Using the inputs into the inter-sessional meetings of the 1972 Biological Weapons Convention to enhance conceptualization of effectiveness for the regime to control biological weapons

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Volume II of II

Tables of comparison of the proposed dimensions with suggestions made at the BWC Meetings of Experts for strengthening the regime

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This Volume contains the full tabulations of policy suggestions at the annual BWC Meetings of Experts that are referred to in Chapter 8 of Volume I of this thesis.

The comparison of proposals for strengthening and enhancing the regime that have been raised through the two BWC inter-sessional processes with the dimensions of effectiveness proposed in this thesis is of particular significance. As part of the inter-sessional processes there have now been seven pairs of annual meetings with each year discussing an allocated topic.

The Meeting of Experts in each year includes opportunities for BWC states parties to discuss in a frank manner the allocated topic. There have been these annual meetings in the periods 2003-05 and 2007-10, known as the first and second inter-sessional processes, respectively. Other than at the 2003 Meeting of Experts, the meeting secretariat has collated 'considerations, lessons, perspectives, recommendations, conclusions and proposals put forward in presentations, statements, working papers and interventions during the meeting'. This collation was appended to the report of the Meeting and later summarized into a *Synthesis Paper* presented to the Meeting of States Parties later that year. In 2003, the secretariat instead produced a 172-page compilation of statements and interventions in the Meeting.

The relevant reports of the Meetings of Experts are contained in the following documents:[1]

> Report of the Meeting of Experts, BWC/MSP.2003/MX/4 (Part I), dated 18 September 2003, 10 pp
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> Report of the Meeting of Experts, BWC/MSP.2003/MX/4 (Part II) [Statements, Presentations and Contributions Made Available to the Chairman], dated 18 September 2003, 172 pp
>
> Report of the Meeting of Experts, BWC/MSP/2004/MX/3, dated 11 August 2004, 56 pp

1. These documents are available via the UN online document server at <http://documents.un.org> as well as from the BWC Implementation Support Unit website at <http://www.unog.ch/bwc>.

Report of the Meeting of Experts, BWC/MSP/2005/MX/3, dated 5 August 2005, 50 pp

Report of the Meeting of Experts, BWC/MSP/2007/MX/3, dated 3 September 2007, 30 pp

Report of the Meeting of Experts, BWC/MSP/2008/MX/3, dated 8 September 2008, 51 pp

Report of the Meeting of Experts, BWC/MSP/2009/MX/3, dated 16 October 2009, 42 pp

Report of the Meeting of Experts, BWC/MSP/2010/MX/3, dated 8 September 2010, 38 pp

While the suggestions embodied in these documents will inevitably be biased towards the topics discussed in each meeting, collectively they represent the most comprehensive compilation available of indications of what BWC states parties would consider to be policies or activities that could strengthen or enhance the regime — in other words, they are directly related to understandings of effectiveness. The proposed dimensions for evaluating effectiveness can then be set against these suggestions to establish whether the dimensions capture all of the suggestions — if they do not, then modification to the existing dimensions or an additional dimension might have to be considered — and whether the dimensions can be used to indicate relative effectiveness of different proposals.

It is beyond the scope of this tabulation to detail how any individual policy, activity or other suggestion enhances effectiveness in a particular dimension, merely to note that it does. Some selected samples from the lists of suggestions have been explained in greater detail in Chapter 8, starting on page 218 of Volume I.

Other aspects

The compilations of the suggestions made in each meeting are substantial documents which are repetitive as some suggestions are made by more than one State Party and some others are no more than rhetorical debating points. In some cases the political nature of international diplomacy makes this inevitable. For example, if ‘Anywhere’ makes a statement the delegate may state afterwards that they would like to see a particular paragraph reflected in the suggestions compilation — notwithstanding that this paragraph

boils down to a general statement — the meeting secretariat has essentially no choice but to accede to this request.

With these practical factors in mind, the following criteria for elimination of any individual suggestion in the compilation for the purposes of testing the validity of the proposed dimensions are as follows:

- *Rhetorical/Political* 'R' — any suggestion that is essentially rhetorical, political or a simple restating or rephrasing of a basic obligation of the Convention or the broader regime; e.g., that use of biological weapons might be considered a bad thing.
- *Descriptive* 'D' — any suggestion that is essentially descriptive such as providing a comment on a contextual aspect such as global threat levels. Sometimes proposed definitions of terms are included in the compilations and these are counted as descriptive entries unless they are used to guide policy.
- *Process/Procedural* 'P' — any suggestion that suggests the process for something rather than whether that something is required or not. Such suggestions may also be used to divert attention about a political aspect of an issue.

General potential diminution, such as straightforward opportunity costs, are not included unless there is a specific potential for this to happen.

2004 suggestions

The topics under discussion in 2004 were:

> enhancing international capabilities for responding to, investigating and mitigating the effects of cases of alleged use of biological or toxin weapons or suspicious outbreaks of disease
>
> strengthening and broadening national and international institutional efforts and existing mechanisms for the surveillance, detection, diagnosis and combating of infectious diseases affecting humans, animals and plants

The two topics in 2004 were about responses to disease outbreaks. Clearly these primarily fall within the *Resilience* dimension. As the first topic deals with international capabilities and the second with national and international institutions dealing with disease surveillance there are many proposals that fall within the *Coherence/Engagement* dimension. Improvements in effectiveness of measures to investigate alleged use would also impinge upon the *Threat Ambition* dimension in general terms. The proposals relating to disease surveillance have considerable overlap with each other. In general terms, the dimension relating to *Threat Ambition* is enhanced as rapid detection of an deliberately induced outbreak of a disease would not only increase the ability for rapid response but also reduce levels of panic and concern within the general public. This would make the potential use of deliberate disease less attractive and therefore the acquisition of biological weapons perceived to be less beneficial. Enhanced disease surveillance would add to coherence of the regime by bringing different responsible actors together. The impact of enhanced disease surveillance on technology availability is double-sided; by enhancing laboratory capabilities would make the security of pathogens more secure, but with the downside that an expansion of laboratory capacities would widen the access of individuals to pathogens and technologies used to handle them. Resilience of the regime would increase with better disease surveillance. Therefore, most of the proposals for the first topic in the 2004 Meeting of Experts would be defined as X X – X and for the second either – X – X or – – – X.

2004 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
The States Parties to the Convention with the assistance of relevant international institutions should strengthen the existing global networks for disease surveillance and build up their capabilities including national networks in order to respond to disease outbreaks in a timely manner particularly in humanitarian assistance to the States Parties affected by disease outbreaks. [Iran]	X	X	–	X	
States Parties should be encouraged to improve disease surveillance and response capabilities. [South Africa]	X	X	–	X	
States should be encouraged to improve their disease surveillance capabilities. [South Africa]	X	X	–	X	
Strengthen the capacity to conduct effective surveillance activities. [Nigeria]	X	X	–	X	
Improved national and co-operative international disease surveillance is consistent with the object and purpose of the Convention which is the elimination of biological weapons. [USA]	X	X	X	X	
Participation in local, national or global disease surveillance systems represents one way of making progress on biological weapons non-proliferation through cooperation and transparency. [USA]	X	X	X	X	
Strengthening surveillance should not be automatically associated with increasing the number of health conditions included in the system. [USA]					R
Ensure national disease surveillance systems cover the whole of the country. [India]	X	X	–	X	
Animal disease surveillance should rely on existing standards and recommendations wherever possible, rather than 'reinventing the wheel'. [Australia]	X	X	–	X	
(The) possibility of, and opportunity to, broaden (and improve) surveillance activities (includes): increasing appreciation and understanding by both the public and politicians of the effects of animal diseases on human health; increasing appreciation and understanding by both the public and politicians of the economic and social impacts of animal diseases based upon experiences derived from outbreaks of avian influenza, closer cooperation amongst countries E.g. Australia and the Asian regional reference laboratory for Foot-and-Mouth disease, or proficiency tests of Leptospirosis, Brucellosis and the USA and offers of training and strengthening national programmes; (and) the provisional offer of assistance by International Organizations, e.g. FAO and OIE. [Thailand]	X	X	–	X	
The States Parties, acting nationally or collectively, should actively support the WHO, FAO and OIE. [South Africa]	–	X	–	X	
States Parties are urged to support the WHO's efforts to strengthen the global system for disease surveillance. [USA]	X	X	–	X	
Effective global biosecurity can only be achieved if all OIE and FAO Member Countries conscientiously comply with the standards and guidelines of the OIE, effectively train stakeholders and ensure the availability of adequate human and material veterinary resources. [FAO / OIE]	–	X	–	X	
It is necessary to separate clearly the spheres of competence and responsibility of the WHO, OIE and FAO and the Convention, as well as clearly define the field of activities where joint efforts are possible according to the mandates of these organizations and the spheres covered by the Convention. [Russia]					R
Early detection, made possible by surveillance such as the detection and monitoring… besides other plant quarantine measures such as the port-of- entry inspection of imported plants, is crucial for plant protection bodies to avert invasion of further devastating outbreaks by plant pests. [Japan]	–	X	–	X	
Early detection of disease outbreaks is vital to minimize the magnitude and geographic scope of epidemics [USA]	–	–	–	X	
Efforts should be directed towards early detection, diagnosis, outbreak identification and response as well as preparedness, which include the training and allocation of resources. [South Africa]	–	X	–	X	
The importance of speed cannot be over-emphasised and this is clearly an important aspect of the surveillance procedure. [Australia]	–	–	–	X	
Recommendation – we must be aware of the limitations of outbreak detection. [USA]	–	–	–	X	
A multidisciplinary approach is required to address all phases of consequence management and post-incident investigations. [Canada]	X	X	–	X	

2004 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
States Parties to the Convention with advanced surveillance systems as well as relevant international institutions should, particularly through providing training courses, assist other State Parties in strengthening their public health manpower capacity and support the use of information technology for the collection and analysis of data on infectious disease. [Iran]	–	X	–	X	
States that are capable of doing so should help others not as capable, to improve disease surveillance and response capabilities. [South Africa]	X	X	–	X	
States in a position to do so should provide assistance to States Parties that would require such assistance to establish and improve their disease surveillance capabilities. [South Africa]	X	X	–	X	
States parties in a position to do so (should) fund / resource improvements in disease surveillance and response in other States Parties less able to do so. [China]	–	X	–	X	
Assistance, including: technology, resources and information, should be made available to States Parties in order to strengthen their disease surveillance and response capabilities. [China]	–	X	–	X	
The international community should promote cooperation in disease surveillance… Competent States Parties should provide assistances to other States Parties in the form of technology exchanges, personnel training, and financial support as well as international or regional seminars, (all of which should be conducted) on the basis of equality, cooperation and mutual respect. [China]	–	X	–	X	
Training, technical expertise and facilities should be provided to developing countries to upgrade their systems to international standards and to maintain the required criteria. [Pakistan]	–	X	–	X	
Germany firmly believes the best way to come to grips with outbreaks of new and recurring diseases is (through) international cooperation, for in a world in which economic ties and tourism bring people into ever closer contact, infectious agents travel huge distances at great speed with no regard to state borders and create problems for not just one (State) but for a large number of countries. [Germany]	–	X	–	X	
Cooperation amongst governments… is something that must be mutually beneficial and reinforced over time. [Canada]	–	X	–	–	
Relevant international institutions should, within their (fields of) competence assists States Parties to strengthen national and local infectious disease surveillance programs and improve their early notification, control, protection and response capabilities. [Iran]	–	X	–	X	
Although national authorities are responsible for infectious disease surveillance and response, it is incumbent upon the international health institutions to provide technical and financial support to States Parties, particularly developing countries, aimed at the exchange of experiences and capacity building for surveillance and response. [Iran]	–	X	–	X	
States Parties are urged to… provide support to the OIE and FAO to improve surveillance of animal and plant diseases and food safety. [USA]	–	X	–	X	
States Parties should promote cooperation with the relevant international organizations. [China]	–	X	–		
International Organizations may provide technological, financial and information assistance and support to those States Parties which have difficulty in implementing the relevant standards and best practices. [China]	–	X	–	X	
(Enhance) cooperation (between) States Parties and IGOs, like WHO, to make better use of their resources and achievements. [Pakistan]	–	X	–	X	
Strengthen… cooperation with the related IGOs to confront animal disease. [China]	–	X	–	X	
Animal disease surveillance and control (could be strengthened with)… help from international laboratories and vaccine banks, and (through the) dissemination of technology. [India]	–	X	–	X	
An improvement in the quality and efficiency of Member Countries' Veterinary Services will guarantee vigilance in disease monitoring, surveillance and early warning, early detection, and will ensure a timely and rapid response to any emergency. [FAO / OIE]	–	X	–	X	
Recent outbreaks of infectious diseases have shown that an outbreak can be contained and suppressed with international support. In this regard, it should be noted that the containment of a disease outbreak at the earliest opportunity and within the smallest geographic area requires the least resources and international efforts should be directed towards early detection, diagnosis, outbreak identification and response. [South Africa]	–	X	–	X	

2004 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
Disease outbreaks do not respect international boundaries and may spread extremely rapidly via modern travel methods. These problems can be ameliorated through international assistance and cooperation as well as at the regional level, where regional groupings of countries could develop regional surveillance programmes, possibly laying the foundation for regional response mechanisms. [South Africa]	–	X	–	X	
Regional cooperation on the prevention of illegal trans-boundary transport of domestic animals needs to be enhanced. [Iran]	–	X	X	X	
Regional surveillance efforts… must be continued, and where possible expanded, to the mutual benefit of the countries involved. [Australia]	–	X	–	X	
Strengthen… cooperation at a regional level to confront animal disease. [China]	–	X	–	X	
Establish regional systems for the joint prevention and control of certain animal diseases. [China]	–	X	–	X	
Assist regional countries to build their capacity to manage animal health, accurately and transparently report their animal health status, and perform risk analysis on animal diseases and pests. [Australia]	–	X	–	X	
Cooperation between public and private sectors on the implementation of surveillance and the reporting of cases of communicable diseases under surveillance has important impacts and should be encouraged. Participation of medical institutions in the surveillance process should also be improved. [Iran]	–	X	–	X	
Global disease surveillance and control can only be improved by individual States Parties taking action and (through) international cooperation [USA],	–	X	–	X	
(There is a) need to determine what improvements to surveillance systems are intended to accomplished, (such as the) early detection of outbreaks, (to) analyze trends, generate hypotheses (and) reduce (the) global threat posed by biological weapons. [USA]	–	X	–	X	
Specific national animal disease surveillance should be prioritised (according to) their impact on productivity; the importance of the affected animal or product; the feasibility of control; the cost of control or surveillance; and the public health implications. [USA]	–	X	–	X	
It is clear that international cooperation in (the) field (of disease surveillance) plays an important role, particularly in the exchange of information on measures taken and the latest events. This may prove very helpful in practice (as it could) lead to a better (level of) awareness by the public who lack experience in this regard. [Czech Republic]	–	X	–	X	
States Parties, nationally and collectively, should be encouraged to support the activities of NGO disease surveillance and response and those State Parties in a position to do so should provide these NGOs with resources. [South Africa]	–	X	–	X	
The States Parties should nationally and collectively support the efforts of NGOs in the surveillance of and response to disease outbreaks. States Parties who are in a position to do so should provide assistance to such NGOs to improve their activities when required. [South Africa]	–	X	–	X	
The (Canadian) Biological Cluster can serve as a model for international cooperation to support crisis and consequence management of a biological terrorism event International health institutions are encouraged to establish stocks of drugs, vaccines and diagnostic kits at the WHO Regional Centers for (use in a) rapid response to unexpected events in affected countries as well as (to ensure the effective) management of emergency cases. [Canada]	–	–	–	X	
Enhance WHO's surveys of military health programmes for use as potential public health resources. [WHO]	–	–	–	X	
(Enhanced) harmonisation with other global players (including WTO, UNHCR, FAO, ICAO, EU, G7, OIE, MSF, IFRC, IATA, IMO, WTA, IFPMA, etc). [WHO]	–	X	–	X	
States Parties, nationally and collectively, should be encouraged to support the activities of WHO, OIE and FAO by developing a standing capacity for disease surveillance and response, starting at the regional level. [South Africa]	–	X	–	X	
The States Parties should nationally and collectively support the WHO, FAO, OIE and the relevant organisations to establish a standing capacity for epidemiological investigation of disease outbreaks and an immediate response capability. [South Africa]	–	–	–	X	

2004 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
The States Parties, acting nationally or collectively, should actively support the WHO, FAO and OIE in the continued development and implementation of programmes for improving health and epidemiological services in individual countries, with a specific allocation for disease surveillance and outbreak response activities. [South Africa]	–	X	–	X	
Improvements can best be accomplished through cooperation with the WHO, OIE and FAO. [USA]	–	–	–	X	
State parties should support WHO, FAO, and OIE in their activities related to disease surveillance and response in order to maximise their efficiency with their existing resources [China]	–	X	–	X	
Over the years, intergovernmental organizations such as the WHO, FAO and OIE have done a great deal for disease surveillance. States Parties can further enhance cooperation with these international organizations and make full use of their resources and achievements. [China]	–	X	–	X	
Infectious disease events are best investigated and verified by the WHO. [Australia]	–	–	–	X	
WHO is the ideal organization to undertake global surveillance because of its role and responsibilities as the health arm within the United Nations family of international organizations, its responsibilities in compiling the International Health Regulations (IHR) and is coordinating the review process. [Australia]	–	X	–	X	
States Parties should strengthen the relationship and cooperation between health authorities in charge of human and veterinary disease surveillance. [Iran]	–	X	–	X	
Recent global events reinforce the need for increased partnerships between human and animal health… Integration of human and animal surveillance requires a multidisciplinary approach. [USA]	–	X	–	X	
(There is a) need (for) better integration of (surveillance of) animal and plant diseases. [USA]	–	X	–	X	
Animal disease control (should include a) well coordinated response capable of being scaled up. [UK]	–	X	–	X	
The animal industries (should) have a large role in policy formulation and implementation. [Australia]	–	X	–	X	
(The) deployment of well-trained expert teams, for Rapid Health Assessments in emergency situations, and epidemiological investigations, for a rapid and timely response to outbreaks, should be supported by the relevant international institutions. [Iran]	–	X	–	X	
Recent outbreaks of infectious diseases have shown that outbreaks can be contained and suppressed with international support. In this regard, it should be noted that the containment of a disease outbreak at the earliest opportunity and within the smallest geographic area requires the least resources, and international efforts should be directed towards early detection, diagnosis, outbreak identification and response. [South Africa]	–	X	–	X	
Regional networks could be enhanced through further coordination and integration, which would enhance transparency and speed and could also be pursued through the WHO. [Australia]	–	X	–	X	
Enhance bilateral and international collaboration for disease surveillance and response to address cross-border disease events. [India]	–	X	–	X	
An integrated regionally based surveillance network, including a laboratory sub-network and experts on call, would be of great benefit and should be encouraged. [Australia]	–	X	–	X	
Expand the network of collaborating agencies in the region. [Australia]	–	X	–	X	
It is essential in a space (such as the EU) that appropriate arrangements be put in place to ensure: action at source be undertaken to stem the spread of disease and environmental contamination; mutual assistance be provided for diagnosis and management of cases; access to special laboratory services and expertise for epidemiological investigations be secured; and public health responses be put into effect… as well as good coordination and interoperability of preparedness and response plans. [Netherlands]	–	X	–	X	
An appropriate response to these challenges (the spread of known and the appearance of new infectious diseases) must in our view include a coordinated national and international strategy to identify early on, and take effective action to control, outbreaks of disease and pandemics in particular. [Germany]	–	–	–	X	
An appropriate organizational structure should be established and priority needs to be given to allocating the required funds for surveillance and response. [Iran]	–	X	–	X	

2004 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
Priority should be given to the management, availability and access to medicine, drugs, vaccines and rapid diagnostic kits for emergency cases at the national level (to facilitate a) prompt response to usual and unusual outbreaks of infectious diseases. [Iran]	–	–	–	X	
Countries should define the objectives for their integrated systems, the partners that need to be connected and the functions to be supported (i.e. the "requirements"). [USA]	–	X	–	X	
Recovery (from animal disease) requires the cooperation of all (of the) involved authorities and operational parties. [UK]	–	X	–	X	
Plant pest and disease control… key elements (include) organisation (with) clear responsibilities, (a) well coordinated response capable of being scaled up (and) review procedures after (an) outbreak. [UK]	–	X	–	X	
If the resources at county level are insufficient or if the outbreak involves several counties, national coordination is needed. [Sweden]	–	X	–	X	
Virtual networks have a role to play in responding to outbreaks, especially those of unknown aetiology, and such an arrangement can be built on existing networks quickly and effectively. [Australia]	–	X	–	X	
Systems must be sustainable both politically and technologically over time (and should consider) disease-based and syndromic disease reporting, (be) used regularly, (and rely on) incentives and not penalties for reporting. [USA]	–	–	–	X	
Real-Time Symptom Surveillance… (has) benefits (including the) early detection of deliberate and natural disease outbreaks (but represents a) large scale task involving multiple agencies. [UK]	–	–	–	X	
Increase the involvement of clinicians in surveillance systems. [Nigeria]	–	X	–	X	
Strengthen the involvement of laboratory personnel in epidemiological surveillance. [Nigeria]	–	X	–	X	
Broad departmental participation in laboratory clusters ensures that federal laboratory resources are available in most provinces and regions… This facilitates access to specialised facilities and expertise and can minimise transportation of sample requirements. [Canada]	–	X	–	X	
Develop a laboratory cluster (taking into account) the problems associated with a geographically dispersed population, transportation of samples, and the need for urgent access to federal expertise to support a local response. [Canada]	–	X	–	X	
Close collaboration of… institutions, public authorities and the industry is essential (for disease surveillance). [Germany]	–	X	–	X	
Establishing proactive arrangements to sustain crisis phase operations will improve capability and surge capacity. [Canada]	–	X	–	X	
Cooperation amongst practitioners and communities in medical and public health matters is something that must be mutually beneficial and reinforced over time. [Canada]	–	X	–	X	
Emphasise community participation to detect and respond to public health problems. [Nigeria]	–	X	–	X	
Ensure that rural areas receive the same measure of protection and surveillance (as urban areas). [Canada]	–	X	–	X	
Animal disease control (should include) well established and rehearsed contingency plans. [UK]	–	–	–	X	
Plant pest and disease control… key elements (include a) well prepared and rehearsed contingency plan. [UK]	–	–	–	X	
Encourage industry operators to develop specific response plans for their businesses. [New Zealand]	–	X	–	X	
Encourage industry operators to develop… arrangements… to maintain the capability to mount an effective response to outbreaks and technical experts, to provide expert technical advice on preparedness and response matters as required. [New Zealand]	–	X	–	X	
(The) technological exchange of information amongst States Parties to the Convention should be urged for the peaceful use of genetic engineering, prevention, diagnosis and treatment of diseases caused by microbial and other biological agents or toxins, in particular for infectious diseases, and for other relevant fields of the biosciences and biotechnology. [Iran]	–	X	–	X	

2004 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
States Parties to the Convention are encouraged to share their experiences with each other on infectious disease surveillance. [Iran]	–	–	–	X	
States Parties should: maintain, strengthen and improve the notification mechanism for disease outbreaks and disease prevention and control measures; (and) enhance consultation, coordination and information-sharing with each other. By promoting technological cooperation and personnel exchanges, States Parties can share experiences in disease prevention and control and relevant research results. [China]	–	X	–	X	
What is important is the issue of transparency. Each country should make the mechanics of its surveillance system known to its neighbours and trading partners. Such transparency builds confidence, facilitates mutual risk analysis, and will promote investment and trade in the future. [USA]	–	X	–	X	
Strengthen communication at a regional level to confront animal disease. [China]	–	X	–	X	
Systems must be sustainable both politically and technologically over time (and should consider), international data sharing balanced against country sovereignty. [USA]	–	X	–	X	
(The benefits of an) electronic reporting system for outbreaks of infectious disease… (include the ability to deal with and produce) large numbers of reports, standardised description of outbreaks, a minimal additional work load for health departments… and (they are) appropriate for continuous collection of large numbers of outbreaks for international surveillance systems. [Germany]	–	X	–	X	
Due to the potentially vast amounts of information generated and required in these processes, the tools of bioinformatics are of increasing importance. [UK]	–	X	–	X	
It is essential in a space (such as the EU) that appropriate arrangements be put in place to ensure prompt and secure notification and exchange of information… This in turn requires sharing of knowledge and good practice, laboratory facilities, equipment and products, experts and intervention personnel across the Member States of the EU. [Netherlands]	–	X	–	X	
(There is a) need to identify relevant experts in the EU and list them in a directory to be shared by the authorities of the Member States. [Netherlands]	–	X	–	X	
The WHO, FAO and OIE could play a facilitating role in the exchange of information on infectious disease surveillance amongst State Parties. [Iran]	–	X	–	X	
Strengthen communication with the related IGOs to confront animal disease. [China]	–	X	–	X	
Global alert and response operations (are) required [WHO]	–	X	–	X	
Differing experiences may allow for a useful exchange of ideas in… (relation to) the urban-rural divide. [Canada]	–	X	–	X	
Awareness programmes on biosafety and biosecurity should be initiated at various levels. [Pakistan]	–	X	X	X	
Some countries are still using manual systems for data collection, reporting, analyzing, feedback and dissemination. Reporting data through appropriate electronic systems would facilitate the integration of surveillance activities especially if the system is user-friendly and does not use multiple or different data sets that result in an extra workload or subsequent abandonment. Each State Party could try to establish computerized systems for information management (similar to the) Geographic Information System (GIS). [Iran]	–	X	–	X	
Information sharing between domestic health departments and the relevant international institutions through national health authorities has to be encouraged (in such a way as to) minimise the administrative implications. [Iran]	–	X	–	X	
The lack of systematic data exchange amongst laboratories at the national level causes many problems for countries. Therefore the establishment or promotion of national laboratory networking should be enhanced. [Iran]	–	X	–	X	
The laboratory response network formula for success (includes) secure communications (and) rapid response and reporting. [USA]	–	X	–	X	
Develop a system (for electronic outbreak reporting) to allow standardised, up-to-date and easily retrievable epidemiological data management of outbreaks on all administrative levels… The (German) system could serve as a blue print for a multinational outbreak reporting system. [Germany]	–	X	–	X	
Improve the flow of surveillance information between and within levels of health systems. [Nigeria]	–	X	–	X	

2004 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
Essential to the achievement of these objectives (effective disease surveillance, detection and diagnosis) is the availability of a reliable data-handling tool. [UK]	–	X	–	X	
Effective surveillance systems must be continuous, real-time and should generate alerts to provide the earliest indications of illness. [UK]	–	X	–	X	
Recommendation - if high quality data already exists, or can be cheaply obtained, it is not expensive to implement a syndromic surveillance system. [USA]	–	X	–	X	
Recommendation - use existing analysis and statistical algorithms for appropriate data sources. [USA]	–	–	–	X	
Surveillance is fundamental to the prevention and control of all communicable diseases. The process for reviewing and strengthening surveillance systems (could include): enhanced surveillance schemes that collate detailed data about risk factors; surveillance of syndromes and specific diseases by community doctors and less common diseases by specialist medical practitioners; surveillance of laboratory evidence of viral illness; detection of threats by surveillance for infections (in) sentinel animals; characterisation of specific organisms that are a public health threat; and measures of implementation such as vaccination to prevent infection. [Australia]	–	X	–	X	
Strategic decisions should be made regarding the development of specific tools or software at the national level, where it is either inefficient or technically difficult for local participants to build their own. [USA]	–	X	–	X	
Integrate multiple surveillance systems so that forms, personnel and resources can be used more effectively. [Nigeria]	–	X	–	X	
Improve the use of information for decision-making. [Nigeria]	–	X	–	X	
Communication and coordination systems (could be enhanced by addressing) gaps identified by training exercises (as well as) training facilities systems integration. [USA]	–	X	–	X	
System integration could be enhanced through training exercises. [USA]	–	X	–	X	
Plant pest and disease control… key elements (include) effective intelligence and surveillance to inform risk assessment and policy. [UK]	–	X	–	X	
The importance of healthy animals for food production and public health needs to be brought to the attention and prioritisation at the Ministry level so that a long term commitment to this public good is achieved. [FAO / OIE]	–	X	–	X	
Animal disease surveillance and control (could be strengthened by a) national campaign on emergency diseases. [India]	–	X	–	X	
Information dissemination to farmers and communities is… important for the recognition of clinical diseases and the early notification of disease outbreaks. [South Africa]	–	X	–	X	
Public awareness of health program and surveillance should be strengthened, in particular in local communities. [Iran]	–	X	–	X	
In dealing with epidemics of emerging infectious diseases States Parties to the Convention could consider the instructions of the WHO, based on the principles of International Health Regulation (IHR). [Iran]	–	X	–	X	
The revised IHR, once adopted, would provide a fundamental tool to support the WHO's disease surveillance activities. Moreover, the revised IHR would provide a mechanism for delivering greater transparency through greater disease reporting to the international community and provide a basis for developing national measures. [Australia]	–	X	–	X	
Animal disease surveillance and control (could be strengthened by the) harmonization of test methodologies, (and the) enactment of statutes and the provision of directives. [India]	–	X	–	X	
Systems must be sustainable both politically and technologically over time (and should) enjoy a mandate of official authority. [USA]	–	X	–	X	
States parties should consider developing standards or best practices for disease surveillance. [China]	–	X	–	X	
(The) laboratory response network formula for success (includes a) unified operational plan, standardise protocols and tests and oversight, and quality laboratory results. [USA]	–	X	–	X	
Procedures should be in place for the rapid proper transport of samples to the laboratory and the onwards dispatch of samples to national, regional or world-reference laboratories. [South Africa]	–	X	–	X	

2004 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
The OIE standards designed to control disease and to prevent the introduction of pathogens should be used as a basis for the harmonisation of legislation. Comprehensive livestock sector development, which includes production, health and policy, are hallmarks of the FAO Animal Production and Health Division as mandated by the Ministries of the member countries. [FAO / OIE]	–	X	–	X	
OIE and FAO Member Countries should comply with the OIE guidelines, standards and recommendations and EMPRES principles relating to surveillance and prompt notification of diseases, including zoonoses, of domestic livestock and wild animals. [FAO / OIE]	–	X	–	X	
Many countries share a common concern about the natural occurrence or deliberate misuse of biological pathogens that could affect public health, food and animal production. Existing methods of disease prevention and containment, regulations, international guidelines and standards are being extended at both national and international levels to improve the ability of countries to prevent, manage and recover from natural, accidental or deliberate introduction of animal diseases. In this regard there are, at present, substantial differences amongst countries in the perception of the national threat from the deliberate use of pathogenic biological agents. [FAO / OIE]	–	X	–	X	
National standards have been able to draw on international standards for conducting important risk assessments, implementing import policies and procedures, and for developing strategies for preparedness, prevention and response to endemic and exotic animal diseases. [Australia]	–	X	–	X	
States Parties can discuss and formulate standard and best practices for disease surveillance in accordance with their national situation and on the basis of the relevant standards of the intergovernmental organizations. [China]	–	X	–	X	
Countries should identify the standards that will be used to support interoperability, ideally international standards for data and system architecture. [USA]	–	X	–	X	
Funding awards should specify that standards will be used in systems developed or modified using the funding. [USA]	–	X	–	X	
Implement an independent process to certify interoperability functions for systems developed by private sector or state partners. [USA]	–	X	–	X	
With regard to disease surveillance mechanisms, laws and regulations are the foundation, personnel and institutions are the basis, finances and technologies are the guarantee. Taking into consideration specific national situations, States Parties may establish their own operational and effective disease surveillance mechanisms to strengthen their response capabilities to outbreaks of infectious disease. [China]	–	X	–	X	
The main requirements for effective animal disease control (include predetermined) responsibilities, a legal framework, intelligence and surveillance (capabilities), contingency plans, a suitable response including diagnostic mechanisms and recovery (planning). [UK]	–	X	–	X	
Plant pest and disease control… key elements (include) (a) legal framework. [UK]	–	X	–	X	
Encourage industry operators to develop specific response plans for their business. [New Zealand]	–	X	–	X	
Biosafety and biosecurity standards should be formulated by each country, taking into account the best practices. [Pakistan]	–	X	X	X	
Establishing a proper legal basis for the use of non-licensed drugs and vaccines in emergency situations will avoid the need for lengthy discussions on the legal status of drugs and vaccines offered for help during, as well as after, international relief operations [Germany]	–	X	–	X	
Vigilance of physicians and other health care providers are important factors in the surveillance and control of infectious diseases and they are in the best possible position to observe and report usual and unusual illnesses, syndromes and diseases that require regular and continuous training. [Iran]	–	X	–	X	
Training reinforces and improves (disease surveillance) capabilities (including) clinical and veterinary, epidemiology and public health, laboratory diagnostics and outbreak detection. [USA]	–	X	–	X	
Veterinarians (both state and private), as well as auxiliary animal health personnel, should be adequately trained in the clinical recognition of diseases and in the procedures for the collection and dispatching of samples [South Africa]	–	X	–	X	
It is necessary to… train the attending physicians. [Germany]	–	–	–	X	

2004 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
The laboratory network will need to be in a constant state of readiness, possibly requiring regular exercises with colleagues in other laboratories. [Australia]	–	X	–	X	
The laboratory response network formula for success (includes) trained laboratorians. [USA]	–	–	–	X	
Specially designated laboratories have an essential role in disease surveillance and most epidemiological surveillance systems require well-equipped laboratories for confirmation. In order to serve both the routine confirmation of clinical syndromes and rapid confirmation of the causative agent of outbreaks, upgrading laboratories and capacity building should be taken into consideration. [Iran]	–	–	–	X	
Continue efforts to strengthen laboratory capabilities. [India]	–	–	–	X	
Improve laboratory capacity to identify pathogens and monitor sensitivity. [Nigeria]	–	–	–	X	
The laboratory response network formula for success (includes) molecular diagnostics, rapid response and reporting, rapid response and reporting, safe secure laboratories, (and) coverage for human, animal, food and environmental specimens. [USA]	–	X	–	X	
Risk assessments should be carried out in all respects for pathogenic microorganisms. [Pakistan]	–	–	X	X	
Plant pest and disease control… key elements (include a) diagnostic capability. [UK]	–	–	–	X	
Before a test can be accepted for routine diagnostic use it must demonstrate repeatability, reproducibility, accuracy, precision, sensitivity and specificity. A suitable panel of samples, including a reference standard must be available to test these attributes. [UK]	–	X	–	X	
The OIE guidelines relating to the biosecurity of laboratories, based on expertise provided from researchers in human and animal health, are recommended for the safe management of biological agents used in those laboratories. [FAO / OIE]	–	X	X	X	
The regional reference laboratories, with due consideration of the important role of national laboratories involved in surveillance of infectious diseases, should provide technical support for capacity building. [Iran]	–	X	–	X	
(There is a) necessity for a good global and regional laboratory capability to support disease surveillance and response activities. [Australia]	–	–	–	X	
Before initiating a (regional) laboratory network there are two prerequisites that must be satisfied. First of all it will be necessary to collate a list of all laboratories with the requisite levels of expertise … Then, there must be solid regional commitment to effect ongoing resources for building capacity and supporting the network. [Australia]	–	X	–	X	
The application of biotechnology and scientific research and development, for the prevention, surveillance, detection, diagnosis and treatment of diseases caused by microbial and other biological agents or toxin, in particular infectious diseases, should be available to States Parties on a non-discriminatory basis. [Iran]	–	X	–	X	
The States Parties, acting nationally or collectively, should actively support the WHO, FAO and OIE in the continued development and implementation of: programmes that are aimed at regional initiatives for the development of, and research into, speedy, effective and reliable disease surveillance and outbreak response activities; and programmes that are aimed at international initiatives for the development of, and research into, speedy, effective and reliable disease surveillance and outbreak response activities. [South Africa]	–	X	–	X	
Scientific knowledge and understanding of disease agents and infectious processes are far from complete and continual research is required to keep pace with the natural bio-aggression of microorganisms. [South Africa]	–	–	–	X	
Develop additional capabilities to ensure early detection and response to epidemic emergencies. [India]	–	–	–	X	
Real-Time Symptom Surveillance (requires) further investment and research to realise (its) potential benefits. [UK]	–	–	–	X	
Animal disease control (should include) effective surveillance and recognition of the unusual. [UK]	–	X	–	X	
Animal disease surveillance and control (could be strengthened through the) adoption of biotechnological tools. [India]	–	–	–	X	
It is necessary to… develop faster and (more) specific analytical methods. [Germany]	–	–	–	X	

2004 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
Develop additional national rapid response capabilities. [India]	–	–	–	X	
Effective investigation of any suspected BW event, whether through national, international, cooperative, or other means is essential for promoting international peace and security. [USA]	X	X	–	X	
It is important to promote a wide understanding that there are systems capable of detecting suspicious outbreaks of disease and of investigating incidents of alleged BW use. [USA]	x	–	–	x	
Resorting to the UN Security Council under Article VI, convening a formal consultative meeting under procedures developed to implement Article V, and conducting international investigations authorised by the UN Secretary-General… all three of these mechanisms remain viable and… revisions to their scope or procedures are neither necessary nor appropriate. [USA]	–	–	–	–	R
It is obviously necessary to use the potential of the UN Security Council for investigating alleged use of biological weapons. [Russia]	–	–	–	–	R
Need (for) coordination (of a global plan to fight against biological risk which would includes) effective and common synergy between all BWC members and an overview of research programmes and their implementation. [France]	X	X	X	–	
Better coordination between different actors in different countries is needed to reach good and fast surveillance and control. [Sweden]	–	X	–	X	
Scientific research remains essential and requires sustained efforts because: (of) threats from unexpected or unexplored risks; the pace of scientific progress in clandestine laboratories cannot be objectively measured; the access of terrorist groups to training, expertise, source material and equipment is difficult to map; (and) the validity of risk inventories, priority ranking and risk assessment is time-limited. [Netherlands]	–	–	–	–	D
Pay close attention to zoonotic and emerging diseases and potential threat agents. [Nigeria]	–	–	–	X	
Any cooperation on primary notification… (or a) call for international assistance and response must be based on national mechanisms. [Norway]	–	–	–	–	P
Capacity must be developed within existing national structures. [Norway]	–	–	–	–	D
Focus on prevention and control of disease outbreaks (as a) terrorist origin of (an) outbreak may not be clear (and the) preparations for naturally-occurring outbreaks is similar to preparations for bioterror attacks. [USA]	–	X	–	X	
Include food-borne pathogens (in thinking as) there is a precedent for bioterrorist use of food contamination. [USA]	–	X	–	X	
International cooperation is critical, in balance with (the) need to address national security concerns. [USA]	–	X	–	X	
Sampling and analysis are potentially important tools in investigations into alleged use of BW. [UK]	–	X	–	X	
International attention (on this issue should include) food virology (including an) assessment of (the) real contribution (which) viral food pathology (could make). [Netherlands]	–	X	–	X	
The delay in reporting and the… underreporting of food borne infections and intoxications inhibits a quick rapid response. [Netherlands]	–	X	–	X	
Surveillance is the key to early detection of disease outbreaks and for rapid and effective response. [India]	–	X	–	X	
An effective and efficient disease surveillance system is crucial for detecting cases of alleged use of biological weapons or suspicious outbreaks of diseases. [India]	–	X	–	X	
It is time to go back to past decisions about investigations made by the BWC prior to the protocol negotiations [Germany]	–	X	–	X	
Political questions relating to investigations should be dealt with at the Review Conference, as (the Meeting of Experts)… should only look at technical measures. [Germany]	–	X	–	X	
An effective, universally accepted, mechanism for investigations should be achieved through negotiations [Iran]	–	X	–	X	
A common understanding should be promoted on the role of experts in operating Article VI on a case by case basis and accordance (with) the Convention [Brazil]	–	X	–	X	

2004 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
With the increased perceived threat from (the) intentional release of pathogenic microogranisms, additional aspects of the management of these outbreaks will have to be taken into account. Among them is the need for broader competence which covers both the epidemiological side of an outbreak, as well as the need for some type of forensic knowledge with the main objectives of tracing the perpetrator. [Sweden]	–	X	–	X	
It is important to remember that handling an allegation of use of (a) biological agents and the investigation that goes with it has two components (disease control and forensic investigation). (They) have to work both in parallel and (along) different tracks and at the same time (they should) be integrated to achieve a maximal output. It is highly likely that the first signs of an intentional release (will be) recognised by the public heath / animal health authorities. This means that disease control will be dealt with before a forensic investigation but it is of vital importance that both partners have knowledge about each others' missions and cooperate so that an optimal result is achieved. [Sweden]	–	X	–	X	
The involvement of additional actors is needed in managing an intentional release. [Sweden]	–	X	–	X	
The legitimate and equitable rights of the investigated State Party (under the terms of the Convention) could be protected (and) the wasting of investigation resources and unnecessary losses to the investigated State Party (should be) avoided. [China]	–	X	–	X	
It would be logical for a State Party to have powers to request an investigation only in its own territory. [Russia]	–	X	–	X	
(There is a) need for a whole-of-government effort to manage significant outbreaks of animal disease. [Australia]	–	X	–	X	
Enhancing capabilities for responding to a natural or deliberate epidemic of disease affecting humans… (could include): promoting enactment of domestic legislation; strengthening medical and public health structures related to initial response, enhancement of response capabilities and strengthening of collaboration between concerned organizations; countermeasures including point-of-entry inspections; (and) cooperation with international organizations and other countries. [Japan]	–	X	–	X	
(The) essential pillars of… prevention and protection (include): demonstrating political and financial support for non-proliferation and threat reduction programmes translates into proactive prevention; (and) assessing (the) vulnerability of and protecting critical infrastructure. [USA]	–	X	–	X	
(The) essential pillars of… surveillance and detection (include): early warning (including) detection and reporting systems to rapidly recognise and characterise dispersal of biological agents; (and) enhancing deterrence by improving attribution capabilities and improving capabilities to perform forensic analysis. [USA]	–	X	–	X	
(The) essential pillars of… response and recovery (include): plans for mass casualty care and risk communication; accelerated development of countermeasures; (and) strategies, guidelines and plans for decontamination of persons, equipment, and facilities. [USA]	–	X	–	X	
(The) six principles of emergency management (include): organisation; command and control; coordination of support; information management; timely action; (and an) effective emergency (disaster) management plan. [Australia]	–	X	–	X	
(The) essential pillars of… threat awareness and assessment (include): improving our ability to collect, analyse and disseminate information; ensuring an integrated and focused effort to anticipate and response to emerging threats; (and) vulnerability assessments. [USA]	–	X	–	X	
The system (for response could include) prevention (including) screening against entry of additional cases, national and international surveillance and travel advice, control and containment; isolation and quarantine; surveillance and investigation including laboratory testing, national emergency stockpiling system, guidelines for treatment and management; issue management and risk communication (for) intra / inter-governmental and other sector involvement; (and) international collaboration. [Canada]	–	X	–	X	
Outbreak control (can include) human resources, evidence based decision making, blood safety and border issues, and quarantine / isolation / contact tracing. [Canada]	–	X	–	X	
Infection control (can include) identifying critical control points, optimising efficiency, changing approaches to infection control, changing attitudes and behaviours, (and) strengthening nosocomial and syndromic surveillance systems. [Canada]	–	X	–	X	

2004 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
(A) cross-governmental response to health issues (can include) federal (responses including workplace health, drug approval, transport, missions abroad, income support for individuals and businesses, customs and immigration and national defence); federal / provincial / territorial (responses including) new partnerships in disease control (clinical medicine and public health, public health and law enforcement), research and international cooperation (including information exchanges, travel advisories, and laboratory networks). [Canada]	–	X	–	X	
Addressing allegations of (the) use of CBRN… agents (could include) building a laboratory network (both nationally and internationally), (the) transfer of technologies and protocols; training and accreditation (both internal and external); laboratory validation (both internal and external), (and) sample transport (including) international reference laboratories. [France]	–	X	–	X	
Countries should make an effort to enhance outbreak response capabilities, including: the formulation of national laws and regulations; the improvement of supervision of law enforcement in public health; the setting up of effective organizations and agencies for disease surveillance and control and command; the development of contingency plans; increasing clinical personnel and input (resources) for emergency response; strengthening epidemiological / etiological research; increasing financial input and medicine stockpiles; and increasing awareness of biosaftey and medical issues, including within the general public, and encouraging public participation in response activities. [China]	–	X	–	X	
A possible framework for a common partnership (for a global plan to fight biological risk includes) preparedness, crisis management and rehabilitation. Preparedness (should include) development of detection tools; development of prophylactic means (and) therapeutic means and immunotherapy; and (the) development of animal models for toxicological and pharmaceutical studies. Crisis management (should include) stockpiles of drugs and vaccines; stocks of environmental detection kits (and) stocks of diagnostic detection ticks. Rehabilitation (should include) development of detection tools for circumscription of contamination (and the) development of new means of decontamination. [France]	–	X	–	X	
Strengthen the global epidemiological network [France]	–	X	–	X	
Preparedness for BWC response… (could include the) study, analysis and updating of the situation of biological and chemical weapons for the promotion (of a) rapid response; strengthening surveillance and responses for the early detection of a BCW outbreaks; development of standard operating procedures for surveillance and response; development (of) guidelines for the supply and allocation of necessary resources; capacity building (for) a response unit / team; development of risk communication and management guidelines; demonstration (rehearsal) and exercises of the response plans (and) national and international research and collaboration. [Thailand]	–	X	–	X	
(The) objectives (of outbreak response could include for) threat awareness and command and control arrangements: (a) mechanism for information exchange, consultation (and) coordination; (for) surveillance and detection: (a) capability for inventorying, detection and identification: (for) response and recovery: medicine stocks and health service databases and an arrangement for the provision of medicines, specialists, other medical goods and infrastructure; (and for) prevention and protection: (the) interdiction of agent movement and critical infrastructure protection, including legislation, rules and guidance and coordination of the… response… (and) links with third countries and international organizations. [Netherlands]	–	X	–	X	
Current priorities (for outbreak response, include the) development of a unified preparedness and response capability through general emergency plans and unified command and control centres; risk and crisis communication and management; incident investigation and environmental sampling, including protocols and detection; health resources and mutual assistance, including minimal requirements; exercises and emergency plan evaluation; and public health intelligence and threat monitoring and assessment in liaison with security and law enforcement services. [Netherlands]	–	X	–	X	
Develop critical public health infrastructure and core capabilities to ensure communities and states can detect and control infectious diseases. [USA]	–	–	–	X	
Enhance capabilities for early disease detection and control, receipt and delivery of antibiotics and vaccines, (and the) strengthening of laboratory systems. [USA]	–	–	–	X	

2004 Suggestions	Dimensions				Other aspects
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One way to (prepare public health responses to alleged use or suspicious outbreaks) includes the development of work plans (which could include) documentation indicating achievement of critical benchmarks; brief proposals for other objectives (including a) plan for approach, measurable milestones, (and) estimated budget; actionable, well-defined and achievable objectives; (and) measurable outcomes that (are indicative of) enhanced preparedness and a capacity to respond. [USA]	–	–	–	X	
Examples of priority benchmarks (to help prepare public health responses to alleged use or suspicious outbreaks include): designation (of) senior public health official to serve as Executive Director(s) of bioterrorism programmes; Advisory Committee including (a) broad range of representatives (from both the public and private sectors); plans for the dissemination of health information; plans for the receipt and delivery of material from national pharmaceutical stockpiles; the evaluation of disease reports on a 24/7 basis; accessing training needs; (and) ensuring (the existence of) working relationships and communication among all laboratory levels. [USA]	–	X	–	X	
Relevant materials of the Ad Hoc Group of the BWC States Parties (for example the Chapter on investigations of the draft BWC verification Protocol) could be used as a basis for the development of specific technical procedures for carrying out investigations. [Russia]	–	–	–	X	
(The) consideration and adoption of necessary measures related to unusual outbreaks of infectious diseases is the prerogative of national authorities. Besides national authorities, the investigation of unusual outbreaks of diseases can be carried out with the participation of international organizations (WHO, FAO, OIE, etc.). [Russia]	–	–	–	X	
Investigations should be timely and accurate; comprehensive and objective; epidemiologically sound; grounded in bioforensic analysis; support findings of fact and legal determinations; (and) closely coordinate efforts. [USA]	–	–	–	X	
To launch an investigation of (the) alleged use of biological weapons it is important for the complaint to contain reliable information without which the investigation could not take place. [Russia]	–	X	–	X	
(Develop nationally): global biosafety standards; recognized attribution standards / benchmarks; systems to certify laboratory and laboratory staff expertise; establish investigation / collection protocols; strengthen global surveillance; build national epidemiological investigative teams; (and) build universal pathogen databases. [USA]	–	–	–	X	
Community support (is one way of) dealing with secondary effects of disease and quarantine. [USA]	–	–	–	X	
Enhanced public health infrastructure prepares us whether events are naturally occurring or intentional. [USA]	–	–	–	X	
If any State Party to the Convention has concerns about suspicious outbreaks of disease and asks the Security Council for an investigation, it should provide valid evidence and detailed data to prove that the relevant outbreak of disease is not natural but directly linked to activities prohibited under the Convention. In addition, before launching the investigation there should be adequate coordination and communication among (States Parties) so as to establish the facts. [China]	X	–	–	X	
The Australian Manual on Emergency Management could serve as a model for other States Parties looking to incorporate biological weapons preparedness and response into existing emergency management programmes. [Australia]	–	–	–	X	
International early warning systems such as RASFF / INFOSAN (could) be scrutinized. [Netherlands]	–	–	–	X	
Add accessibility as a CCP in HACCP system; and inspect and enforce this. [Netherlands]	–	–	–	X	
Food Counter Terrorism calls for an integrated approach in which the following aspects are simultaneously addressed: recognition; detection; outbreak response; (and) prevention. [Netherlands]	X	–	–	X	
The most effective universally acceptable investigation mechanism could only be established on the basis of a multilaterally negotiated legally binding instrument based on the Convention. [Iran]	–	X	–	X	

2004 Suggestions	Dimensions				Other aspects
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Implementation of the provisions on investigations will be most efficient only if the other elements of a verification mechanism for the Convention on the Prohibition of Biological Weapons are established. In this context, we reaffirm our position as to the necessity of comprehensively tackling this problem by establishing a control mechanism for the BWC. [Russia]	X	X	–	X	
The (Secretary-General's) investigation mechanism is not appropriate (for use under the Convention) since it (was established) on the basis of the international political and security environment of the 1980s, when the Chemical Weapons Convention had not been finalized nor entered into force and the Ad Hoc Group negotiation for a Protocol strengthening the implementation of the Convention had not come into being. The text of these guidelines and technical procedures for an investigation has not been negotiated by States Parties to the Convention and therefore do not fully reflect their legitimate and immediate concerns. [Iran]					R
(Questions over the) role of IGOs (include): are they qualified for investigations? Is this the job of Member States? It should be noted that IGOs rely on Member States to provide their capabilities (for investigations). [Germany]	–	X	–	X	
States Parties should: create an adequate national medical system that can response efficiently to outbreaks of disease; contribute to the training of necessary human resources to fight outbreaks of disease; transfer technologies that contribute to the improvement of national capacities of diagnosis and investigation of outbreaks of disease; and support academic and scientific exchange between national experts dealing with biological security. [Cuba]	–	X	–	X	
The work of WHO, FAO, OIE etc., however important, should not be mixed up with work being done within the Convention [Cuba]	–	X	–	X	
The mechanisms in the Chemical Weapons Convention on how to deal with non-member States of the OPCW could be usefully studied for the Convention. [Brazil]	–	X	–	X	
WHO and other relevant IGOs should keep to their mandate of giving assistance in surveillance and response to States that ask for it, and not be given a role in investigations. [Brazil]	–	X	–	X	
International organizations such as the WHO, OIE and FAO who are usually involved in coordinating the provision of aid to response to disease outbreaks would probably be involved in these actions (outbreak response) without regard to cause and they should continue to play the primary coordinating role under such circumstances. [South Africa]	–	X	–	X	
An international structure, not coupled to ordinary (existing) national resources, that has the capacity to support the already existing national operational structures, preferably with expertise within the field of biological weapons, epidemiology, public health and legal matters, would therefore be of vital importance. [Sweden]	–	X	–	X	
Problems that need to be solved (include): the format for the coordination between different national and international actors needs defining; the possibility of using national expertise in international teams investigating events in other countries; (and) the disposition of national experts in any international organisational structure with the authorisation to work in a requesting country. [Sweden]	–	X	–	X	
On the detection of a suspicious outbreak of disease, one State Party should: share relevant information with (the) others, determine the causes and control the disease in a timely and expeditious manner. If the outbreak of disease exceeds the State Party's control capability, it should request relevant assistances from World Health Organization or other international organizations. Moreover, according to the confidence building measures stipulated in the Convention, the occurrence of suspicious outbreaks of infectious disease should be reported to relevant bodies of the United Nations in a timely manner. [China]	–	X	–	X	
A first step in establishing effective emergency or disaster management arrangements is to identify natural and human-made hazards which may affect the community or nation. Identified hazards must be evaluated in a structured way and appropriate responses developed, implemented, tested and reviewed. Hazard analysis will involved measuring or estimating the likelihood of an event taking place and the possible consequences of each event. Once hazard analysis programs have been put in place, arrangements to deal with the more likely - or high consequence threats can be designed using… broad principles. [Australia]	–	X	–	X	

2004 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
Effective emergency (disaster) management must be supported by an organisation and organisational framework in which to operate. This is required to establish functional responsibilities for prevention, preparedness, response and recovery. Prevention and recovery will be the responsibility of many government departments, each having a small role. It is necessary to set up standing interdepartmental arrangements for co-ordination of effort. Preparedness and response activities are usually more homogeneous, although the need for interdepartmental and inter-agency arrangements to support planning, control, co-ordination and resource management is just as important. The emergency (disaster) management organisation should be established in legislation and interdepartmental plans. [Australia]	–	X	–	X	
A whole-of-government approach in partnership with industry is essential for emergency disease preparedness, response and recovery measures following an outbreak. This approach must include exhaustive pre-planning, with clearly defined organisational roles and responsibilities and tasks allocated to teams with the appropriate skills. [Australia]	–	X	–	X	
To develop sound biological counter-terrorism prevention, preparedness, and response mechanism, new models to systematically analyse the risk of bio-terrorism and assess the key knowledge and scientific gaps must be developed and employed. This systematic approach can be both the basis for the development of national programmes but equally importantly, given the international dimensions of the problem and the likely requirements for international cooperation to manage the consequence of many BW attacks, the basis for developing international collaborative programmes as well. [Canada]	–	X	–	X	
In situations where countries lack sufficient expertise or resources to conduct an effective national investigation, assistance could be sought from other countries or international organizations. [USA]	–	X	–	X	
International cooperation for surveillance and response is indispensable. (This should include) strengthen cooperation, information exchange and the sharing of results. Countries in a position to do so, should provide assistance to others... SPs should strengthen cooperation with IGOs to make best use of (their) resources. [China]	X	X	–	X	
IGOs (could) formulate guiding principles for (a) mechanism for cooperation (including) technical information and support especially for developing countries. [China]	X	X	–	X	
Consolidation (of) international cooperation and criminalisation against trafficking and fraudulent use of pathogens and toxins (is desirable and represents a step) towards international traceability and cooperation in order to fight against the fraudulent use of pathogens. [France]	X	X	X	X	
Develop and strengthen epidemiological networks and global alert systems under the aegis of WHO, OIE, FAO. [France]	–	X	–	X	
(It is) essential (for) mitigating the effects of the alleged use (of biological weapons) or suspicious outbreaks of disease that: States Parties advanced in biotechnology and biosafety, to the fullest degree possible, transfer materials, equipment and biological information, as well as capabilities for the detection and protection against such agents, to developing States Parties; each States Party possessing the capability to do so, identify medical veterinary or other forms of assistance and provide training, national and international rapid response teams as well as detection capabilities to other States Parties; resources are made available through bilateral and multilateral assistance agreements conducted in advance; that the United Nations and the relevant IGOs (WHO, FAO OIE), with due consideration to their standing mandates, have a coordination role in the provision of assistance; and States Parties, when requested to provide assistance, provide timely emergency assistance and that requests are considered and a response be provided. [Iran]	–	X	–	X	
A virtual network for cooperation between laboratories already exists, but suffers problems related to the international transport of sample materials. This constitutes a veritable, but unnecessary obstacle against efficient cooperation and should be addressed as a priority topic. [Norway]	–	X	–	X	
Intergovernmental organizations that contribute to preparedness (highlight) the primacy of national emergency response procedures… (They suggest) cooperation between states and with inter-governmental organizations should start (by) addressing national preparedness, both technical (diagnostic and medical) and organizational (disaster management). [Norway]	–	X	–	X	
Medical surge capacity requires advance planning. [USA]	–	X	–	X	

2004 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
The relevant international organizations, such as the WHO, OIE, FAO, should fulfil their obligations in strict compliance with their Charters and relevant Resolutions. They have no right to carry out investigation of the alleged use of biological weapons or suspicious outbreaks of disease. However, they can provide technological assistance to the latter when requested. [China]	–	X	–	X	
States Parties should consider international cooperation in accordance with Article X. [Brazil]	–	X	–	X	
It is proposed that a State Party should directly request other States Parties and relevant international organizations, such as the WHO, OIE and FAO, to render assistance. In this regard States Parties should support the response capabilities of the WHO, OIE and FAO. [South Africa]	–	X	–	X	
The States Parties could coordinate procedures for assistance in order to ensure the provision of timely emergency assistance. A request for assistance should be promptly considered and an appropriate response should be provided. In this context, pending consideration of a decision by the United Nations Security Council, timely emergency assistance could be provided by States Parties and / or appropriate International Organizations, upon request. [Iran]	–	X	–	X	
In the event of a case of the alleged use of biological agents or (a suspicious) outbreak of diseases, the United Nations, with the help of appropriate intergovernmental organizations, such as World Health Organization (WHO), Office of International des Epizootic (OIE) and Food and Agriculture Organization (FAO) with due consideration for their statutory mandate, could play a coordinating role in providing humanitarian emergency assistance. [Iran]	–	X	–	X	
States Parties are urged to provide assistance bilaterally and / or multilaterally through relevant agreements concluded in advance with other States Parties, concerning emergency assistance in cases of outbreak of diseases. [Iran]	–	X	–	X	
States Parties, advanced in biotechnology and biosafety, should be urged to facilitate the fullest possible transfer of equipment, material and scientific and technological information concerning (both) means of detection and protection against bacteriological (biological) and toxin weapons to developing States Parties. [Iran]	–	X	–	X	
Each State Party, in a position to do so, should identify possible types of medical, veterinary or other assistance available and to the extent possible, provide or contribute to the training and operation of national and / or international rapid response teams for emergency medical assistance, as well as, (the) necessary materials and equipment, especially for detection [Iran]	–	X	–	X	
In order to enhance international capabilities to investigate such incidents, a State Party should directly request other States Parties for support in handling the outbreak as well as conducting an investigation before the involvement of the United Nations Security Coucil [South Africa]	–	X	–	X	
The establishment of an independent international support team would be desirable so that the consequences of an alleged use could be handled in an expedient manner… an independent international team would add a higher degree of credibility to any result coming out of the extensive investigation if the results are questioned. [Sweden]	–	X	–	X	
The missing part today is primarily a lack of structures to integrate the different areas (of) an investigation. [Sweden]	–	X	–	X	
States Parties in a position to do so may, under the request of disease affected States Parties, provide financial and technological assistance to the latter. Relevant international organizations can also give full play of their manpower and technological (capabilities). [China]	–	X	–	X	
Establishing a mechanism for the import, stockpiling and use of non-licensed drugs side-steps legal requirements for emergency or disaster relief and could be conducted by any country. [Germany]	–	X	–	X	
Develop national measures for disease surveillance and response, in line with national requirements. [China]	–	X	–	X	
Develop (outbreak response) cooperation between county public departments. [Romania]	–	X	–	X	
Coordinate medical and public health preparedness with other efforts at the community, State and Federal levels. [USA]	–	X	–	X	
Command and control are vital elements of any operation. [Canada]	–	X	–	X	

2004 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
To confront the worst-case scenario of a successful attack, adequate measures must be in place to deal with the occurrence, to investigate the nature of the incident, and if possible, to discover those responsible. [Canada]	–	X	–	X	
Better coordination between different actors in different countries is needed to reach good (effective) and fast surveillance and control. [Sweden]	–	X	–	X	
Once what could be defined as a suspicious event has been identified, cooperation between the authorities responsible for human and veterinary epidemiology and forensic investigations is needed to verify if the outbreak is natural or man-made. [Sweden]	X	X	–	X	
Prior to an emergency or disaster, the responsibility for overall control of the situation and for the command of each organisational element involved will need to be clearly specified in either legislation or the emergency (disaster) plan. [Australia]	–	X	–	X	
The authority and responsibility for assembling resources to support any counter-disaster operation will need to be specified in the (emergency) disaster plan. [Australia]	–	X	–	X	
If responses are to be timely, activation of plans should be independent of declarations of states of emergency or disaster. Authority to activate part or all of the plan should be vested in an appropriate authority, preferably the designated controller. [Australia]	–	X	–	X	
The aim is to (accomplish): the setting up of an international network of competent laboratories; the transfer of technologies and protocols helping to disseminate capacities globally; the training of persons competent to address allegations; the institution of laboratories' validation methods (and the consideration of the) transport of contaminated samples. [France]	–	X	–	X	
Amend medical history recording procedures to incorporate questions over whether there has been contact with others that have travelled recently. [Canada]	–	X	–	X	
Risk perception (and) risk communication (can consider): vulnerability to travel advisories; public health recommendations; clear communication of epidemiological situation; and control measures essential to show control over situation. [Canada]	–	X	–	X	
(There is a) critical role (for) communications in consequence management [Canada]	–	X	–	X	
Incorporate (a discussion of) the ownership of samples into any (consideration of) the development of a laboratory network to address chemical, biological, radiological or nuclear agents. [France]	–	X	–	X	
When there is an outbreak it is most important to keep the public and press informed. [Japan]	–	X	–	X	
Develop communication between central institutions (involved in outbreak response). [Romania]	–	X	–	X	
Achieving interoperability and integrated systems for information and communication (is desirable). [Netherlands]	–	X	–	X	
Develop effective risk communication and an information dissemination strategy to address community needs. [USA]	X	X	–	X	
Public information can build public trust and cooperation during emergencies. [USA]	X	X	–	X	
Community support (is one way of) dealing with (the) secondary effects of disease and quarantine. [USA]	–	X	–	X	
Stimulate (a greater) public perception of food borne infections and intoxications (including through) the use of notifications. [Netherlands]	–	X	–	X	
Improvement of notifications and case / food analysis is an imperative. [Netherlands]	–	X	–	X	
Intensify risk communication. [Netherlands]	X	X	X	X	
The existing systems of reporting outbreaks of food borne infections and intoxications is relatively insensitive (regarding) epidemics such as those caused by intentional (or) terrorist activities. [Netherlands]	–	X	–	X	
Improved systems / communication could alert public health and agriculture officials as to the existence of a potential bio-attack earlier than (just) waiting for a report of a suspicious cluster of similar clinical cases from traditional surveillance systems. [Sweden]	–	X	–	X	

2004 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
If any State Party to the Convention has concerns about a suspicious outbreak of disease and requests an investigation by the United Nations Security Council, it should provide valid evidence and detailed data to prove that the relevant outbreak of disease is directly linked to activities prohibited under the Convention rather than just (being) a natural outbreaks. In addition, States Parties to the Convention should have (had) adequate coordination and communication amongst themselves to iron out the facts before launching an investigation. [China]	–	X	–	X	
Effective management of information is essential to deal successfully with emergencies and disasters. Communication networks will be needed between organisations and agencies to ensure that preparedness measures and response operations can be properly coordinated. There is also a requirement for community information, which covers prevention, preparedness, response and recovery. People must be aware of hazards they face and how to avoid them, or reduce their effects. They need to be aware of emergency / disaster management arrangements in their local area and when a threat emerges they must be warned of it and advised what to do prior to and post-impact. [Australia]	–	X	–	X	
It is necessary… to have a national and international network for the dissemination of knowledge, technologies and protocols, aimed at building the necessary national capacities whose results (can be) accepted by all. [France]	–	X	–	X	
Publish consensus standards for building quarantine wards (including a) definition of minimal requirements for personnel, material and logistic competence (and) treatment and care of patients with highly contagious diseases (including) guidelines / recommendations for clinical diagnosis, therapy and the prevention of nosocomial transmissions (and) study planning (e.g. vaccines). [Germany]	–	X	–	X	
Harmonise national, regional and international response plans, in particular for interoperability, in connection with WHO, OIE, FAO and according to (their) policies. [France]	–	X	–	X	
Develop a Code of Conduct for scientists and other professionals handling biological materials. [Nigeria]	–	X	–	X	
Investigations must reflect the best scientific protocols. [USA]	–	X	–	X	
Investigations must incorporate the best investigative methods. [USA]	–	X	–	X	
Investigations must include the best law enforcement practices. [USA]	–	X	–	X	
Investigations must exhibit objectivity and accuracy. [USA]	–	X	–	X	
Any international measure to enhancing capabilities in combating alleged use (of a biological weapon or a) suspicious outbreak of diseases has to be based on internationally recognized definitions. [Iran]	–	X	–	X	
The term 'suspicious outbreaks' should be defined under the Convention. [Brazil]	–	X	–	X	
Strengthen national legislation and put in place (or implement) a strict legal system (to enforce it). [China]	–	X	–	X	
Train professionals and (invest) more resources so as to provide adequate manpower and material resources. [China]	–	X	–	X	
Enhance the construction of public health infrastructure and improve disease surveillance, prevention and control systems. [China]	–	X	–	X	
Step up scientific research efforts to enhance capacity (including in) disease surveillance and prevention. [China]	–	X	–	X	
Enhance public awareness of self-protection and prevention against disease. [China]	–	X	–	X	
To be effective it (an effective emergency / disaster plan) must be written, simple, properly disseminated and regularly tested and revised. [Australia]	–	X	–	X	
Devise and apply accreditation standards for network laboratories. This further requires establishing a real or virtual agency empowered to issue that accreditation. [France]	–	X	–	X	
(Laboratory) accreditation will not be considered unless laboratory staff are thoroughly technically trained (from equipment use to maintenance, as well as in regulatory areas and in interpreting results). [France]	–	X	–	X	
Validation techniques must be provided for, to maintain the competencies introduced. (These could include): internal validation by providing secure positive markers and regular testing of techniques and protocols; external validation through random quality control (testing) of samples by identified international laboratories. [France]	–	X	–	X	

2004 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
IATA standards for the transport of biological samples are currently in force. However, chemical, biological, radiological and nuclear hazards have a special risk value and refusals of transport are to be expected. It is essential to analyse what conditions (would need) to be introduced to ensure that (the) transport of such samples is accepted. [France]	–	X	–	X	
While several technical platforms and methods are in principle available for (the detection of biological warfare agents and diagnosis of related disorders), more work is required to establish with greater certitude how to apply these procedures to biological warfare agents and disorders. [Germany]	–	X	–	X	
Bio-security is activity-oriented (task specific), but where possible should allow extrapolation of results to other fields. [Netherlands]	–	X	–	X	
Lead a national bioscience research and development effort (for) civilian biodefence. [USA]	–	X	–	X	
New technologies can improve outbreak emergency response. [USA]	–	X	–	X	
(There are) techniques and methodologies available / under development for (the) analysis of biological warfare agents in complex samples (but it is necessary to) recognise (the) limitations (and) develop methodologies to minimise these (including the) development (of) full validated analytical procedures (and the) training and accreditation of staff. [UK]	–	X	–	X	
Make use of basic microbiological techniques for the rapid detection of biological warfare agents (because it): determines (the) viability of (a) threat (which could prove) critical for public health decisions; (facilitates) epidemiological mapping; (facilitates) forensic analysis; (and involves) limited technological requirements and (so is) cost effective [USA]	–	X	–	X	
Enforcement of restrictions on access to biological materials. [Nigeria]	–	X	–	X	
Bioforensics can help distinguish terrorist attacks from other causes of outbreaks. [USA]	–	X	–	X	
The assessment of laboratory capacity and the improvement of linkages amongst laboratories is needed. [USA]	–	X	–	X	
International collaboration on laboratory assays and the exchange of methodologies (is desirable and should be undertaken) without competition. [Netherlands]	–	X	–	X	
Considerations for investigations into (the) alleged use of biological warfare… (include): that sample screening methods must provide protection for analysts handling unknown chemical, biological or radiological materials whilst maintaining the sample's forensic integrity (such as mechanisms to) maintain chemical, biological or radiological agents, maintain fingerprints, (and) maintain DNA evidence; that all analysts and screening must be carried out in the appropriate biological containment laboratories; (that such processes are suitable for use) on the battlefield and can be used in relation to bioterrorism; that biological mass spectrometry has great promise for the detection of agents; that it is necessary to differentiate between different strains of agents, as some would appear naturally and may appear through contamination; that large amounts of certain agents (can be found) in, for example, soil and would appear to indicate use; (and that) the environment (is taken into account) in the case of environmental samples, e.g. is the site near a vaccine facility? [UK]	–	X	–	X	
(Consideration of) sampling and analysis (should include)… sample types; handling, screening and accurate and reliable analysis; (and) appropriate and safe facilities and equipment. [UK]	–	X	–	X	
A high level of reliability in testing complex samples has to be accomplished. One way to achieve this is through the establishment of a network of test-laboratories among which the responsibility is shared. [Sweden]	–	X	–	X	
Great care must be taken when using laboratory services to ensure that the problem is correctly diagnosed and not compounded. Sample collection must be done strictly in accordance with guidelines; a chain of custody must be established; labelling, (and) handling and shipment (transport) rules must be implemented rigorously. It is imperative that rules and regulations covering these matters are developed and incorporated into emergency plans. [Australia]	–	X	–	X	
It is vital to have a national laboratory network making it possible to address the risk comprehensively. [France]	–	X	–	X	
Samples should be transported rapidly to laboratories for confirmation. [France]	–	X	–	X	

2004 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
The need to develop a network of laboratories dedicated to chemical, biological, radiological and nuclear threats is obvious, but there is no structure to host them. [France]	–	X	–	X	
There is a need to formulate the conditions for setting up a network (of laboratories dedicated to chemical, biological, radiological and nuclear threats) whose existence is necessary and which is scientifically feasible and without posing major difficulties. [France]	–	X	–	X	
With the increase in the perception of the level of threat posed by the intentional release of pathogenic microorganisms, additional aspects of the management of these outbreaks will have to be taken into account. Among them is the need for broader competence covering both the epidemiological as well as the forensic sides of an outbreak. [Sweden]	–	X	–	X	
Train public health (personnel) and (establish a) workforce for bioterrorism preparedness and response. [USA]	–	X	–	X	
Ensure community and regional health care systems are prepared for the medical and psychological needs of victims as well as the 'worried-well'. [USA]	–	X	–	X	
International exercises and ring tests for food borne infections and intoxications (are desirable). [Netherlands]	–	X	–	X	
Training for a chemical, biological, radiological or nuclear incident is important. [Canada]	–	X	–	X	
In order to enhance international capabilities to investigate such incidents, efforts by law enforcement agencies to improve their capabilities to investigate incidents of terrorism with biological agents or toxins should be supported. [South Africa]	–	X	–	X	
Relevant international organizations and States Parties may hold workshops and seminars to explore how to mitigate and avoid the negative consequences of an outbreak of disease. [China]	–	X	–	X	
It is important responsible authorities act on lessons learnt… (from the) examination of chemical, biological or radiological incidents. [Australia]	–	X	–	X	
The (Secretary-General's) investigation mechanism is not appropriate (for use under the Convention) since it (was established) on the basis of the international political and security environment of the 1980s, when the Chemical Weapons Convention had not been finalized nor entered into force and the Ad Hoc Group negotiation for a Protocol strengthening the implementation of the Convention had not come into being. The text of these guidelines and technical procedures for an investigation has not been negotiated by States Parties to the Convention and therefore do not fully reflect their legitimate and immediate concerns. [Iran]					R
The United Nations Secretary-General's investigative mechanism is not suitable as it was developed during the 1980's and was not negotiated by the States Parties to the Convention. [Iran]					R
(The Secretary-General investigative mechanism) only deals with the alleged use of biological and chemical weapons and has its legal basis from the 1925 Geneva Protocol. The mechanism was not created for the purpose investigating compliance with the Convention. Therefore, it will be incomprehensive to use this mechanism as the verification mechanism for the Convention. [China]	–	X	–	X	
(The Secretary-General investigative mechanism) was drafted by 6 experts… from US, UK, France, USSR, Egypt and Bulgaria. There were no experts from Asia or Latin America. It is self evident whether or not the formation of this expert group enjoyed representiveness and geographical equality. Therefore, it is thus worth considering the necessity of discussing and agreeing upon an investigation procedure by all United Nations Member States. [China]					R
An investigative mechanism (should be) part of a multilateral, negotiated, legally binding instrument based upon the Convention. [Iran]					R
In order to enhance international capabilities to investigate such incidents, the Secretary-General should be requested to review the existing procedures contained in the Secretary-General's report (A / 44 / 561) on Chemical and Bacteriological (Biological) Weapons dated 4 October 1989 and endorsed by the General Assembly on 4 December 1990 (A / Res / 45 / 57). The report of the Secretary-General on such a review can then be provided to States Parties for their consideration, (and) expert consultants can be utilised for such a review. [South Africa]	–	X	–	X	
States Parties could make a national contribution to the existing (Secretary-General investigative) mechanism by updating their contributions for the list of qualified experts and laboratories. [USA]	–	X	–	X	

2004 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
(In respect of the Secretary-General's mechanism) it seems high time to update the lists of experts and laboratories as well as to assess the procedures and guidelines in light of recent technological developments. [Germany]	–	X	–	X	
(In respect of the Secretary-General's investigative mechanism) special attention should be paid to the recommendations: that Member States may designate qualified experts to be placed on lists, which should be periodically updated; that Member States should make available to the designated experts any equipment necessary for the investigation; (and) that Member States may designate laboratories to be placed on lists, which should be periodically updated. [Germany]	–	X	–	X	
Recent experiences and technical developments (could be used)… to update the existing alleged use investigation system under the auspices of the United Nations Secretary-General… Appropriate changes could be incorporated in revised guidelines. [UK]	–	X	–	X	
The changes in political environment since the adoption of the Secretary-General's investigative mechanism does not mean the context is not valid. [Germany]	–	X	–	X	
United Nations Member States who are also States Parties to the Convention (could) explore the possibility of establishing a brand new investigation mechanism by reviewing the Secretary-General investigation mechanism, taking into consideration current developments and relevant requirements of the Convention, and drawing upon the Protocol negotiated results on investigation procedures, as well as feasible experiences of the… United Nations Expert Report. [China]	–	X	–	X	
(The Secretary-General's) mechanism required the Member States of the United Nations to provide, on a voluntary basis, lists of qualified experts and a laboratory capable of conducting investigations. Specific requirements should be codified to ensure the representiveness and geographic equality amongst experts as well as laboratories. [China]	–	X	–	X	
(In respect of the Secretary-General's investigative mechanism) special attention should be paid to the recommendations: that expert consultants chosen by the Secretary-General on the basis of their personal abilities should assist him in a consultative capacity where competence is required; (and) that expert consultants should assist the Secretary-General in organising the composition of teams of qualified experts, preparing programmes for calibration of equipment, evaluating the qualification of laboratories as well as periodically updating the procedures and methods for determining whether chemical, biological or toxin weapons use has occurred. [Germany]	–	X	–	X	
The list of designated personnel must be kept up to date to ensure not only that there is a wide range of relevant scientific and technical expertise available, but also that sufficient numbers of experts could be deployed at relatively short notice. States Parties might begin to identify the types of expertise that would be required, as a basis for a request from the United Nations Secretary General for a new round of nominations, if required. The report of the States Parties meeting should encourage Member States to up-date, or to make as appropriate, their nominations to the United Nations Secretary-General [UK]	–	X	–	X	
The Secretary-General should formally request States Parties to nominate Qualified Experts using the guidelines provided. [South Africa]	–	X	–	X	
The list of areas of expertise of Experts should be reviewed [South Africa]	–	X	–	X	
Include law enforcement experts on the list of experts (in the Secretary-General mechanism) The list of laboratory specialisations in Appendix V (of the Secretary-General's investigative mechanism) and the information to be provided by States in designation of analytical laboratories should be reviewed. [South Africa]	–	X	–	X	
The existing requirements for, and functions of, laboratories concentrate on analysis for chemical agents with very little reference to biological analyses. This section needs to be reviewed. The following issues should also be considered: development of a list of the types of analytical laboratories required; the Secretary-General may terminate the designation of a laboratory on the request of the nominating State Party or if such a laboratory falls below the require proficiency standards; in order to ensure the security and confidentiality of samples of being analysed, the Secretary-General should enter into specific agreements with designated laboratories as soon as possible after the designation of each laboratory. [South Africa]	–	X	–	X	

2004 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
A much wider range of laboratories would be needed to support a comprehensive biological warfare analytical capability covering bacteria, viruses, toxins and fungi that affect humans, animals and plants. It is worth considering whether criteria for the designation and certification of biological laboratories, including proficiency standards and procedures, could be developed by experts appointed by the United Nations Secretary-General. We should also consider security and confidentiality requirements for information held in such a system. All such developments could represent a significant strengthening of the existing rudimentary system. [UK]	–	X	–	X	
In reference to the Secretary-General's investigative mechanism, it is necessary not just to have procedures but also to have insights into these procedures. It is necessary to see that procedures and technologies are updated: lists of experts should include the names of experts and an evaluation of their expertise; and laboratories should be listed and evaluated. This process should be similar to the Organization for the Prohibition of Chemical Weapons' system for laboratories. [Germany]	–	X	–	X	
There would at some stage be a need for a system of regular exercises in which designated experts and laboratories were tested in realistic training environments. [UK]	–	X	–	X	
(In respect of the Secretary-General's investigative mechanism) special attention should be paid to the recommendations: that Member States may designate relevant specialised training courses available to qualified experts; that the abilities and expertise of the qualified experts may be evaluated by the Secretary-General with the assistance of the expert consultants; (and) that designating laboratories may be called upon by the Secretary-General to participate in inter-laboratory calibration studies so as to establish their validity and accuracy. [Germany]	–	X	–	X	
Any (Secretary-General's investigative mechanism) list (of information to be provided in support of a request for an investigation) should be illustrative, but some standard approaches may be helpful. The types of information that appears in the Report's Appendix I could be reviewed and amplified where necessary to include a more specific reference to epidemiological information and any initial diagnoses by the Member State. [UK]	–	X	–	X	
The members of the investigation team should, unless authorized by the Secretary-General, be prohibited at all times from communicating directly or indirectly on any matter related to the investigation with any person or institution other than the members of the investigation team or the Secretary-General. [South Africa]	–	X	–	X	
The receiving State Party (under the Secretary-General's investigative mechanism) should provide or arrange for the amenities necessary for the (investigation) team such as transport, communications, interpretation, working space, lodging, meals and emergency medical care. [South Africa]	–	X	–	X	
The Secretary-General supported by other States Parties should provide equipment that the receiving State Party cannot provide. The receiving State Party should communicate with the Secretary-General prior to the investigation to determine who would supply the equipment required. [South Africa]	–	X	–	X	
The requirement that equipment for use during the response / investigations (under the Secretary-General's investigative mechanism) be provided by the State Party receiving an investigation should be emphasised. [South Africa]	–	X	–	X	
The list of equipment in Appendix III (Secretary-General's investigative mechanism) should be updated. [South Africa]	–	X	–	X	
(The Secretary-General's investigative mechanism) itemises equipment required for investigations… the Organization for the Prohibition of Chemical Weapons has developed an equipment list for its inspections, some of which would be relevant to a BW investigation. We might compare specifications and packing arrangements to see what could be transposed to the United Nations Secretary-General system. [UK]	–	X	–	X	
Financial issues such as indications of responsibilities for funding of an investigation should be considered (under the Secretary-General's investigative mechanism). [South Africa]	–	X	–	X	
An ability to move an investigation team at short notice to potentially remote and inaccessible areas is a key factor in any effective investigation of alleged use… One option would be for the various organisations / systems (Organization for the Prohibition of Chemical Weapons and Provisional Technical Secretariat of the Comprehensive Test Ban Treaty) to pool efforts in a joint approach to this problem. [UK]	–	X	–	X	

2004 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
The members of the investigation team should, unless authorized by the Secretary-General, be prohibited at all times from communicating directly or indirectly on any matter related to the investigation with any person or institution other than the members of the investigation team or the Secretary-General. [South Africa]	–	X	–	X	
Physical examination of victims, including the collection of biomedical samples… must be a feature of any meaningful investigation. So too must a review of medical records, as recognised by the 1989 Report. Post-mortems and the collection, and analysis of pathological samples will be necessary. [UK]	–	X	–	X	
The model interview questionnaire in Appendix IX (of the Secretary-General's investigative mechanism) concentrates on chemical incidents and should be updated to provide for biological and toxin incidents as well. [South Africa]	–	X	–	X	
Interviews are one of the most important techniques in any investigation. The authors of the 1989 Report prepared a model questionnaire limited to eyewitnesses or victims of any alleged attack. Other possible interviewees could be relevant, for example, national health, medical, veterinary or phytosanitory officials. A revision of procedures should consider this. The model questionnaire might also be re-examined since many of its questions are more appropriate to an alleged chemical warfare rather than biological warfare attack. New questions might include the location of the victim at the time of the suspected attack and a description of the symptoms. [UK]	–	X	–	X	
Access to national epidemiological information would also play an important part in ensuring any investigation's effectiveness… any revised procedures should explicitly state that one of the tasks for any investigation team would be to request access to relevant background documentation covering human, animal and plant disease outbreaks and any epidemiological enquires carried out by national bodies. [UK]	–	X	–	X	
Appendices VII and VIII (of the Secretary-General's investigative mechanism) describe sampling procedures (which) provide primarily for sampling after a chemical weapons incident. They should be reviewed with a view to provide for sampling after biological or toxins weapons incidents. [South Africa]	–	X	–	X	
Measures to ensure the safety and security of samples should be included (in the Secretary-General's investigative mechanism). [South Africa]	–	X	–	X	
Procedures to ensure the chain of custody of samples (in the Secretary-General's investigative mechanism) should be reviewed. The experience developed in the Organization for the Prohibition of Chemical Weapons could be utilised in this effort. [South Africa]	–	X	–	X	
Sampling and analysis have been identified as potentially important tools in investigations into the alleged use of biological weapons, for example, under the auspices of the United Nations Secretary-General. Experience… suggests that careful consideration needs to be given to the types of samples that may be taken, and the challenges they may pose to timely handling, screening and accurate and reliable analysis, and to the facilities and equipment in which such activities are undertaken. [UK]	–	X	–	X	
It would also be worth considering the extent to which field analysis could be employed. Identification of analytical techniques and equipment (and Standard Operating Procedures for their use) that could be readily used in a mobile laboratory would be worthwhile… it will probably be necessary for Member States to make one or more such laboratories available. [UK]	–	X	–	X	
The development of fully validated analytical procedures, and the training and accreditation of analysts, are important considerations in any efforts to strengthen the United Nations Secretary-General's system for investigations into alleged use. [UK]	–	X	–	X	
Laboratories should report the results of their analysis upon completion thereof to the Secretary-General, who should include it in the final report. [South Africa]	–	X	–	X	
(In respect of the Secretary-General's investigative mechanism) special attention should be paid to the recommendation that the Secretary-General should report periodically to Member States on the Status and degree of completion of standing preparatory measures. [Germany]	–	X	–	X	
The investigation report (of the Secretary-General's investigative mechanism) should be made available to the receiving State Party, Secretary-General and any other State Party that may be involved. [South Africa]					P
A final report (from the Secretary-General's investigative mechanism) should be transmitted to the Secretary-General upon completion thereof. [South Africa]					P

2004 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
The Secretary-General should submit the report (from the Secretary-General's investigative mechanism) to the United Nations Security Council for consideration. [South Africa]					P

2005 suggestions

The topic under discussion in 2005 was:

> the content, promulgation, and adoption of codes of conduct for scientists

The topic for 2005 was on codes of conduct. Much of the discussion in the meetings was about ensuring that scientists and engineers had levels of awareness of relevant issues so as not to allow their work to be misused either deliberately or inadvertently. Much of this work would therefore fall within the *Availability/Opportunity* dimension, with aspects of the *Coherence/Engagement* dimension also being relevant as codes establish benchmarks against which activities can be assessed and this enhances engagement. Efforts towards awareness raising would also impinge upon the *Threat Ambition* dimension in general terms. While codes of conduct might make it more difficult for an entity to recruit scientists to work on a biological weapons programme, the contribution towards the *Resilience* dimension would be minimal. It therefore follows that most of the proposals within the 2005 Meeting of Experts would be defined as either – X X – or X X X –.

2005 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
Potential benefits (include) Increased Public Confidence through better Accountability Trigger to Streamline Policies and Procedures Better Awareness of the Dual-use Applications of Science Improved Public Communications [USA]	–	X	X	–	
Key benefit of a code would be to create a value-driven social norm [USA]	–	X	X	–	
(Beneficial)…effects… (derived from the) coding process (include) To raise public awareness of this issue To encourage active discussion on how to strike the right balance between healthy development of science and preventing security risk To help to reduce the distance between scientists and the general public (building sense of trust for scientists) To build the public's sense of reassurance that a certain mechanism is being prepared to prevent science abuse [Japan]	–	X	X	–	

2005 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
Benefits arising from incorporating environmental values into codes of conduct (include) encouragement to scientists to disclose discoveries of potentially harmful effects of their research codes of conduct pay heed to environmental issues and incorporate appropriate risk management or precautionary strategies structures are more likely to be created that assist in preventing intentional or unintentional release of dangerous materials Codes of conduct could implicitly or explicitly take into account the impact of research on non-human species, again reflecting the broadening of environmental values to incorporate both human and non-anthropocentric concerns A broadening of methods to secure compliance - from those of regulation and sanctions to one trust Intrinsic or actual rewards of public trust in scientists (e.g. greater public support for funding research) The value of a relationship between the community and scientists based on trust [Australia]	–	X	X	–	
Codes of Conduct • Provide an overview of trends in the development of codes • Identify common and distinguishing features among different codes • Identify factors that may influence a code's utility or success [USA]	X	X	X	–	
Codes can create a culture of responsibility and accountability and can train the current and future scientific community in best practices. [USA]	X	X	X	–	
Codes of Conduct / Code of Ethics • Recognition of individual responsibility, and biosafety and biosecurity aspects are core elements for codes of conducts / codes of ethics. • Codes should be evolving instruments that can be adjusted on a continual basis in their application and interpretation reflecting international security situations and development in life sciences and biotechnology. • Codes do not provide a complete solution for countering bioproliferation and bioterrorism. They can contribute to achieving such objectives only in conjunction with other measures. • Widespread adoption of codes of conduct / codes of ethics may serve as a basis for best practices that government agencies, university labs and institutions can take into consideration when they update their instruments and procedures. [Republic of Korea]	X	X	X	–	
The establishment of an international code of conduct for those engaged in the life sciences would certainly make a significant and effective contribution in combating the present and future security threats of biological weapons and bio-terrorism [Malaysia]	X	X	X	–	
There is need to establish an international code of conduct for those engaged in life sciences as part of efforts to prevent present and future threats from biological weapons and bioterrorism [Nigeria]	X	X	X	–	
…introduction of ethical standards of conduct for scientists could turn out to be an effective auxiliary measures in terms of… BTWC compliance. Meanwhile… the task of strengthening the Convention through the development of a legally binding verification Protocol remains relevant [Russia]	X	X	X	–	
Codes of conduct for scientists are important for setting general standards of acceptable scientific behaviour. Alone however they will not deter states or individuals prepared to carry out bioterrorist attacks and it is therefore important to restrict access to potential bioterrorism agents. [IUBMB]	X	X	X	–	
…need to have a set of ethical principles which are educational, or precautionary, or philosophical, which show the ethical dimension and which should be present in all aspects of biological sciences [Cuba]	X	X	X	–	
Codes of conduct are both awareness raising and useful for establishing norms [USA]	X	X	X	–	
The primary and direct objective of codes… (is) to reduce the risk of sciences causing negative effects on human beings and society through establishing specific rules, principles of guidelines as written documents that scientists should respect [Japan]	X	X	X	–	
Codes of conduct provide scientists with an opportunity to (re)gain public trust [Australia]	X	X	X	–	

2005 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
A Code of Conduct for the Life Sciences could represent an effective element in preventing the hostile use of biological agents, if it is designed to promote awareness of the complex dual use dilemma and at the same time pro-actively obligate the research scientist to engage in reflective activities such as risk assessments and consideration of alternative approaches during the research process. [Germany]	X	X	X	–	
(Codes of conduct) should provide the essential ethical framework for a Code to assure that the benefits of the most powerful life sciences are not utilised for spreading disease or other harmful outcomes towards human, animal and plant welfare [ICGEB]	X	X	X	–	
…ensure a more transparent functioning of investigations being carried out by scientists… it is important to ensure the global dimension of this discussion and, in this respect, codes of conduct can play a very important role [Cuba]	X	X	X	–	
Significance of Codes of Conduct (includes) To ensure scientists realize the potential risks inherent in their activities To raise scientists' awareness of their ethical and social responsibility To help scientists understand the national and international rules, regulations and frameworks To ensure biosafety and biosecurity To prevent dual-use research results from being abused by criminals and terrorists [Japan]	X	X	X	–	
…code of conduct or ethic regulations should be adopted and implemented to educate, supervise and regulate scientists' behavior to prevent the accomplishments in their research from being abused or misused intended or unintended. Thus the beneficial integration between discipline and self- discipline could be realized. [China]	X	X	X	–	
…code of conduct or ethic regulations should be adopted and implemented to educate, supervise and regulate scientists' behavior to prevent the accomplishments in their research from being abused or misused intended or unintended. Thus the beneficial integration between discipline and self- discipline could be realized. [China]	X	X	X	–	
Codes of Conduct: • can act as a warning signal, indicating that while an activity can still proceed, nevertheless one must proceed, nevertheless one must proceed with the utmost caution; • can also indicate the boundary between that which is permitted and prohibited under legislation [Canada]	X	X	X	–	
Codes can provide warnings in a number of areas not explicitly covered by legislation including: • Careless transfers of Intangible Technology • Work where risks outweigh benefits • Compromising professional integrity through: - Use of false data - Conflicts of interest - Lack of due diligence [Canada]	X	X	X	–	
Why a Code of Conduct for Dual Use Research? • Government cannot oversee all scientists and experiments across the nation • Offers greatest opportunity for improving security of research at the level of individual scientists -Increases understanding of biosecurity -Persistent reminder of moral and ethical responsibilities -Creates a "culture of responsibility and accountability • Sets professional standards that may have legal implications [USA]	X	X	X	–	
…codes of conduct for biologists, should the decision to elaborate them to be adopted, have to be worked out on a multilateral basis at meetings which have to be initiated in the framework of the BTWC. [Russia]	X	X	X	–	
There is need to draw up (a) national / international code of conduct for those engaged in life sciences as part of efforts to minimize present and future threats from biological weapons and bioterrorism. [Nigeria]	X	X	X	–	
…it is necessary to recognise that the most appropriate body to ensure the provisions of activities that do not serve peaceful purposes is indeed with the Biological Weapons Convention [Cuba]					R

2005 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
(There is a) need to carry out a dialogue at the national level to adopt measures that would contribute to our fight against the ill use of biological agents… this is a dialogue that (was)… within the framework of the Biological Weapons Convention… compliance protocol and… include(d) various procedures that… are quite useful [Cuba]	X	X	X	–	
Further consideration would be needed to determine how best to introduce BTWC issues and responsibilities into education. [UK]	X	X	X	–	
Should consider codes of conduct in the context of the Biological Weapons Convention, for instance Article IV [Japan]	X	X	X	–	
…the elaboration of these codes should be based on the norms established by the Convention and should be consistent with the legislative and regulatory framework adopted by the States Party [Algeria]	X	X	X	–	
A code would extend responsibility for helping implement the provisions of BWC to the level of individual scientists [USA]	X	X	X	–	
… capacity building is an important element in the empowerment of bioethics and of codes of conduct for scientists… in order to support the national implementation of BTWC [Indonesia]	X	X	X	–	
Codes of Conduct that are built upon strong bioethical principles are critical for: Promoting compliance with the provisions of the Biological and Toxin Weapons Convention Helping to protect the life sciences against misuse by terrorists Enhancing national and global security [Center for Deterrence of Biowarfare and Bioterrorism (CDBB)]	X	X	X	–	
Scientists should be aware that biological agents and toxins that are capable of causing temporary or permanent damage, harm or deaths by humans, animals, plants, materials of any kind or the environment are permitted only for protective or other peaceful purposes [Italy]	X	X	X	–	
Scientists should be aware that the design, construction or possession, for any purpose, of delivery mechanisms designed to use biological agents or toxins for hostile purposes or in armed conflict is prohibited by the Biological and Toxin Weapons Convention. There is no exemption for protective purposes [Italy]	X	X	X	–	
There is a lack of a formal code for scientists in the biomedical and biological scientists [Malaysia]	X	X	X	–	
Those that conduct, fund, administer and regulate biosciences and biomedicine have an ethical, social responsibility and obligation to actively deliberate measures necessary to minimize risk that their work could be employed for hostile ends [Malaysia]	X	X	X	–	
Risks of some research may warrant regulatory oversight physician-researchers should work with key stakeholders to promulgate global standards for research governance [AMA]	X	X	X	–	
The challenge is to manage the risks [ICLS]					R
Guidance is required to prevent a conflict between: Senior, tenured scientific staff and their post-doctoral researchers; The concept of 'publish or perish' and security requirements; and Research funding and ethics. [Canada]	X	X	X	–	
International oversight will be very difficult [ABPI]	X	X	X	–	
…good intentions cannot be used to justify negligence and for allowing the non-peaceful use of results of… scientific work [Cuba]	X	X	X	–	
Bills of law, biosafety regulations in the labs, etc., are not ethical rules themselves but as other human activities are subjected to moral judgement [Poland]	X	X	X	–	
Legal controls remain the most important element [South Africa]	X	X	X	–	
A possible set of minimum safety requirements are described in the WHO laboratory biosafety manual (WHO 2004). International harmonisation would also make it harder for a scientist to undertake an unsafe activity by simply moving from one country to another. [Royal Society]	X	X	X	–	
Writing a code… (the) key remains getting 'buy-in' [WMA]	X	X	X	–	
Provide clear evidence that there is a need / problem that a code of ethics could help solve [USA]	X	X	X	–	
Demonstrate the benefits derived from formulating and adopting a code [USA]	X	X	X	–	
Need further discussion regarding impact of code on stakeholders [USA]					R

2005 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
It is possible and meaningful for relevant international organizations to develop examples of codes e.g. international ethical guidelines [Japan]	X	X	X	–	
Ethical and responsible behavior by scientists complements States Parties' national obligations towards fostering international security [Iran]	X	X	X	–	
…any code as devised by States shall ultimately be applied to their subjects, it remains the prerogative to States Parties to decide on the content, promulgation and adoption of codes. However, the development and adoption of such codes of conduct could be effective and useful, when complemented with the involvement and assistance of national scientific community [Iran]	X	X	X	–	
… the close linkage and relationship of different branches of bio sciences have made clear the need for the States to review their codes applicable in different areas of relevant activities [Iran]	X	X	X	–	
Compelling need (for action) from the scientific communities and public [Canada]	X	X	X	–	
Cannot legislate ethics (it is) descriptive not prescriptive [Canada]	X	X	X	–	
Environmental values reflect fundamental shifts in social values. Capturing some of these shifts in values in codes of conduct could render the codes much more relevant to scientists [Australia]	X	X	X	–	
…the relationship between ethical codes for science and, for example, educational strategies and laws are relevant [Argentina]	X	X	X	–	
It is necessary to control exchange of material, which includes pathogens of high-pathogenic potency. This is especially true for the methods of weaponization. A quick and unbureaucratic exchange of material across borders, however, is still necessary. [Germany]	X	X	X	–	
An international framework, probably under the umbrella of the UN, should develop regulations for activities in the field of infectious agents research including biosafety and biosecurity. [Germany]	X	X	X	–	
A professional community needs to solve its ethic problems independently by introducing restrictions based on law before they are introduced by the bureaucracy through a rigorous regulatory system [Russia]	X	X	X	–	
... avoid elaborating on general restrictions that unfairly restrict or limit scientific work and biotechnology development in an indiscriminate manner. [Argentina]	X	X	X	–	
…we need all national and international institutions, organizations, medical universities and etc. involved in life sciences research and manufacturing activities, supported strongly by the governments, to combine their efforts and to reach by consensus reasonable acceptable for all of us codes of conduct for people working in this field. [Bulgaria]	X	X	X	–	
Establishing an ethical climate for research cannot be imposed by external regulation; it must be fostered from within the professional community [AAAS]	X	X	X	–	
Well established values and principles from medical research relating to human health and safety and animal welfare also apply to GMOs [Australia]	X	X	X	–	
Suspension of the publication of research results should be considered only in cases (where): • The security risk is clear and present • (it is) accompanied by fully convincing reasons [Japan]	X	X	X	–	
…important to strengthen the adoption and implementation of code of conduct in educational community, conducive to helping scientists to devote themselves to human peace and progress from their student hood, and implementing code of conduct in a benign. [China]	X	X	X	–	
…guidelines also prescribe concrete punishment mechanisms, punishing those behaviours in violation of scientific ethics, hence realizing the integration of discipline and self-discipline. [China]	X	X	X	–	
…Member States have got to act in perfect transparency… [Libya]	X	X	X	–	
…it is also necessary for fruitful cooperation to exist for defensive purposes and for warding off danger amongst all Members. [Libya]	X	X	X	–	
…it could also be necessary for a protocol to be devised in order to strengthen the Convention and it could be also that we could reach a code of conduct, which is the focus of our discussions… [Libya]	X	X	X	–	

2005 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
(On the international level) measures intended to promote responsible, secure and appropriate science to achieve humanitarian ends can nonetheless produce results that undermine the equity, the right of all peoples to health and well-being, if their implementation divides countries between those who can and those who cannot fund the norms of security and the necessary conditions of work [Argentina]	X	X	X	–	
Codes of Conduct, Codes of Practice and Legislation can all be seen to play a complimentary role in guiding the "traffic" of scientific research and behaviour [Canada]	X	X	X	–	
Creating codes of conduct and explaining their contents can make legislative provisions easier to comprehend [Canada]	X	X	X	–	
The warning function of codes can act as an indicator of where legislative restrictions begin, and enables researchers / scientists to better grasp the implications of the "grey areas" inherent in their research [Canada]	X	X	X	–	
Codes should be used as evolving benchmarks with targeting precision and efficiency [Pakistan]	X	X	X	–	
Secrecy in biodefense programs, in general, causes suspicions and should be avoided as much as possible [Italy]	X	X	X	–	
Scientists should be aware that weaponisation of active biological agents for defensive purposes violates the spirit of the BWC and should be avoided. Aerosolisation or other dissemination of active biological agents should be performed only in confined and small-scale environments and only for purposes of detection, prophylaxis or medical treatment [Italy]	X	X	X	–	
Life scientists must be constantly aware of the fact that the extraordinary opportunities made available by the knowledge and technologies recently developed or foreseeable in the near future, may have dual use effects [Italy]	X	X	X	–	
Review and adapt ethics in line with the development of science and technology, particularly in the field of the life sciences [Indonesia]	X	X	X	–	
…a code should be viewed as a 'living document' subject to review and modification over time as knowledge, conditions, or perspectives change. There should be a process in place for evaluating the effectiveness of any code, especially as it relates to the attitudes and behaviours it is intended to influence [AAAS]	X	X	X	–	
Code should be assessed periodically and revised as necessary [USA]	X	X	X	–	
…codes, like legislation, have to be treated as living documents with the flexibility to respond to changing circumstances as required. [Canada]	X	X	X	–	
…need something self-enforcing rather than imposed. This is not something that we believe we are going to be able to look at in the short time frame. To generate the cultural awareness we need to get the generational change of having that becoming a way of life [USA]	X	X	X	–	
The improvement of the sense of ethics of the researcher is necessary to prevent the intentional action. The following matters are necessary for the purpose. The noble idea of the organization The definition of the research purpose The feeling of the social responsibility The regulation by the law The education to deny biological weapons [Japan]	X	X	X	–	
(It is important to:) Increase awareness, understanding and education; Create institutional culture of ethos and responsibility; Engage individual scientists and institutions in self-governance measures; Need innovative strategies for oversight and responsible stewardship; (and) Create framework for harmonization of national and international rules, regulations, agreements and laws. [NTI]	X	X	X	–	
To minimize the risk of 'dual use' (activities, efforts could include:) Careful education of students Offensive and special training of graduate students and postdocs Achievement of generally accepted guidelines Codes of conduct Self control of science and scientists (local, national and global level) [Germany]	X	X	X	–	

2005 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
The first… step in developing a code of conduct is to define the core values the code is intended to promote… If there is no agreement on the core values that should underlie dual-use research in biology, it will be very difficult to know whether one is travelling in the desired direction… for researchers the core values must make sense in light of their real-world experiences if they are to believe in and live by them… Any attempt to forge a set of core values inconsistent with the values of the larger society will inevitable fuel public anxiety and lead others to question the ability and willingness of researchers to self-regulate themselves [AAAS]	X	X	X	–	
Need to provide sufficient details about scope, approach, and implementation of a code to enable realistic estimates of costs [USA]	X	X	X	–	
Key components of code development process include: • Defining scope and goals of code • Stakeholder communication and education • Public communication and education • Developing institutions and infrastructure to support and maintain code [USA]	X	X	X	–	
A code in the biodefense context (should) • attach (an) ethical review to a local group with related duties • (utilise a) national oversight group attached to a national body of similar purpose • (be) accomplished under a national code of ethics and conduct - voluntary not legislated [Canada]	X	X	X	–	
Questions (to facilitate the consideration of codes) • What kind of code would be feasible • The contents, scope, focus and character • Consensus building • Political support • Strategies of implementation [UNESCO]					P
…very basic description(s) of various code functions (include as an) • Enabling document • Public evaluation • Professional socialization • Public trust • Deterrent • Support system • Adjudication [AAAS]					P
The formulation and adoption of codes of conduct for scientists and institutions must take into account and harmonize four levels of conceptual analysis, ethical intervention and positive action [Argentina]	X	X	X	–	
(Guidelines for codes for scientific institutions) should create conditions that are favourable for the integrity of research, transmit to researchers coming into working life the values and principles for ethical conduct, and ensure conditions of biosecurity and apply codes of practice that adhere to norms fixed at the national and international levels; also permit public investigations both of laboratories and of projects and ensure that the inflow of all biological material is undertaken in keeping with local, regional and international legislation [Argentina]	X	X	X	–	
There should be three layers of codes: at the top, a universal code describing the ethical norms and principles; in the middle, more detailed codes developed or adapted by scientific societies; and at the bottom, operational codes specific to a particular workplace or institution. [Australia]	X	X	X	–	
A System (or infrastructure) of implementation of Codes has to be established at three levels: • The first level (local or institutional. Operation through education in Universities, in Institutions and other research centers where the research is conducted (by peer reviewing and supervision) and in scientific journals where the results are published; • The second level (National). Operation through the National Councils for Bioethics, Biosafety and Biosecurity, and via financing Bioresearch; • The third level (International)-control on BWC, and operation through general recommendations (e.g. International Ethical Guidelines). The latter rises the necessity to create an International Forum on Biosecurity and Biosafety. [Ukraine]	X	X	X	–	
A code should, however, form part of a broader "matrix of codes" applicable to decision makers, bioscientists, researchers and administrators handling life sciences [Pakistan]	X	X	X	–	

2005 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
What is a "Code of Conduct"? • Formal statement of values and professional practices of a group of indivudals with a common foucus, either an occupation, academic field, or social doctrine • Defines the expectations and directs the actions of a group [USA]	X	X	X	–	
Findings: Social and Professional Contexts • Most codes addressed relationships between professionals and: -The public, environment, and / or society -Colleagues -Constituencies served • Fewer codes addressed relationships with trainees [USA]	X	X	X	–	
A bottom up approach in formulation and implementation of bio-safety and bio-security policies through direct involvement of scientists [India]	X	X	X	–	
Self regulation and participation is key [ABPI]	X	X	X	–	
Due consideration should be given to the discussion at other international organizations, such as UNESCO, OECD, ICRC etc [Japan]	X	X	X	–	
Although the codes of conduct published by several UN specialized agencies do not refer specifically to Biological and Toxin Weapons… in view of the fact that BTWC is related to a broad range of sciences, the codes of conduct of scientists involved in these activities should take account of the prohibition of biological and toxin weapons [Indonesia]	X	X	X	–	
Bring in the pharmaceutical industry in the process related to any future negotiations over codes of conduct [Sweden]	X	X	X	–	
To avoid the risk that the code will be divorced from the very real concerns expressed by non-scientists, there must be broad consultation with affected communities… we must be careful not to burden codes with such unrealistic expectations [AAAS]	X	X	X	–	
Involve scientists and representative organizations early on and throughout the process. [USA]	X	X	X	–	
Get the assistance and support of organizations to whom scientists look for leadership (e.g., American Society for Microbiology). [USA]	X	X	X	–	
Including other stakeholders, such as industry, NGOs, and the public, is necessary to enable (a) decision on whether and how to move forward with a code [USA]	X	X	X	–	
Need stakeholder buy-in early in the code development process [USA]	X	X	X	–	
Need to test conclusions with other stakeholders [USA]	X	X	X	–	
The core people to formulate Codes of Conduct should be… scientists themselves. Involvement by people concerned in various fields is also necessary and productive, (including) security, public health, medicine, judiciary, publishing sector, funding, government etc. [Japan]	X	X	X	–	
(For the) coding process… regular discussion among experts and working-level officials in various fields would be necessary [Japan]	X	X	X	–	
The involvement of scientists and scientific community in preparation of codes of conduct would both strengthen and highlight the role and responsibility of the relevant individuals in this field, and guarantee that such codes would not endanger the scientific nature of their activities and use of scientific achievements for peaceful purposes [Iran]	X	X	X	–	
Scientists should be the core people to formulate Codes of Conduct for Scientists, but involvement by other people concerned are also necessary [Japan]	X	X	X	–	
(Codes of conduct) should be done by all the actors in this area, in particular researchers and scientists [Algeria]	X	X	X	–	
Include the pharmaceutical industry in the coding process [Japan]	X	X	X	–	
Ethical codes (should be) developed by professional groups, industry, academia, etc. [South Africa]	X	X	X	–	
Frame the code around responsibility in the biological sciences [USA]	X	X	X	–	
Avoid alienating scientists by implying they need to be convinced to conduct responsible research [USA]	X	X	X	–	
Important to introduce scientists to a code of conduct by describing the potential scope of a code and presenting a well-formulated rationale regarding the benefits scientists might receive from a code [USA]	X	X	X	–	
A systematic process for developing a code may not be well-accepted [USA]	X	X	X	–	

2005 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
(It) should be promulgated that (a) 'Code is a measure to prevent conscientious scientists from receiving unnecessary restrictions on their research activities' [Japan]	X	X	X	–	
Codes of conduct should not leave individuals and scientists with the impression that codes are designed against them or their scientific activities. Due respect should be extended to the scientific community as members of the society who serve the noble objectives of humanity through the advancement of science. Wider contributions by the scientists in promotion, establishment and adoption of codes would effectively remove any such misunderstandings and would enhance the implementation of codes [Iran]	X	X	X	–	
(Being) adequately compensated for… work, and… the benefits of continuing to undertake legitimate activities outweighs the perceived greater benefits, and associated risks, of engaging in more dubious work. [Canada]	X	X	X	–	
It was considered important to address the purpose of codes of conduct and demonstrate that the costs of development, promulgation and adoption did not outweigh the benefits. [UK], X	X	X	–		
Implementation of (a) code should be via existing professional scientific societies as opposed to government [USA]	X	X	X	–	
Ensure guidance and advocate mechanism inclusive of a robust education and training programmes to achieve the desired objectives before embarking on a National legislation [Malaysia]	X	X	X	–	
A web of approaches are needed in order to increase biodefense / medical understanding as well as constrain malignant applications [Center for Biosecurity, UPMC]	X	X	X	–	
Notwithstanding the important roles of other stakeholders, academies of sciences perhaps should shoulder a primary responsibility in the development, promulgation and adoption of codes of conduct for scientists [Islamic World Academy of Sciences (IAS)]	X	X	X	–	
Codes of conduct will be more readily accepted if they build upon existing institutional guidelines and principles and are developed in collaboration with the scientists to whom they will be directed [ABPI]	X	X	X	–	
…work on codes of conduct should build on existing frameworks, procedures and practices. [UK]	X	X	X	–	
Ensure organizational and individual accountability [USA]	X	X	X	–	
Ensure accountability for the principles of the code – without undermining support for the code [USA]	X	X	X	–	
…a code of ethics, as opposed to a code of conduct, is needed [USA]	X	X	X	–	
Social norm would not strictly enforce or regulate scientific research; it would be similar to the physician's Hippocratic Oath [USA]	X	X	X	–	
(A) mutual check system (is) • difficult due to human resources constraints and highly sophisticated expertise • can possibly hamper beneficial research activities • promoting transparency of research contents should be considered as an alternative [Japan]	X	X	X	–	
…all necessary precautionary measures need to be taken to avoid hampering the economic or technological development of States Parties to the Convention or international cooperation in the field of peaceful bacteriological (biological) activities, while devising national codes of conduct [Iran]	X	X	X	–	
No attempt thus should be made to impose on States Parties any particular form or format for codes of conduct [Iran]	X	X	X	–	
Is it easier to follow the spirit of a code versus technical regulations • spirit respects the variation between communities • technical regulations often limit flexibility [Canada]	X	X	X	–	
Incorporating environmental values into codes of conduct (could be accomplished by focusing on) • post-materialist values • deep ecology and the Gaia hypothesis • stewardship • sustainable development • the precautionary principle • quality of life [Australia]	–	X	–	–	

2005 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
Environmental values provide a different and fertile vocabulary for capturing the range of motivations for scientific discovery and contribution [Australia]	–	X	–	–	
Sustainable development has the potential to forge links and resolve tensions between economic and environmental concerns… the same logic of incorporating environment, development and social concerns could be applied to codes of conduct. [Australia]	X	X	X	–	
…the matrix could cover a table of various types of possible codes. These would be tools of a legal nature and different rules: codes of conduct, of ethics and practices, with a view to achieving the maximum objectives for various publics: political decision makers, researchers, jurists and all other persons involved both in the defense sector and others [Algeria]	X	X	X	–	
Drafting by each State of a charter for biological researchers which can serve as the basis for an international text [France]	X	X	X	–	
…any proposal for a code should provide for a combination of ethical, behavioural and practical aspects [Cuba]	X	X	X	–	
…a code should not be regulatory in nature – a code should raise the individual's awareness of ethical issues [USA]	X	X	X	–	
Address the internet throughout the consideration of universities, researchers and funders. [Japan]	X	X	X	–	
We should facilitate a high-level code of conduct for scientists engaged in life sciences world-wide [China]	X	X	X	–	
… codes must be universal; it would be inappropriate to apply different moral and ethic(al) standards to scientists in different countries [Russia]	X	X	X	–	
… adopting a universal code should be practicable [Nigeria]	X	X	X	–	
…possible outcomes… a new universally agreed Code of Conduct based on a consensus-decision of all States Parties [Australia]	X	X	X	–	
A universal code of ethics could be a code that applies to all but it does not necessarily mean there will be a single code; there could be other codes and practices that lie below it. [UK]	X	X	X	–	
There is no 'one size fits all' approach to codes of conduct… a universal code of conduct is not… feasible [USA]	X	X	X	–	
There is no universal recipe for a code of conduct [Cuba]	X	X	X	–	
No one size fits all - a range of regional, national, society, workplace codes [Australia]	X	X	X	–	
Although there is no 'one size fits all' in this domain and a universal code of conduct is not practically feasible at the present stage, we believe that existing codes of conduct should be harmonized. There are at least three main characteristics to bioethics, namely it is interdisciplinary, international, and pluralistic. [Indonesia]	X	X	X	–	
Codes of conduct will be more readily accepted if they build upon existing institutional guidelines and principles and are developed in collaboration with the scientists to whom they will be directed [NTI]	X	X	X	–	
…work on codes of conduct should build on existing frameworks, procedures and practices. [UK]	X	X	X	–	
A code cannot be applied uniformly across all life science disciplines and across all countries [USA]	X	X	X	–	
Process of code development and implementation may differ [USA]	X	X	X	–	
It is not practical to try to develop 'a universal code of conduct' [Japan]	X	X	X	–	
A universal code of conduct is neither achievable nor practical. The success of this process lies in providing the States Parties with the most objective understanding of the possibilities to strengthen the implementation of the Convention through active interaction with the national scientific and professional community [Iran]	X	X	X	–	
…efforts to elaborate codes specific to the Convention could consist of a matrix code which would enable States Parties to base themselves on it at the appropriate time and this takes into account the view… there was no single code which might be applied to everyone [Algeria]	X	X	X	–	
Content of particular codes may necessarily vary depending on their individual context and objectives and the way in which the codes are intended to be applied by organizations or professional bodies [Iran]	X	X	X	–	

2005 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
(Codes of Conduct) should adopt a balanced approach so as to not unduly limit the legitimate research activities of life scientists [RoK]	X	X	X	–	
A code should be comprehensive enough to combat the inadvertent use of science and at the same time encourage the expansion of rigorous scientific research [Malaysia]	X	X	X	–	
Balance between freedom for scientists to work independently for the welfare of mankind (and) to develop a culture of responsibility within the institutions employing scientists and funding research in the life sciences [Pakistan]	X	X	X	–	
…there should be clear establishment of the incompatibility of scientific work in biotechnology with a hostile use of results in armed conflict or towards other objectives which are not directly linked with sustainable development or the benefit of humanity [Cuba]	X	X	X	–	
Scientists (working) on… animal disease have the obligation to peacefully use pathogenic microorganisms. They also have the responsibility both to prevent and stop research and production that may jeopardize… humankind, and to prevent the spread of disease and pollution of the environment [China]	X	X	X	–	
The need to find cures, diagnostic tools, and preventative measures against these agents is therefore aimed at fighting not only bioterrorism, but also naturally occurring dangerous infections [Germany]	X	X	X	–	
Code should not impede scientific discovery while addressing national security needs [USA]	X	X	X	–	
…it is important that codes are formulated so as not to undermine legitimate scientific exchange. [UK]	X	X	X	–	
Additional regulations will hamper research in the field of biomedicine, biology and biotechnology. Experimental results should be made available to the scientific community as precise as possible. An open information exchange between scientists will allow a better understanding of risks arising from the handling of infectious or toxic material or genetic modifications of organisms. This will lead to generally accepted recommendations for risk management of dangerous pathogens and toxins. [Germany]	X	X	X	–	
The code of Conduct will… have to take into consideration, the aspirations for scientific development of all States Parties, particularly those from the developing world [Nigeria]	X	X	X	–	
These codes should not hinder scientific research or constitute a hindrance to the exercise of the legitimate rights of State to acquire biological equipment, substances and technology [Algeria]	X	X	X	–	
There should be encouragement to the foreign researchers in laboratories to ensure varying approaches while ensuring protection from trainees from countries which do not provide security guarantees [France]	X	X	X	–	
Codes of conduct should prevent potential proliferation, not stymie scientific research [Pakistan]	X	X	X	–	
Avoiding any possible hostile use of research must take precedence over any duty derived from other commitments [Italy]	X	X	X	–	
Scientists should communicate and share information about biotechnology and its derived products and services in a balanced manner, taking into account both benefits and risks [Italy]	X	X	X	–	
Life Sciences: New Considerations • "Dual use" potential of certain life sciences research requires consideration of new processes and procedures designed to minimize the likelihood that biological research will be misused to threaten public health and / or national security. [USA]	X	X	X	–	
Life Sciences: Striking a Balance • Goal is to enhance protections for life sciences research while ensuring that any impact on the free flow of scientific inquiry is minimized. [USA]	X	X	X	–	
…investigate if it is possible to find smallest common denominators that might form the basis for an international agreement. [Argentina]				–	P
…possible outcomes… agreement of States Parties of certain elements or themes that may subsequently be drafted into appropriate language by various biological organizations / associations / societies and incorporated into existing Codes of Conduct. [Australia]	X	X	X	–	
It is possible and meaningful for the BWC States Parties to agree on generally important elements of Codes of Conduct [Japan]	X	X	X	–	

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Core guidelines (must be) agreeable to all national participants with institutional adaptation [Canada]	X	X	X	–	
Propose a set of 'building blocks' aimed at establishing codes of conduct for scientists, either as individual researchers or as individuals responsible for the direction, evaluation or monitoring of scientific projects in the life sciences [ICGEB]	X	X	X	–	
(There is a) possibility to reach an agreement to create a document at least in the form of general guidelines on the matters discussed during our meeting. [Ukraine]	X	X	X	–	
Signing the code would be voluntary; living according to its principles would not be because the code would create a set of social and scientific standards [USA]	X	X	X	–	
Code of conduct is voluntary [Nigeria]	X	X	X	–	
Codes of conduct should be voluntary at all levels [India]	X	X	X	–	
Code should be voluntary at the national level; no mandatory enforcement [USA]	X	X	X	–	
Voluntary codes do not achieve much [ABPI]	X	X	X	–	
Expand focus from biology to (the) 'life sciences' [USA]	X	X	X	–	
Codes of conduct for Universities, Funders, Research and Publishers are necessary [Sweden]	X	X	X	–	
Guide those not only involved in scientific research but also funding bodies to be appreciative and reflect on the dual use of research applications and its inadvertent use [Malaysia]	X	X	X	–	
Codes of conduct should incorporate representatives of mass media. [Georgia]	X	X	X	–	
Codes of conduct should address a wider range of persons than just scientists [South Africa]	X	X	X	–	
We should bear in mind the variety of existing rules and regulations among countries and organizations relating to the 'codes of conduct for scientists' as well as the importance of the BWC context of our deliberations [Japan]	X	X	X	–	
Review existing codes - it may be better to further develop existing codes rather than developing new codes [Australia]	X	X	X	–	
Advantages in adapting existing codes to cover these issues [South Africa]	X	X	X	–	
Existing guidelines and principles should be used as the basis for any codes where possible, rather than starting from first principles. [Royal Society]	X	X	X	–	
Identify existing structures which could be used to develop and maintain a code [USA]	X	X	X	–	
Code should use existing infrastructure to implement code when feasible [USA]	X	X	X	–	
…initiatives aimed at the elaboration of codes of conduct specific to the Biological Weapons Convention should be based on existing codes, as well as on efforts under way with those referred to in the Convention, as those in other areas [Algeria]	X	X	X	–	
Codes of conduct will be more readily accepted if they build upon existing institutional guidelines and principles and are developed in collaboration with the scientists to whom they will be directed [NTI]	X	X	X	–	
…work on codes of conduct should build on existing frameworks, procedures and practices. [UK]	X	X	X	–	
Scientific activities… should strictly comply with and safeguard the ethics related to national security, ecological, environmental and health safety [China]	X	X	X	–	
Scientists should use knowledge and abilities for the protection and enrichment of life in addition to respecting human rights and the dignity and importance of all forms of life [Nigeria]	X	X	X	–	
Scientists should be truthful and subject the assumptions, methods, findings and goals of their work including possible impacts on humanity and on the environment, to open and critical discussion [Nigeria]	X	X	X	–	
…the content of any code should consist of general guidelines to be upheld in new situations whose results have a doubtful benefit for humanity [Cuba]	X	X	X	–	
Scientists… should… refuse to undertake research that has only harmful consequences for human kind [IAP]	X	X	X	–	

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The need to draft, promote and adopt code of conduct should be concluded by the States Parties on the basis of the necessity felt to dissuade scientists and scientific community from the hazards posed by the effects of accidental or intentional activities which run contrary to the obligations undertaken by the States Parties [Iran]	X	X	X	–	
Scientists should firmly oppose the research, production and use of biological weapons, and should not participate in and assist such activities. They also have the responsibility to prevent and stop research and production, which may jeopardize the humankind. [China]	X	X	X	–	
…should scrupulously abide by scientific ethics, always put the interests of the nation, people and humankind on primacy and insistently make science to serve the human civilization, peace and progress. [China]	X	X	X	–	
…should scrupulously abide by scientific ethics, always put the interests of the nation, people and humankind on primacy and insistently make science to serve the human civilization, peace and progress. [China]	X	X	X	–	
Scientists and institutions must address questions and controversies surrounding the use of biotechnology and make choices that will best serve humanity [Italy]	X	X	X	–	
Scientists should not be involved in research that is to the detriment of humanity [Nigeria]	X	X	X	–	
All those who conduct scientific research and the technological development in the life sciences or the related fields should comply with the basic guidelines for any scientists, i.e., any scientific activity should be based on serving the people, serving the society and between human beings and society, and between human beings and nature. [China]	X	X	X	–	
Codes and legislation is juxtaposed so that the two instruments can complement each other to the maximum degree possible [Canada]	X	X	X	–	
Code of Compliance with non-proliferation legislation being contemplated… would be required to be implemented by any institution required to register in accordance with... legislation. [South Africa]	X	X	X	–	
…laws and regulations provide a solid legal basis in regulating the public, including the scientific personnel's conduct [China]	X	X	X	–	
Scientists should be aware of, disseminate and teach national and international law and regulations, as well as policies and principles aimed at preventing the misuse of biological research [IAP]	X	X	X	–	
Scientists who become aware of activities that violate the Biological and Toxin Weapons Convention or international customary law should raise their concerns with appropriate people, authorities and agencies [IAP]	X	X	X	–	
…backing a code up with the threat of a sanction… will help to counter… economic pressure (to pursue prohibited activities). [Canada]	X	X	X	–	
Increase knowledge about the laws, regulations and policies - governments and institutional - and professional guidelines that govern the conduct of research [AAAS]	X	X	X	–	
There are however "niche" roles where codes can potentially fit in neatly with legislation [Canada]	X	X	X	–	
The scientific community dealing with life sciences and biological weapons should abide by local, national and international laws [Pakistan]	X	X	X	–	
There should be an element of transparency among peers without revealing scientific or economic secrets [France]	X	X	X	–	
Ethical codes (could require scientists to)… • Act with skill and care in all scientific work. Maintain up to date skills and assist their development in others; • Take steps to prevent corrupt practices and professional misconduct; • Be alert to the ways in which research derives from and affects the work of other people, and respect the rights and reputations of others; • Ensure that your work is lawful and justified; • Minimise and justify any adverse effect your work may have on people, animals and the natural environment; • Seek to discuss the issues that science raises for society. Listen to the aspirations and concerns of others; • Do not knowingly mislead, or allow others to be misled, about scientific matters. Present and review scientific evidence, theory or interpretation honestly and accurately. [UK]	X	X	X	–	

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Research associations, institutions and individual researchers should maintain generally accepted standards for good laboratory and manufacturing practice, and take action against 'bad science' [Nigeria]	X	X	X	–	
Scientists… should… always bear in mind the potential consequences - possibly harmful - of their research and recognise that individual good conscience does not justify ignoring the possible misuse of their scientific endeavor [IAP]	X	X	X	–	
Include and require all individuals in an organization act with honesty, integrity and objectivity and promote openness… on a day to day work basis [ABSA]	X	X	X	–	
Responsibilities of researchers (include) • 'to society, funding agencies, their discipline / field, their colleagues and those whom they supervise or train' • approval by 'a human or an animal ethics committee, or by other safety or regulatory committees' • 'report cases of suspected misconduct' • 'in a responsible, timely and appropriate manner as directed by institutional procedures' [Australia]	X	X	X	–	
...physicians should hold high professional ethics, have enough medical capacity and protect the health of public in the spirit of humanitarianism…should timely report the infectious diseases to designated organizations. [China]	X	X	X	–	
Personal benign intent does not justify neglect of the possible hostile utilization of available technologies, while the use of good and safe laboratory procedures must also be a part of the moral duties of scientists, particular involved in the work with highly pathogenic microorganisms or with dangerous toxins, so that also the risk of unintentional damage be eliminated [Italy]	X	X	X	–	
Good leadership will turn a weak code or ethos into something highly effective. Leadership which can change culture and change values will be critical to any degree of success (of a code of conduct) [Australia]	X	X	X	–	
A code of conduct offers the greatest opportunity for improving the security or research at the level of the individual scientist. [USA]	X	X	X	–	
Promoting responsible stewardship in the biosciences (necessitates efforts to) identify and document common concerns regarding the oversight of the biosciences; develop a common vocabulary; help broker and ingrate the concerns of the constituent stakeholder communities into the development of codes; (and) help develop mechanisms to render codes and other oversight tools operational. [OECD]	X	X	X	–	
…ethical considerations, including scientific responsibility when working on certain research projects that may lead to discoveries that could make BW more effective [Australia]	X	X	X	–	
Ensure that explanations are identified, incorporated into working practices and monitored for effectiveness [Det Norske Veritas (DNV)]	X	X	X	–	
Responsibility lies with the operator to meet expectations and role of independent third party is to ensure this has been done in an effective and transparent manner [DNV]	X	X	X	–	
Scientists working with agents such as pathogenic organisms or dangerous toxins, have a responsibility to use good, safe and secure laboratory procedures, whether codified by law or by common practice [IAP]	X	X	X	–	
Responsibilities of institutions (include) • promoting awareness of other relevant national guidelines • 'research climate of open exchange of ideas and mutual cooperation' • 'formal induction process regarding its policies and procedures for research staff, students and research trainees' • 'open presentation and discussion of results with peers [Australia]	X	X	X	–	
Scientists must collect and store in a retrievable form all information regarding studies and experiments performed, including the source of biological samples and pathogens used [Italy]	X	X	X	–	
The authorities in charge at the single institution of management of scientific issues must define a policy for internal evaluation of scientific products and for the availability of the above mentioned information [Italy]	X	X	X	–	
Bio-scientists must have a clear understanding about the content and purposes of their research, conscientiously analyze and evaluate the consequences of the achievements in their research and try their best to prevent the potential negative impact brought by such achievements [China]	X	X	X	–	

2005 Suggestions	Dimensions				Other aspects
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Responsibilities of Scientists (include)… Not to knowingly participate in or provide assistance to the development of biological weapons (and) Consider the potential for their work to be misused in a BW programme [Australia]	X	X	X	–	
Responsibilities of Scientists (include)… Ensure that materials, equipment and data that have a clear potential BW application are stored and transported securely (and) Ensure that in transferring materials or knowledge to scientists in other institutions, appropriate consideration is given to the use to which the materials or knowledge will be put [Australia]	X	X	X	–	
Responsibilities of Scientists (include)… Comply with relevant code(s) of conduct and relevant national legislation and international conventions; For overseas transfers, comply with import or export control legislation where applicable (and) Where risks of diversions are identified, ensure that the risks are adequately managed to minimise the potential for misuse [Australia]	X	X	X	–	
Responsibilities of Scientists (include)… Ensure that only suitable cleared and qualified staff have access to materials, equipment or data that are assessed as being of high risk of diversion to a BW programme (and) Ensure that only staff who are trained in the necessary safety procedures are allowed to handle hazardous materials [Australia]	X	X	X	–	
Responsibilities of Scientists (include)… Submit research proposals for risk assessment by the institutional review body, where such exists; Periodically reassess the potential applications and implications of their research to a BW programme. Where research throws up unexpected results leading to the appearance of previously unidentified risks of misuse, and that risk is deemed to be significant, the relevant authorities should be informed (and) Notify the appropriate authorities if they become aware of suspicious activities undertaken by other scientists. [Australia]	X	X	X	–	
Scientists must investigate thoroughly and take into account the social and environmental consequences of any research about to be conducted [Nigeria]	X	X	X	–	
Scientists have the obligation to do no harm. They should always take into consideration the reasonably forseeable consequences of their own activities. [IAP]	X	X	X	–	
Conflicts of interest (requires a consideration of) • 'a divergence between the individual interests of a person and their professional obligation to the institution • such that an independent observer might reasonably question whether the professional actions or decisions of that person are influenced by their own interests'. • 'private benefits significantly dependent on research outcomes and significant personal or professional advantage' [Australia]	X	X	X	–	
Whistle blowing may work effectively in some particular cases, but… to distinguish false information is very difficult (and we) have to recognise possible abuse of whistle blowing [Japan]	X	X	X	–	
…codes should make provision where necessary to protect the individuals reporting concerns, and, indeed, to protect those who might be maliciously or mistakenly accused. In making such provision, however, codes must be compatible with, and take cognisance of, all relevant national legislation covering disclosure. [UK]	X	X	X	–	
Biosafety and biosecurity measures are required in the industrial sector, and education and training, including codes of conduct for researchers, is important. [National Institute of Animal Health (Japan)]	X	X	X	–	
(Recurring) themes or principles… (include) Introducing biosecurity measures appropriate to the level of risk associated with a particular line of scientific work." [Australia]	X	X	X	–	
Ensure that materials, equipment and data that have a potential BW application are securely stored and transported. This would include ensuring that scientists have adequate facilities for safe handling and storage of hazardous materials and that staff are trained in the appropriate safety and security procedures [Australia]	X	X	X	–	
Codes of conduct must provide for biosafety, biosecurity and bioethics [CDBB]	X	X	X	–	
Research in the life sciences, including biodefense research must be conducted safely, securely and ethically [CDBB]	X	X	X	–	
Elements required in codes of conduct (include) formulating specific procedures and / or rules for handling such agents and information (measures for management and control) [Japan]	X	X	X	–	

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…requiring the scientists and related personnel in laboratories dealing with pathogenic microorganisms to abide by the operational rules so as to prevent the leak of pathogenic microorganisms and protect the public health. [China]	X	X	X	–	
They must comply with national laws and regulations, comply with the disease reporting system and scrupulously abide by the technical guidelines on biosafety and biosecurity. [China]	X	X	X	–	
Environmental protection should be carefully considered in any scientific research to prevent the disposal or leakage of any toxic materials or pathogenic microorganisms to the environment. Appropriate disposal measures of any of these materials should be highly regulated. [China]	X	X	X	–	
Government institutions, semi-autonomous organizations, industry, universities and laboratories should make development of codes of conduct for biosafety and biosecurity part of their organizational Standard Operating Procedures [Pakistan]	X	X	X	–	
(Codes should be) Addressed to the individual conscience of the scientist… (with) no judicial implications; Focus on individual responsibility of scientists and on the principle that ethical values shall overcome hierarchy; Life scientist(s) is in a position to follow the complete procedure related to the potential misuse of the experiment; Not a definition of permissible or forbidden experiments but the concept of acceptable or unacceptable intents of the research; (and) Not aimed at establishing principles of self-censorship but example of self-governance by the scientific community [ICGEB]	X	X	X	–	
(Codes of conduct) should specifically call on the individual scientist to be clearly aware of the likely or possible misuse of the outcome of his / her work for health and the environment, regardless of his / her hierarchical position, keeping in mind the moral obligations to denounce any misuse of biotechnology he / she detects in the fulfilment of his / her duties. [ICGEB]	X	X	X	–	
To be accepted universally a code of conduct… should be: • Short • Easily understandable to both scientists and the general public • Acceptable to scientists coming from a variety of backgrounds and cultures • Endorsed by national and international scientific professional organizations with especial emphasis on those in the life sciences • Agreed to by both public and private funding bodies • Applicable also to scientists in industrial labs [IUBMB]	X	X	X	–	
Mechanisms necessary (include)… • Working with authorities is essential to… improve protection against deliberate exposure to pathogens • develop governance mechanisms to address contentious research'- research with weapons implications that raises questions concerning how, or whether, it should be conducted and disseminated • Implementing prior review of proposals to conduct 'contentious research' • Offering 'last resort' guidance for editors, publishers, and researchers to deal with research that raises security concerns • Raising awareness of dual-use concerns • Maintaining dialogue with security, law enforcement and biodefense communities [CSIS]	X	X	X	–	
Principles… (include): • humans as supreme beings… • avoidance of negative impact from scientific knowledge… • promotion of debate… • objective polemic in a freedom of discussion… • assessments of scientific discussions and social impact in connection with research… • the upholding of autonomy and dignity of human beings under inquiry… • the protection of the environment and • the promotion of sustainable development [Cuba]	X	X	X	–	
…principles to guide individual scientists and local scientific communities (include)… • Awareness… • Safety and Security… • Education and Information… • Accountability… (and) • Oversight of Research [IAP]	X	X	X	–	

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Making a code work (necessitates efforts to)… • Make it relevant • Make it simple • Make it clear • Ensure it is taught • Ensure it is understood • Engage those who need to use it / follow its principles [WMA]	X	X	X	–	
Four major elements to consider when planning how to embody those responsibilities in a code of conduct for scientists… are: • The relationship between a code, the experience of scientists, and the core values of science; • The specific functions that codes of conduct perform and the implementations of those functions for how scientists and others will interpret the code; • The importance of reinforcing whatever cide is adopted with follow-up activities; and • The need for evaluation of the code's impact on knowledge, attitudes and behavior [AAAS]	X	X	X	–	
Suggestions for Code Content (include) • Ensure science benefits mankind / does no harm • Ensure right to advance scientific knowledge • Obligate individuals to identify / call out unethical behavior • Obligate individuals to know the quantity and content of material and knowledge they possess and who should be granted access • Consider dual use implications before dissemination of information, knowledge, materials and technology • Ensure peer review for safety, security and ethical implications • Obligate individuals to abide by applicable U.S. laws and regulations, and international treaty requirements • Enable individual's right to refuse participation in unethical science • Communicate the code and code precepts • Ensure code reassessment and reevaluation [USA]	X	X	X	–	
Principles (include) • respect for human beings • justice • research merit and integrity • balancing benefits and risks in research • consent to participation in research [Australia]	X	X	X	–	
Significance of Codes of Conduct (includes) To ensure scientists realize the potential risks inherent in their activities To raise scientists' awareness of their ethical and social responsibility To help scientists understand the national and international rules, regulations and frameworks To ensure biosafety and biosecurity To prevent dual-use research results from being abused by criminals and terrorists [Japan]	X	X	X	–	
Possible elements for codes of conduct • Ethics / morals (including) ethics for scientists (and) social / professional responsibilities • Risk awareness (including)… efforts to reduce risks… increasing awareness (and) open debate • Education / promulgation (including)… training… promoting promulgation (and the) observance of treaties, regulations, etc. • Control of biological agents (including) biosafety (and) biosecurity • Control of information (including) publication of research results / information control • Research funding (including a) consideration for research contents in funding • Oversight of research contents (including) ensuring transparency of research contents (and) oversight and supervision of research activities [Japan]	X	X	X	–	
Codes of conduct and practice (should contain) • Systematic collection(s) of unambiguous guidelines • (a statement of a) group intent to adhere to defined culture • unequivocal… clarity and intent • support (for) ongoing guidelines, education, assessment, positive feedback, alternative solutions to problems, affirmation • …individual accountability within the culture • (a) process (which) must start small and enlarge - a generational work [Canada]	X	X	X	–	

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Such code of conduct could include, inter alia, a statement that scientists will use their knowledge and skill for the advancement of human, animal, and plant welfare and will not conduct activities directed towards the use of micro-organisms or toxins or other biological agents for hostile purpose or in armed conflicts. [Argentina]	X	X	X	–	
Codes of conducts will do no harm, but will have no effect on those who have bad intentions. Some recent developments are unacceptable, however, because they violate central rules of scientific research. These include: • Censorship of scientific publications, even if it comes under the label stewardship; • Incrimination of certain research topics, such as studies aiming at altering pathogenicity, transmissibility, and host range of an infectious agent; • impeding the exchange of biological material by non-transparent and non-matching shipping regulations; and • restrictions of free international exchange of scientists. [Germany]	X	X	X	–	
…scientists participating in biomedical and bioscience research should agree: • not to engage knowingly in research for the production of biological agents for the purpose of their use in hostile conflicts. • This is a necessary element of a code, however, it does not address the real problem of dual use research and the inadvertent production of dangerous biological agents. Therefore, another element that should be included is the obligation: • to become informed and be aware of possible dual use aspects of biomedical and bioscience research, to carry out risk assessments at each stage of the research process as a reflective action and to consider alternative approaches as the risks demand. [Germany]	X	X	X	–	
…suggest the following five recommendations that we feel should be taken into account in the drafting, promulgation and adoption of codes of conduct: • greater awareness of the ethics in practical investigation, ethics and sciences • should go hand-in-hand with codes for science institutions that promote the creation of appropriate conditions for the integrity of research and for an ethical frame for implementation of security and oversight measures. • support coordinating actions with countries in the region • should establish security thresholds that should be adopted by institutions and individuals, avoiding measures that might unnecessarily, however, restrict the work of responsible research • support the establishment of an international fund that will ensure that those countries that are not in a financial position to meet the guidelines established and adhere to the established thresholds should receive the necessary financial assistance to ensure such compliance [Argentina]	X	X	X	–	
On the Code(s) itself, which may be different in size, details and contents depending on goals and other factors but which must have general features (or, in other words, must be harmonized): • code(s) has to be based upon the principles of the BWC and Geneva Protocol of 1925; • code(s) has to be easy for understanding and not permitting double interpretation; • code(s) of conduct linked to the Biosafety has to cover all scientists involved in the research concerned and the same time to protect these people from biohazards; • code(s) has to be reviewed from time to time in accordance to the relevant changes in life sciences. [Ukraine]	X	X	X	–	
Should consider codes of conduct in the context of the Biological Weapons Convention, for instance Article IV [Japan]	X	X	X	–	
There should be willingness to provide warnings, whilst also protecting the whistle blower. [France]	X	X	X	–	
Codes of conduct should avoid any restrictions on exchange of scientific discoveries in the field of biology for prevention of disease and other peaceful purposes. Subjecting scientific research and the free flow of scientific information to undue restrictions, may amount to violation of obligations undertaken under Article X of the BWC. [Iran]	X	X	X	–	
…the content of such codes, where they relate to core principles and responsibilities enshrined within the BTWC…fall …under three broad themes: The raising of awareness of the Convention and its Articles, key objectives and prohibitions; Undertakings to adhere to its prohibitions and to responsibilities aimed at preventing the misuse of science (whilst encouraging scientific exchange for peaceful purposes); and,, Reporting concerns relating to breaches of the prohibitions [UK]	X	X	X	–	

2005 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
All those who conduct the scientific research and the technological development in life sciences or the related fields should be fully aware of the purposes and objectives of the Biological Weapons Convention and abide by its provisions. They should firmly oppose the research, production, use, storage or transfer of the biological weapons and should not assist or participate in such activities. [China]	X	X	X	–	
Biological weapons are unacceptable under any circumstance and any event: scientists must be determined not to participate in any work or activity that will bring to the production or the use of biological agents aimed at causing harm to human and animal health or to the natural environment [Italy]	X	X	X	–	
We need to find the threshold for criteria for acceptable / unacceptable research [China]	X	X	X	–	
Certain actions that might be constrained under a code of conduct may not actually be illegal in of themselves, but can come very close to crossing that line. Examples of this might include conflicts of interest or the irresponsible dissemination of knowledge, neither of which are directly prohibited under legislation, but can lead in short measure to activity that is in contravention of the laws of the land. [Canada]	X	X	X	–	
Consideration might be given to distinctions, if any, between scientific misconduct and misuse of science; or how to incorporate misuse of science into existing codes, identified principles of scientific practice, or excellence in the UK Government Science. [UK]	X	X	X	–	
Any risk caused by scientific research to the public health and social development should be avoided in its best efforts. Such work as trying to increase the pathogenicity, virulence or drug resistance of pathogenic microorganisms, to construct non-naturally-existing or artificially made severelyy infective pathogens (e.g. poliovirus, variola poxvirus etc.) or reactivate / restore the extinct pathogenic microorganisms should not be conducted. [China]	X	X	X	–	
In every step of the whole research process, data should be analyzed, assessed and evaluated to foresee any possible negative consequences to public health, nature and the society to prevent scientific accomplishments to be misused to harm the nature and the public health. In any case this negative effect is being seen, the research should be stopped immediately and the scientific community should be notified at the same time. [China]	X	X	X	–	
Need (an) efficient mechanism for judging what is dual-use [USA]	X	X	X	–	
Amber light words and combinations (which may help in distinguishing between permitted and prohibited science include) environmental persistence, resistant to, altered incubation period or host range, modification of host immune response, no immunity, very stable in the environment, become highly virulent or infectious [Canada]	X	X	X	–	
Issues like development of new pathogenic agents for assessment of vulnerability should be considered in developing codes of conduct for research funders. [Sweden]	X	X	X	–	
Excluding from the scientific community any individual who violates his obligations for political or economic reasons [France]	X	X	X	–	
…a one line statement that encapsulates the key message in an easy to recall format would achieve widespread awareness of the existence of the Code and its basic principles. [Australia]	X	X	X	–	
To be effective, training / codes should be organic to the culture / practice of science [Center for Biosecurity, UPMC]	X	X	X	–	
Environmental ethics may promote a regional and, perhaps ultimately, a global perspective to ethical debate, which is important in relation to the BWC… environmental ethics provides an alternative frame of reference that is well placed to help resolve associated dilemmas. In this context, environmental ethics has a place in discussions relating to ethical conduct under the BWC. [Australia]	X	X	X	–	
Ethical arguments should be considered in their (codes of conduct) formulation and implementation [Poland]	X	X	X	–	
Combined codes of conduct covering all weapons of mass destruction may be worth considering [South Africa]	X	X	X	–	
Codes, where needed, should be short and broad [South Africa]	X	X	X	–	
…producing guidance for referees on dual use issues would be helpful, to help referees take them into consideration when assessing both funding proposals and publications. [Royal Society]	X	X	X	–	

2005 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
Elements required in codes of conduct (include) measures to improve awareness of scientists who handle potentially dangerous agents and material (measures for ethical aspects) [Japan]	–	X	X	–	
Any activity related to bio-defense research should be transparent to prevent any non-peaceful activities to be conducted under the name of bio-defense. [China]	X	X	X	–	
Especially in the field of agriculture, researchers, when defining protocols deriving from their activities, for the production of agents potentially usable as biological weapons, should include, whenever possible, advices on how to trace, reduce or neutralize the effects of such agents [Italy]	X	X	X	–	
Important to consider that patent applications also can contain technical and scientific information that could be misused. [Sweden]	X	X	X	–	
Research laboratories to be brought into networks creating the feeling of collective responsibility [France]	X	X	X	–	
Exchanges and cooperation with… foreign counterparts with the aim to learn from each other and make progress together [China]	X	X	X	–	
International exchange is a great way to broaden the outlook of future scientific leaders and may also be of help in reaching a consensus on a global code of conduct for scientists. [IUBMB]	X	X	X	–	
Sharing experience is important for those countries and scientists that are not aware of these dilemmas [India]	X	X	X	–	
It is necessary to strengthen the international contacts of scientists working in the field of infectious disease research. Despite the fact that the new situation regarding biosafety and biosecurity makes it necessary to control persons working at least with category-A-infectious agents, the international contact between scientists should be strengthened rather than being restricted. [Germany]	X	X	X	–	
Consider how Governments, public sector, third parties and outsiders can be engaged [Japan]	X	X	X	–	
There should be symposia and conferences organized at the level of individual laborator(ies), they should be continuing training in ethics of responsibilities [France]	X	X	X	–	
Reference and principles should be inculcated in the researcher through using neutral for a, so that everyone can dare, without greater risk, to alert as to abuses. [France]	X	X	X	–	
Provision of education, training, etc. to promote the norm against BTW (could include)… Road shows; Information; Newspaper, journals, etc. articles; Inclusion in curriculae; Seminars; (and) Presentations [South Africa]	X	X	X	–	
Recommends... opening a required course on scientific ethics for postgraduates, strengthening the moralities education for young students and setting up supervising networks against improper research activities [China]	X	X	X	–	
Promulgation and adoption of codes (should incorporate) a combination of : • Seminars conducted in workplaces • Specific courses at undergraduate and postgraduate level including the use of case studies and the development of problem-based learning • Mentoring by staff [Australia]	X	X	X	–	
Educational institutions should be encouraged to include components addressing ethical issues in scientific study programmes. [Australia]	X	X	X	–	
Include in undergraduate and / or graduate training programmes an element addressing ethical issues in science [Australia]	X	X	X	–	
…it is not enough simply to put such Codes in place. Without effective measures to educate scientists about the existence and importance of such Codes, attitude and awareness will remain largely unchanged. [Australia]	X	X	X	–	
…any education campaign has to be a continuous process. The information needs to be presented regularly and through multiple channels involving both bottom-up and top-down approaches. [Australia]	X	X	X	–	
…targeting high school or secondary school students may constitute an effective method of reaching the whole scientific community with a general message outlining the key issues. Incorporating the message into school curricula will provide coverage of a broad cross section of the community… [Australia]	X	X	X	–	
A code of conduct should be the end point in a process of education and awareness-raising [NTI]	X	X	X	–	

2005 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
Ethical principles should be part of the education and training of all physicians involved in biomedical research [AMA]	X	X	X	–	
Development of training programmes and materials for educating scientists on bio-safety and bio-security issues [India]	X	X	X	–	
Encourage the inclusion of BWC awareness and the dual-use dilemma in graduate student curriculae [Sweden]	X	X	X	–	
…the inclusion in textbooks and training programmes for the military (scientists)… of the prohibitions included in the Convention [Cuba]	X	X	X	–	
…the consideration of ethical and social implications of advanced technologies (such as nanotechnology) should form part of the formal training of all research students and staff. [Royal Society]	X	X	X	–	
Scientists with responsibility for oversight of research or for evaluation of projects or publications should promote adherence to these principles by those under their control, supervision or evaluation and act as role models in this regard [IAP]	X	X	X	–	
Goals for research ethics education should include • Enhance understanding of what constitutes the range of accepted practices in research; • Heighten sensitivity to and appreciation for the ethical issues associated with doing dual-use research; • Improve abilities for reflecting independently on ethical issues and thinking creatively about possible solutions; [AAAS]	X	X	X	–	
Dual-use education of those pursuing careers in the life sciences must begin at the university level and be continually reinforced. [USA]	X	X	X	–	
Develop programs for training, education and outreach [USA]	X	X	X	–	
Supervision of students & research trainees (necessitates) • 'structured formal training in research ethics, research methods and research governance' • 'Researchers acting as supervisors must provide guidance in all matters of research conduct to those whom they supervise' • 'Researchers must not put research students or junior researchers at risk. Risks can include chemical hazard, infectious disease and psychological trauma' [Australia]	X	X	X	–	
…ethical education should be given at an early stage e.g. foundation course in universities [Japan]	X	X	X	–	
Education… for corporate researchers and scientists (should be) • before they are assigned to the job • (part of) regularly continuous education after they begin working [Japan]	X	X	X	–	
Training programs and materials on bio-safety should also be improved and inserted in university curricula [Iran]	–	X			
Governments should therefore encourage universities to place such instruction into their biomedical and bioscience curricula as required courses. Special incentives should be offered to those universities that do so. [Germany]	X	X	X	–	
The only solution: careful education of students from the very beginning, promote special training of graduate students and postdocs, achievement of generally accepted guidelines and selfcontrol of science and scientist on local, national and global levels. [Germany]	X	X	X	–	
…to raise public awareness of the BTWC goals and objectives, administrative and criminal responsibility for violations of its provisions by…supplementing the textbooks and curricula of higher education medical, chemical and biological institutes with a lecture course on the subject [Russia]	X	X	X	–	
Consider the significance of education and training [Japan]	X	X	X	–	
Life science students should be educated in ethics of science [Nigeria]	X	X	X	–	
For individual researchers, codes of ethics for scientists must be seen as an instrument both for teaching ethics to researchers in training and for their training when they are hired as young researchers by scientific institutions. Codes thereby contribute to building an ethical conduct on the part of scientists and also boosting confidence of society in science [Argentina]	X	X	X	–	
Codes can also act as teaching tools, bringing legislative provisions into the lab or classroom [Canada]	X	X	X	–	
Raising awareness should start at schools and universities and culminate into scientific institutions [Pakistan]	X	X	X	–	

2005 Suggestions	Dimensions				Other aspects
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Scientists must strive to know, diffuse and teach the knowledge of national and international regulations aimed at abolishing the harmful use of biological agents, including, in particular, the Biological Weapons Convention [Italy]	X	X	X	–	
Appropriate codes of conduct should be included in ethics courses in university and high school curricula [Italy]	X	X	X	–	
All researchers in the course of the studies and throughout their careers must be conscious of the potential misuse of their work [France]	X	X	X	–	
Make researchers aware of the potential hazards resulting from failure to respect basic rules in laboratories… with respect to security and safety [France]	X	X	X	–	
Personnel in institutions to be informed of, and to comply with, the content of the Code of Compliance [South Africa]	X	X	X	–	
Provision of education, training, etc. to promote the norm against BTW (could include)… Road shows; Information; Newspaper, journals, etc. articles; Inclusion in curriculae; Seminars; (and) Presentations [South Africa]	X	X	X	–	
…full awareness of the scientific community of national laws related to biological activities, and full compliance with all such laws [Australia]	X	X	X	–	
Effective outreach is essential - this is a continuing process, cannot just do once [Australia]	X	X	X	–	
(Recurring) themes or principles… are: • Raising awareness of the possibility amongst scientists, to ensure that they do not inadvertently assist in a biological weapons programme; • Raising awareness of relevant legislation to ensure that scientists do not fail to comply through ignorance of the existence or scope of the legislation; [Australia]	X	X	X	–	
States should work to promote awareness amongst research institutions, the biotechnology sector and other scientific institutions of their obligations under international conventions and treaties, of relevant national legislation, and of the existence of the Code and its implication for their work. [Australia]	X	X	X	–	
Promote awareness amongst scientific staff of the existence of the Code and their obligations under it [Australia]	X	X	X	–	
Raise awareness amongst staff of relevant code(s) of conduct and relevant national legislation, including important and export regulations, and of international conventions governing materials and equipment with BW applications [Australia]	X	X	X	–	
Awareness raising among scientific community about BTWC provisions (could include)… Seminars to sensitize the scientists and the management of laboratories, industry and research facilities [Pakistan]	X	X	X	–	
Awareness raising among scientific community about BTWC provisions (could include)… Management of each organization / establishment is responsible for the safety and security of biological agents within and in the use of their respective establishment [Pakistan]	X	X	X	–	
Awareness raising among scientific community about BTWC provisions (could include)… Undergraduate and post graduate courses in universities [Pakistan]	X	X	X	–	
Need to increase awareness of the risk of bioterrorism among scientists and managers [India]	X	X	X	–	
Second most important element is education and awareness raising for scientists, managements and others [South Africa]	X	X	X	–	
Any code of conduct is likely to fade in the minds of its adherents and lose its powers of persuasion if not reinforced periodically [AAAS]	X	X	X	–	
Broad-based outreach must accompany the process to develop a code [USA]	X	X	X	–	
Develop leadership and advocacy for code infrastructure [USA]	X	X	X	–	
Raising scientific community's awareness in either state or private sectors with respect to the objectives enshrined in the BWC could be an important and effective element in promoting the national implementation of the Convention [Iran]	X	X	X	–	
Scientists should be encouraged to convene seminars, workshops and prepare research papers to raise the awareness [Iran]	X	X	X	–	
(Important to raise awareness of) • Individual accountability, potential harm outcome • Understanding of relevant conventions, treaties, agreements • Impact public safety / health, environmental safety, global security [Canada]	X	X	X	–	

2005 Suggestions	Dimensions				Other aspects
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…outreach and communication activities that might accompany the promulgation of a code of conduct would serve as a useful tool to inform researchers and students as to the limits of the legislation as well as the risks of other activities that are not necessarily prohibited. [Canada]	X	X	X	–	
…it follows that a further fundamental aspiration of a code of conduct should be to assure awareness amongst individuals of the obligations and restrictions drawn from national legislation implementing, or otherwise relating to, the BTWC. [UK]	X	X	X	–	
…to raise public awareness of the BTWC goals and objectives, administrative and criminal responsibility for violations of its provisions by…holding national and international workshops, symposia and conference to consider BTWC problems, including those that are the subject of consultations among States Parties to this Convention in Geneva [Russia]	X	X	X	–	
…the Avicenna Prize for Ethics in Science is expected to help significantly to increase international awareness and highlight the importance of ethics and science…The purpose of the Prize is to reward the activities of individuals and groups in the field of ethics in science. Such activities shall be in conformity with UNESCO's policies and be related to the Program of the Organization in the field of ethics of science and technology. [Iran]	X	X	X	–	
On the subject of the content of codes, firstly as regards researchers as individuals, the content of codes should contribute to raising awareness regarding the need, firstly, to maintain intellectually honest conduct, maintain integrity in scientific practice and its outcomes and in relations with colleagues and, secondly, develop the awareness of researchers regarding the risk to individual communities and the environment that may be caused in working with dual-use microorganisms [Argentina]	X	X	X	–	
Scientists must act to raise the public awareness on the principle that the production or use of biological weapons should be universally prohibited, prosecuted and punished (from this point of views, the suggestion to encourage under-graduate and post-graduate education programs which address the ethical and practical aspects of preventing the misuse of science should be taken into account) [Italy]	X	X	X	–	
Through information and education programmes encourage professional groups, industry, academia, etc to develop their own accepted set of principles (codes of conduct) against BTW proliferation [South Africa]	X	X	X	–	
Setting up institutions is to better supervise the implementation of the in-house guidelines [China]	X	X	X	–	
All relevant individuals must 'own' codes, including senior managers, academics, researchers, technicians - i.e. not just scientists [Australia]	X	X	X	–	
Awareness raising among scientific community about BTWC provisions (could include)… Research establishments, laboratories and universities to develop their own in-house codes of conduct [Pakistan]	X	X	X	–	
Codes of conduct have added value in awareness raising, and implementing legislation and regulations [Germany]	X	X	X	–	
Scientists and managers at all levels have the duty to disseminate and teach matters relating to the harmful use of biological agents and toxins [Cuba]	X	X	X	–	
The government and concerned organizations such as universities, research institutes and professional bodies have their own roles for raising awareness [Japan]	X	X	X	–	
…the promulgation process must also involve activity with the appropriate community that will be affected…and…special efforts may be required to raise awareness in other scientific communities or in locations, laboratories, or places of work that have not generally considered that risk. Promulgation may involve some or all of the following: (a) Raising awareness of the existence and content of any Codes; (b) Clarifying content and assuaging concerns about the purpose of any Codes; (b) Publishing information about any Code; (d) Encouraging 'ownership' of any Codes within the scientific community and other relevant stakeholders; (e) Establishing expectations and objectives related to any Codes its adoption by the appropriate bodies It is important to the UK that the promulgation aspect continues such a broad approach with multiple stakeholders. The promulgation activities form an important part of awareness raising, which is an essential part of the overall exercise. [UK]	X	X	X	–	

2005 Suggestions	Dimensions				Other aspects
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Institutions and organisations could be encouraged to reflect BTWC issues and the principles of relevant codes of conduct in their operational frameworks and procedures. Research Councils and other funding bodies could have a role in ensuring that research proposals consider implications for the BTWC and the risk / benefit balance of the work. Review panels, referees and publishers could also consider these issues. [UK]	X	X	X	–	
Scientific institutions must ensure compliance with principles established in codes through oversight mechanisms and transmission of values and principles to young researchers who initiate scientific work. Science institutions must create work environments that encourage integrity in research and should draft manuals of practice that accompany codes of conduct [Argentina]	X	X	X	–	
(On the national level) action should be taken to foster the enactment of legislation that is coherent, coordinated and agreed at the regional level in order to ensure conditions of security and enhance multicentric research. Likewise, science institutions should be provided with the necessary funding to appropriately implement established regulations [Argentina]	X	X	X	–	
…use national and international professional organizations for spreading information on BWC at the relevant scientific fora, through scientific periodicals and in relevant National Institutions. [Ukraine]	X	X	X	–	
If the profession is not adhering to law they could not receive their insurance [Norway]	X	X	X	–	
States Parties should appropriately inform the governmental and private institutions and companies about the objectives of the Convention, and highly and effectively warn them against the breach of obligations under the Convention [Iran]	X	X	X	–	
…to raise public awareness of the BTWC goals and objectives, administrative and criminal responsibility for violations of its provisions by…issuing by national BTWC bodies special compilations reflecting the progress made in the BTWC implementations [Russia]	X	X	X	–	
Awareness raising among scientific community about BTWC provisions (could include)… Popular lectures in the universities by experts in this field so that the new generation of scientists, medical doctors and engineers are aware of the dangers of an irresponsible attitude in handling these dangerous agents [Pakistan]	X	X	X	–	
…target audiences… in raising awareness of Codes of Conduct (could include) a. Professional societies and industry bodies; b. Institutional biosafety committees (IBCs)...; c. Animal experimental ethics committees, human ethics committees, and scientific review bodies; and d. Direct targeting of institutions, including university vice chancellors, faculty heads, and the heads of institutions and companies. [Australia]	X	X	X	–	
Academies of sciences (can): • Be directly involved (in) the drafting of codes of conduct; • Dissemination among the science community; • Ombudsmen: Familiar with the use or abuse of science; • Raise awareness and explain (the) content to decision-makers; (and) • Monitor and evaluate [IAS]	X	X	X	–	
Adoption of policy of outreach to industry to inform and involve it in the process of evolution of bio-safety and bio-security policies [India]	X	X	X	–	
Scientific academies might usefully be included in the development of codes of conduct [Sweden]	X	X	X	–	
Professional re-registration is one method of promulgating ethical standards. [Australia]	X	X	X	–	
Codes of Conduct required for professional researchers in the industrial sector [Japan Bioindustry Association]	X	X	X	–	
Ensure the scientific community implement measures capable of meeting the expectations placed upon them and communicate, communicate, communicate [DNV]	X	X	X	–	
Scientists… should actively conduct cooperation and communication. In order to learn others' advanced experience and promote… relevant work, scientists on the animal disease should communicate and cooperate with other countries and international organizations. [China]	X	X	X	–	

2005 Suggestions	Dimensions				Other aspects
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The WMA… can… • Help with writing a code • Help with publicising to medical researchers and their colleagues • Link to other professional groups • (offer) reassurance [WMA]					P
A code of conduct will require dissemination among the community that developed and agreed it, as well as those scientists at which it is aimed. [UK]	X	X	X	–	
Codes of conduct… could be the basis for the promotion of education and awareness of all stakeholders, research funders and the general public [Nigeria]	X	X	X	–	
The scientific press should be used as an avenue for making available to the largest possible number, data which should not remain secret but should be simultaneously aware that unrestricted information can encourage persons to make malicious use of knowledge [France]	X	X	X	–	
Possible channels for (an integrated communications strategy) might include: a. Print media, including scientific journals and newsletters of professional societies; b. Public relations activities, including a presence at events such as scientific conferences and industry conventions, distribution of brochures, stickers, posters, as well as poster or oral presentations or video displays; c. Collaborative promotions that encourage companies, professional societies or other relevant bodies to become involved in disseminating the message; and d. web links and shared internet resources, which are a powerful tool in the provision of educational material accessible to teachers in high schools, or safety officers in research and commercial establishments. [Australia]	X	X	X	–	
…to raise public awareness of the BTWC goals and objectives, administrative and criminal responsibility for violations of its provisions by…using widely electronic communications means, including the internet [Russia]	X	X	X	–	
…work out a program for an active media policy in order to make the scientists to think much more about their responsibilities and obligations working with biological and toxic materials or in research projects leading to results with real or potential harmful effect on humans, animals and plants [Bulgaria]	X	X	X	–	
The enormous power of the media should be used to enhance public awareness about the codes [Pakistan]	X	X	X	–	
It may also be helpful to establish procedures at the national level whereby those concerned about possible dual-use applications can seek guidance and report any concerns, including whistle-blowing on suspicious activities. [Australia]	X	X	X	–	
…it might be necessary to have a nominated person to deal confidentially with any queries relating to 'dual use' concerns. Internationally, an individual might turn to the International Union of Microbiological Societies, International Council for Science or the International Committee of the Red Cross. [Royal Society]	X	X	X	–	
Create avenues for individuals or organizations to report concerns [USA]	X	X	X	–	
Committees already in place to evaluate research projects on their scientific quality could be expanded to provide a vehicle to consider ethical aspects of research, including the potential for the results to be misused by terrorists or States in the development of BW. [Australia]	X	X	X	–	
Utilise mechanisms already in place for maintaining oversight of safety aspects of scientific work within the institution to also monitor biosecurity aspects of the work [Australia]	X	X	X	–	
Consider the risk that a particular line of research might be misused in BW applications. In many organizations, institutional review bodies already exist for assessing research proposals and the role of these could be expanded to also consider any risks arising from the dual-use nature of the work. In order to take into account changes in research direction or the emergence of unexpected results , risk assessment of research project should be ideally be undertaken both prior to the commencement of a project, and at regular intervals throughout the life of a project. [Australia]	X	X	X	–	
Utilise existing regulatory frameworks to monitor activities [ABPI]	X	X	X	–	
By incorporating ethical and risk assessments of proposed microbiological work within existing institutional body doing similar work, the mission and goals could be harmonized. [Canada]	X	X	X	–	

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Many States issue licenses or permits to scientists allowing research in the areas of genetic engineering and work with pathogenic microorganisms. In this regard, the awarding of a license or permit should be contingent upon receiving instruction about the content of the Biological Weapons Convention and the obligations of the scientist under this treaty, as well as instruction about ethical decision-making and risk assessment processes. Receiving a permit should further be contingent upon signing a code of conduct. [Germany]	X	X	X	–	
The consideration of the possible consequences of the scientific misuses could be encouraged by analyzing problems in the scientific councils or in the bioethical commissions of research institutes [Russia]	X	X	X	–	
In addition to any avenue available at national level, institutions may wish to establish internal procedures whereby those concerned about possible dual-use applications can seek guidance and report any concerns, including whistle-blowing on suspicious activities [Australia]	X	X	X	–	
Establishment, in universities and other scientific institutions, of procedures to monitor research activities and mechanisms to prevent dissemination of information that may be utilized for bioterrorism [India]	X	X	X	–	
Establish review boards for proposals and publications [USA]	X	X	X	–	
(Oversight measures should be) independent of government, (ensure) transparency (and be) far reaching in its mandate [Canada]	X	X	X	–	
The keystone to open reporting is the establishment of a trusted institutional body to which concerns can be communicated. [Canada]	X	X	X	–	
Establishing bioethics commissions in both public and private scientific organizations could be considered as a possible solution to the problem of adopting ethic(al) norms for scientists [Russia]	X	X	X	–	
Guidance and codes of practice may be useful but it is still the organization's responsibility to manage risks [DNV]	X	X	X	–	
(In biodefence programmes) interviews and surveillance by supervisors, workers and self reporting to enhance / ensure reliability and highest level of personnel conduct [USA]	X	X	X	–	
…it is necessary for us to support the constitution of national committees for ethics in science and life sciences… [Libya]	X	X	X	–	
Life sciences research projects should systematically be evaluated by peers and funding bodies. This evaluation should not only be on scientific quality, but also on ethical aspects, including the potential for use of result for hostile purposes [Nigeria]	X	X	X	–	
To incorporate the viewpoint of 'preventing abuse / misuse of science and technology' into peer review process may be acceptable, effective and practical means for scientists [Japan]	X	X	X	–	
Peer based local oversight (is) key [Canada]	X	X	X	–	
Implementation (considerations include) • relevance of the Code to a wide range of disciplines • formal structures for reviewing research may create contestation and regulation from above that is inimical to a voluntary code • weak links in the chain of compliance • lack of acceptance or ignorance among those who really count • information and raising awareness • creating a culture of commitment to appropriate use and access [Australia]	X	X	X	–	
…the most efficient way to ensure the effective implementation of the Convention bans at the national level is to develop and adopt an appropriate national legislation, including penal legislation [Russia]	X	X	X	–	
States may also wish to consider establishing a national body to consider and advise on particular difficult issues in respect of the potential misuse of scientific knowledge, materials or equipment by terrorists or states for biological weapons applications. [Australia]	X	X	X	–	
The Society strongly advocates the formation of a properly resourced international scientific advisory panel supporting the BTWC [Royal Society]	X	X	X	–	
An international scientific advisory panel could serve as a capacity building mechanism. [Sweden]	X	X	X	–	

2005 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
Using the relevant international scientific organisations to provide scientific input to the BTWC would be another way of encouraging appropriate oversight, with the International Council for Science (ICSU) and the International Union of Microbiological Societies (IUMS) being well placed to take this forward. [Royal Society]	X	X	X	–	
Evaluation should focus on both process and outcomes. The former assess the impact of the initiative [AAAS]	X	X	X	–	
Scientists preferred implementation through professional organizations or societies rather than government [AAAS]	X	X	X	–	
The government on its part should supervise their (research funding organizations) operation in accordance with its BTWC obligations [Russia]	X	X	X	–	
Adoption of a code does not guarantee its usefulness to researchers and others… Hence, the code should be viewed as only part of a larger effort to promote responsible research [AAAS]	X	X	X	–	
Code of conduct for scientists may provide a tool nationally adopted by each State Party to the Convention in implementation of its obligations under the Convention and in accordance with its constitutional process and put into force within its territory [Iran]	X	X	X	–	
The widespread adoption of codes of conduct, codes of practice or codes of ethics by all related sectors, such as biotechnology and life sciences, will provide very concrete and solid ground from which useful best practices can emerge. [RoK]	X	X	X	–	
A code of conduct or ethic(al) regulations should be adopted and implemented to educate, supervise and regulate scientists' behaviour in order to prevent achievements in their research from being abused or misused intended or unintended. This the integration of discipline and self-discipline could be realized [China]	X	X	X	–	
Importance of the research institution in developing accountability - 'if the university says, These are the rules, and you're going to live by them if you're going to work here, and you better do the best you can, then we start to believe them. [Center for Biosecurity, UPMC]	X	X	X	–	
…it is necessary to recognise that the most appropriate body to ensure the provisions of activities that do not serve peaceful purposes is indeed with the Biological Weapons Convention [Cuba]					R
Encourage oversight of science-based activities… (through) set(ting) explanations, communicate them and monitor performance [DNV]	X	X	X	–	
Ensure funding agencies have effective policies forbidding awards to organizations unless they can demonstrate that the expectations placed upon them have been met [DNV]	X	X	X	–	
Strengthen and improve the adoption and implementation of the code of conduct, and make the existing code to be aware, accepted and complied by more personnel in the scientific community [China]	X	X	X	–	
The most appropriate promulgation and adoption strategy will depend on the content and the 'ownership' of a particular code: for example, the strategy of government in relation to government-science may be different to the strategy of a professional body, or representatives of industry. [UK]	X	X	X	–	
Each community or stakeholder will develop its own plan for encouraging adoption. It may, however, include: setting a deadline for adoption by a professional organization; consideration of the code at an annual meeting; making adherence to a code a condition of supply to manufacturers; including information about any codes in education and training programmes; or amending agreements with contractors and other activities that may be funded by government, research or charitable foundations, or other bodies. [UK]	X	X	X	–	
…the behaviours of physicians are also under the supervision of public opinions. [China]	X	X	X	–	

2007 suggestions

The topics under discussion in 2007 were:

> ways and means to enhance national implementation, including enforcement of national legislation, strengthening of national institutions and coordination among national law enforcement institutions
>
> regional and sub regional cooperation on BWC implementation

The two topics in 2007 were about national implementation and regional and sub regional cooperation on BWC implementation. The discussion under the first of these included much on technology control issues which would clearly fall within the *Availability/Opportunity* dimension. While much of the second topic also fell within the *Availability/Opportunity* dimension, the main focus fell within the *Coherence/Engagement* dimension. There were few proposals that impinged upon the *Threat Ambition* and *Resilience* dimensions under either topic. Therefore, most of the proposals for the topics in the 2007 Meeting of Experts would have been defined as – X X –.

For the 2007 report of the MX, the proposals were grouped by discussion topic. The headings included here are the headings used by the ISU to group the suggestions.

Agenda Item 5 - Ways and means to enhance national implementation, including enforcement of national legislation, strengthening of national institutions and coordination among national law enforcement institutions

Implementing the Articles of the Convention

2007 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
Review national regulations of States Parties governing international exchanges and transfers in order to ensure their consistency with the objectives and provisions of Article X. [Cuba / NAM]	–	X	X	–	
[Create] national implementation mechanisms[s] with [a] clear division of responsibility and effective coordination. [China]	–	X	X	–	
[Ensure the existence of] Effective measures… [for] national implementation legislation, law enforcement, institutionalization and international cooperation. [China]	–	X	X	–	
Establish an implementation legal system in accordance with the Convention and respective constitutional process and in light of national situations. [China]	–	X	X	–	
Reviews, assessment and updates should be carried out in a timely manner. [China]	–	X	X	–	
A series of effective administrative measures should be adopted to ensure the strict law enforcement and punish violations accordingly. [China]	–	X	X	–	
An overview of BWC ways of implementation in BWC States would be useful [Netherlands]	–	X	X	–	

2007 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
Stress the need for coordination of inspection and enforcement of existing legislation and guidelines [Netherlands]	–	X	X	–	
A review process of the national laws is crucial to ensure that… national framework[s] on the control of biological substances [are] in tune with the international developments [Switzerland]	–	X	X	–	
Implementation [is] not only about enacting laws, enforcing legislation and putting in place oversight mechanisms. In addition, raising awareness of the Convention's provisions among the relevant stakeholders - be they from academia, defense or otherwise - is crucial [Switzerland]	–	X	X	–	
National implementation of the BTWC does not only mean to transform legally binding BTWC obligations into legislative and administrative measures. It also includes the full implementation of measures agreed at BTWC Review Conferences [Germany]	–	X	X	–	
[National implementation measures] can be categorized into three mechanisms: prohibition, management and implementation. [RoK]	–	X	X	–	
The goal of early disruption and prevention of bioterrorist acts is greatly advanced by criminalizing the conduct that leads up to the deployment of a biological agent through criminal offenses such as attempts and conspiracies. [USA]	–	X	X	–	
Laws and regulations [should be] subject to periodic update, taking into account the progressive nature of the developments in the field of science and technology and according to the country's needs. [Iran]	–	X	X	–	
National measures need to… ensure appropriate legislative, penal, administrative, security and policy measures [Japan]	–	X	X	–	
States Parties should fully implement their obligations under the Convention and adopt national measures, including the enforcement of legislative and administrative measures, to ensure their compliance with all the provisions of the Convention. [India]	–	X	X	–	
All BTWC States Parties need to assess regularly the adequacy and effectiveness of their existing national measures to enforce the Convention and adopt and enforce any additional measures that may be required. [Netherlands & UK]	–	X	X	–	
Bring science closer to the law enforcement agencies. [Australia]	–	X	X	–	
Improve the level of technical expertise available to law enforcement agencies. [Australia]	–	X	X	–	
National implementation should cover enactment of penal legislation, ensuring the safety and security of biological materials, strengthening disease surveillance capacities, and promoting training and awareness-raising. [Australia]	–	X	X	–	
Apply the Convention totally and transparently, with the only exception that no constraints must be placed on countries using such technology for peaceful purposes [Libya]	–	X	X	–	
Full implementation of measures agreed at past review conferences includes timely and regular submissions of CBMs [Russia]	–	X	X	–	
Provision of biosafety and biosecurity training to other States Parties helps fulfil Article X obligations. [Australia]	–	X	X	–	
Preference for checklist and drafting elements rather than "model legislation". [Australia]	–	X	X	–	
Comprehensive provisions for penalizing acts of producing, importing or exporting, transporting from one place to another, keeping, selling, buying or processing nuclear, radiological, biological and chemical weapons (WMD) should be enforced. Accordingly, national laws should ensure that violation of such provisions would constitute a punishable criminal office. Effective export controls and enhanced security in customs and ports are complementary to the implementation of the BTWC. [Turkey]	–	X	X	–	
The national measures by States Parties should be organized in a manner that would not appear as an obstacle to international cooperation for peaceful purposes. Furthermore, these measures should preserve and enhance peaceful cooperation, as a means to attain the objectives of the Convention enshrined in Article X. States Parties [are] urged to undertake to review their national regulations governing international exchanges and transfers in order to ensure their consistency with the objectives and provisions of all the articles of the Convention. [Iran]	–	X	X	–	

2007 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
The present follow- up mechanism is of limited scope and nature and cannot be considered as a substitute to real multilateralism and the Protocol on strengthening the Convention. Express expectation to resume negotiations on the Protocol on strengthening the Convention. [Iran]	–	X	X	–	
National and regional BWC efforts can be significantly enhanced with the creation of the ISU – it is indeed a milestone for the advancement for the BWC. The ISU should be supported by a vigorous BWC community in Geneva. [Philippines]	–	X	X	–	

Scope of national implementation measures

2007 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
Cover the whole range of prohibition articles of the Convention, export control, biosafety and biosecurity, public health, [and] infectious disease surveillance. [China]	X	X	X	X	
Enactment and effective enforcement of appropriate legislative measures… to prohibit and prevent the development, production, acquisition, transfer, retention, stockpiling and use of biological and toxin weapons[, including]… penal legislation[, as well as] tightened national export control and regulations of biosafety and biosecurity are essential elements for enhancing national implementation mechanisms. [RoK]	X	X	X	–	
[National implementation measures can include] a stringent biosafety and biosecurity regime. [Pakistan]	–	X	X	–	
[Establish a] regulatory framework… [to] respond to all the concerns and issues referred to in the text of the Convention, such as legal, regulatory and administrative measures, prohibition and control procedures, the promulgation of legislation conducive to their implementation, and the question of security, surveillance, supervision and related issues. [Saudi Arabia]	–	X	X	–	
Stipulate in detail the classification and management of pathogens and microorganisms, the storage and transport procedures [for] bacteria, virus[es] and [associated] specimens, examination and grant procedures regarding the qualifications of laboratories and their activities, the supervision of liabilities, etc. [China]	–	X	X	–	
Establish detailed procedures on the registration, production, research and supervisions of the veterinary drugs and veterinary biological products, as well as punishment provisions. [China]	–	X	X	–	
Establish [an] infectious disease surveillance system and improves the system of reporting, notifying and publishing regime for infectious diseases [China]	–	X	X	–	
Biosecurity requires awareness, vigilance, incursion response, and sound and effective management procedures. To be effective, however, these measures need to be backed by legislation, transparency and commitment. [NZ]	–	X	X	–	
Clear guidance for industry and academia on the implementation of national export licensing regulations and procedures, especially on intangible technology is a vital principle for all States. [UK]	–	X	X	–	
Basic common principles are, inter alia: • licensing requirement for handling dangerous biological materials,, • complying with specific requirements for gaining a license, i.e. professional knowledge and personal reliability,, • classification of organisms and experiments according to risk assessment,, • availability of safe and secure infrastructure according to risk classification,, • transfer of biological materials only between licensees,, • regulations for safe rail, road, air and waterway / sea transport,, • control of licensees, experiments and facilities by respective medical, veterinary, phytohygiene and plant / facility safety agencies of the Federal States. [Germany]	–	X	X	–	
[Require] legally binding implementing measures including penalties for violation of the prohibitions. [Germany]	X	X	X	–	

2007 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
Extraterritorial application of penal legislation contributes to international peace and security by preventing gaps in the enforcement of the prohibitions related to biological weapons. This is essential at least as long as the prohibitions related to biological weapons are not yet implemented on a global scale in an equally restrictive manner. [Germany]	X	X	X	–	
[Elements for national implementation measures include:] penal legislation… overseas application… duties and powers of responsible authorities [Japan]	–	X	X	–	
The implementation of appropriate biosafety measures through legislation regulating biological research, diagnostics and production facilities is a relevant obligation to the Convention. [Switzerland]	–	X	X	–	
Deterrence of acts involving the illicit possession or use of biological agents (or toxins) is accomplished through clear legal prohibitions and resulting penalties commensurate with the dangerousness of the offence. [USA]	–	X	X	–	
Implementation and enforcement of regulations [might cover:] • Regulat[ing]… possession, transfer and multiplication of listed (human, animal plant) pathogens or their toxins… • Listing scientists, laboratories and industrial facilities to perform research or practical use of those pathogens • Obligations to report laboratory or industrial incidents involving release of those pathogens… including obtaining, processing and transport of biological material from such cases. [Poland]	–	X	X	–	
Problems which remain to be regulated [include the] control and penalization of spread of know-how and propaganda related to production of biological weapons, including [a] ban on certain web pages. [Poland]	–	X	X	–	
[An] effective biosecurity regime is essential. [NZ]	–	X	X	–	
A comprehensive national biosecurity strategy [includes:] • Government and public commitment to biosecurity; • Capacity and capability to identify, prevent and manage biosecurity risks and threats; • A cooperative and consultative approach to identify biosecurity risks; • Government and stakeholder partnerships to ensure adequate funding for biosecurity activities (these include central, regional and local government, importers / exporters, industry, community groups…, tertiary and science institutions, pest management companies); • Clear accountabilities for biosecurity; • A legislative framework that meets… biosecurity needs; • Ensuring that exotic biosecurity risks are managed off shore where practicable; • Consistent assessment of biosecurity risks across and within organisations with responsibilities for biosecurity; • Consistent application of cost-effective risk-mitigating measures for identified risks; • Communication programmes that increase the public's awareness, understanding and ownership of biosecurity; • Biosecurity research…; • Ensuring that relevant international biosecurity obligations are met. [NZ]	–	X	X	–	
[Develop] appropriate guidelines for monitoring and conducting research activities on new substances and / or newly emerged viruses. [Iran]	–	X	X	–	

2007 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
Legislative and executive organizations [could] consider the following principles in their work: • Strengthening preparedness level as well as safety and security measures in dealing with toxic or dangerous substances (through issuing directives for safety of physical facilities where biological experiments are conducted, establishing national standards, issuing directives for monitoring and surveillance of biological experiments as well as determining administrative and executive roles and responsibilities for conducting such experiments), • Taking maximum advantage of the active networks and existing potentials in the country (through expansion of training networks), • Utilizing global scientific resources such as those offered by the UN Agencies, • Close monitoring of any cases of violation of the Convention in different parts of the region and in any other part of the world as well as analysis of their human and environmental effects, • Active participation in submitting the confidence building measures report, • Scientific cooperation both in theoretical as well as practical aspects for upgrading relevant International health regulations, • Holding training courses and specialized gatherings in order to establish scientific and ethical codes for scientists and experts. [Iran]	–	X	X	–	
Salient features of biosafety rules [include:] • Risk assessment and risk management • Certification of high level containment laboratories • Production of living modified organism can only commence with consent of National Biosafety Committee • The Biosafety Guidelines… conform to the international guidelines of UNIDO, FAO, WHO and UNEP. [Pakistan]	–	X	X	–	
Penal provisions are required for example, for breaches of biosafety, biosecurity and transfer control requirements and preparatory and assistance activities that would violate the BTWC's Article I. [Netherlands & UK]	–	X	X	–	
[National implementation measures could address:] • the rights and duties of individuals, natural-person entrepreneurs, and legal entities as regards the prohibition of the development, production, stockpiling, keeping and use of biological weapons and their destruction, when handling them and detecting highly hazardous biological agents and toxins that might be used in a manner infringing the prohibition of biological weapon; • the conditions for handling highly hazardous biological agents; • the role the State Administration in the field of compliance with the prohibition of biological weapons;… • criminal sanctions. [Slovakia]	–	X	X	–	
Respect relevant World Health Organization guidelines and recommendations for organizing individuals and institutions directly or indirectly involved in any laboratory activities on biological agents and toxins. [Iran]	–	X	X	–	
Apply specific legislation in the areas of biosafety and bioprotection. [Cuba / NAM]	–	X	X	–	
Activities which involve biological risk [should be] subject to regulatory procedures which ensure safety in these activities, evaluating the risks that these activities may pose to human health and the environment. [Cuba / NAM]	–	X	X	–	
Establish a control and inspection machinery for food products and... ensure this is properly used… [and] promulgate legislation on the control and inspection of food products. [Libya]	–	X	X	–	
While the implementation of the obligations contained in the Convention is first and foremost an obligation of States Parties, ... regional and sub-regional cooperation approaches complement and reinforce national measures [Portugal / EU]	–	X	X	–	
Revitalize the interest in and the use of CBMs and… increase the transparency in the implementation of the BTWC. [Portugal / EU]	–	X	X	–	
The UN Secretary General's mechanism [is] a useful instrument in case of alleged use of biological weapons… [there is a need to] contribute actively to keeping the network of experts and laboratories up-to-date and on stand-by. [Portugal / EU]	–	X	–	X	
Full implementation of measures agreed at past review conferences includes timely and regular submissions of CBMs. [Russia]	X	X	X	–	
For the sake of enhancing the effectiveness of national export controls give regular briefings to national exporters, in order to raise awareness and update them on new developments, and engage them in consultations, conferences and seminars to create an atmosphere of cooperation and partnership. [Russia]	–	X	X	–	

2007 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
[National implementation measures can include:] • A well structured programme for capacity building through taking all the necessary national measures to implement the Convention at the national level… • The establishment of a focal point… • The drawing up of national legislation, as well as • Providing support to strengthen national scientific institutions and national enforcement agencies. [Sudan]	–	X	X	–	
Primary Legislation [can] typically cover: • Definitions • Composition, mandate and powers of National Authority • Prohibitions • Penalties for violations • Extraterritorial application to nationals • Requirement to submit data… • Requirement to protect confidential information. [OPCW]	–	X	X	–	
Subsidiary regulations [can] typically cover: • Licensing of production facilities • Import / Export controls • Procedures for submitting… data. [OPCW]	–	X	X	–	
Areas of significance for successful implementation [include:] • Legislation and guidelines for handling dangerous pathogens, including genetically modified organisms • Lists of pathogens and toxins that are subject to specific guidelines and legislation and • The importance of stringent biosafety and biosecurity regimes. [Sweden]	–	X	X	–	
It is important to include dual-use and potential for misuse of research in the concept of biosecurity… [as] this issue is not fully covered in guidelines, regulations and oversight of work with pathogens and toxins including genetically modified agents. [Sweden]	–	X	X	–	
It is... important to bear in mind that it might be impossible to cover every possible situation by guidelines and registration… it is important to stress that an element of self-governance is important for implementation. [Sweden]	–	X	X	–	
The States Parties to the Convention have different constitutional and legal processes in implementing the Convention. Therefore [a] "one size fits all" approach should be avoided. [Iran]	–	X	X	–	

Managing National Implementation

2007 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
[Enhance] the publicity of relevant laws and regulations… through various kinds of seminars and training courses, with a view to raising the awareness and self discipline of relevant enterprises, research and education[al] institutions and personnel. [China]	–	X	X	–	
Enhance and consolidate the mechanisms for the management of the relevant laws. [RoK]	–	X	X	–	
Faculties and students of leading universities and research institutions…[can be] sensitised to their responsibilities for biosafety and biosecurity. [Pakistan]	–	X	X	–	
Stipulate the functions and responsibilities of relevant competent authorities responding to public health emergencies, and the classification, surveillance, reporting, emergency response, and damage control of such emergencies [China]	–	X	X	–	
Standardise the procedures for disease emergency response, stip[ulating] the responsibilities of the competent authorities, enterprises and individuals, and improve the emergency response mechanism. [China]	–	X	X	–	
Publicity of relevant laws and regulations [can be] enhanced through organising regular training courses and lectures and distributing pamphlets, with a view to helping the enterprises rigorously implement relevant laws and regulations and run their business accordingly. [China]	–	X	X	–	

2007 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
A national implementation mechanism with clear division of responsibility and effective coordination should be enhanced. [China]	–	X	X	–	
Publicity of relevant policies and laws should be enhanced with a view to raising the awareness and self-discipline of relevant enterprises, research and education institutions and personnel. [China]	–	X	X	–	
A holistic approach is needed to engage and involve government, civil society and the private sector. [Philippines]	–	X	X	–	
An overall bio-preparedness approach is recommended. This includes awareness raising, for example on existing bio-security and biosafety legislation. [Netherlands]	–	X	X	–	
Extension of education and training capacities and capabilities [is needed]. [Switzerland]	–	X	X	–	
[It is important to] Maintain of an effective inter-agency response process to deal with emergency situations, including those relevant to the work of [the] Convention. [NZ]	–	X	X	–	
Clear guidance for industry and academia on the implementation of national export licensing regulations and procedures, especially on intangible technology, is a vital principle for all States. [UK]	–	X	X	–	
There are difficulties, in some cases, in creating domestic BWC awareness given the need to mobilise diverse government agencies, parliaments, and other stakeholders to initiate ratification or accession or to introduce and implement legislation. Raising public awareness and gaining support is also a major challenge. [Portugal / EU]	–	X	X	–	
Provide examples of best practice, including an illustration of how companies might approach compliance procedures to deal with [legislation]. [UK]	–	X	X	–	
Develop and institute BWC implementation plans. [Netherlands & UK]	–	X	X	–	
Need to raise awareness about BTWC compliance with a wider range of national stakeholders than are targeted by standard diplomatic and other assistance activities, and the benefits of conducting assistance activities at the sub regional and national levels. [Netherlands & UK]	–	X	X	–	
States are frequently unaware that legislation already in force is relevant to implementing the Convention, particularly biosafety legislation.. [Netherlands & UK]	–	X	X	–	
Diversity of expertise present at the meeting of Experts is valuable [for enhancing domestic cooperation]. [Pakistan]	–	X	X	–	
Identify an institution that would lead the process of national implementation in a way that would result in adopting meaningful legislation responding properly to the requirements of the afore-said obligations and challenges. [Slovakia]	–	X	X	–	
The functions of the National Authority… are to: • collect, evaluate and process information and requirements concerning domestic implementation of the Biological Weapons Convention; • exercise, within the existing legislative framework, supervision over substances and activities that have a potential to be used for development, production and use as biological weapons; • identify fields requiring amendments in the existing legislation… in conformity with the commitment to strengthen the BWC through domestic measures; • cooperate… with the Ministries of Finance, Economy, Defense, Agriculture, Justice, Education, Interior, Foreign Affairs and Environment; • coordinate the preparation of relevant legislative proposals related to the prohibition of biological weapons; • submit the relevant proposals to the Government for decision; • process, within the Ministry of Health, the data for the annual CBMs reports and pass them on to the Ministry of Foreign Affairs; • participate in the expert and annual sessions of the States Parties to the BWC and other relevant events related to the prohibition of biological weapons. [Slovakia]	–	X	X	–	

2007 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
Strengthen the monitoring mechanisms of biological agents which are covered by the Convention as well as the equipment and technology that these involve[, including by:] • The classification of biological agents into risk groups; • A National Authority for biosafety and the Biological Weapons Convention; • An inspection system to verify compliance with existing legislation; • A system of licensing for all activities which involve the use of biological agents as well as for the construction and operation of facilities which entail a biological risk; • Safe microbiological practices for the handling of biological agents, as well as animal and plant agents for experimentation purposes, whether these be natural, exotic or genetically modified organisms; • Responsibilities ... for the owners of facilities and the heads of laboratories which deal with biosafety and bioprotection; and • A National System for Accounting and Monitoring of Biological Materials as well as the equipment and technology applied for these materials. [Cuba]	–	X	X	–	
Stimulate the development of human resources which are working in the area of science in general and activities related to the regulation and control of the monitoring of science on the basis of the aim of enhancing the technological level as well as the professional level and the moral and ethical behaviour which is shown in actual daily practice [Cuba]	–	X	X	–	
Compliance with the BTWC – ways and means to enhance national implementation – strengthening of national institutions [Italy]	–	X	X	–	
Optimise national data collection processes to ensure quality, comprehensiveness and punctuality of CBM submissions. [Switzerland]	–	X	X	–	
The National Authority and inter-ministerial coordination [can involve:] • Ministry of Foreign Affairs • Ministry of Defence • Ministry of Economy and / or Industry or Commerce • Ministry of Health • Ministry of Environment • Ministry of Agriculture • Ministry of Labour • Ministry of Justice or Attorney-General • Ministry of Finance and Central Bank • Customs [OPCW]	–	X	–	–	
Need to raise the awareness [of obligations under the Convention and dual-use research] among researchers. [Sweden]	X	X	X	–	
Need to raise the awareness not only among all currently involved scientific research like academia, institutes, industry, funding agencies and scientific journals. It is equally important to include course on the obligations under the BWC and dual-use research in the curriculum of higher education. [Sweden]	–	X	X	–	
Great value if member states shared their experiences and ideas of how to raise awareness of the convention and dual- use research. Like most topics relevant for the implementation of the convention this is also an area where regional and international cooperation would be highly beneficial. [Sweden]	–	X	X	–	
Set up national committees on bioethics. [Ukraine]	–	X	X	–	
Share from the experiences and expertise of delegations and relevant organizations on best practices, including ways and means to strengthen… national capacity in the implementation of the Convention. [Nigeria]	–	X	X	–	

Enforcing National Implementation Measures

2007 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
[Sharing] national experience in law enforcement to address the threats of bioterrorism would be particularly useful[, including]… policies, practices and enforcement measures in this area. [Pakistan]	X	X	X	X	

2007 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
Adopt best practices for law enforcement and educating and training law enforcement personnel. [China]	–	X	–	–	
[Take steps to ensure] Law enforcement capacity [is] improved. [China]	–	X	X	–	
Successful bioterrorism investigations generally require two fundamental elements. First, because a bioterrorism event can affect national security, these investigations should be grounded in a national strategy. Second, from a law enforcement perspective, to prevent a deliberate or accidental release of a biological agent (or toxin), investigators may need to invoke legal process to apprehend would-be perpetrators. [USA]	X	X	X	X	
The national investigative strategy should answer three basic questions: (1) What are the procedures for threat assessment and domestic coordination? (2) What are the protocols for joint investigations and role responsibilities among various public health and law enforcement agencies? and (3) Is there a comprehensive set of laws that correspond to the strategy so that the likely scenarios involving the illicit use or possession of biological agents or toxins can be fully addressed by law enforcement and public health authorities? [USA]	X	X	X	X	
Establishing clear lines of communication among public health and law enforcement authorities before an outbreak or attack is crucial for successful joint investigations. [USA]	–	X	X	X	
Key aspects of effective investigations [include:] • Threat assessment and domestic coordination • Joint investigations and role clarity [USA]	–	X	–	X	
A multi-sectoral approach is essential in preparing national plans for counter-terrorism. [Japan]	–	X	–	X	
National measures need to be enforced so as to… • Designate and establish appropriate national authorities • Establish a network among national institutions • Coordinate with regional / international organizations • Improve the capacity on counter-terrorism. [Japan]	–	X	–	–	
Diversity of expertise present at the meeting of Experts is valuable [for enhancing domestic cooperation]. [Pakistan]	–	X	–	–	
It is no use having perfectly crafted legislation if it is not effectively enforced. Attention must therefore be paid to the practicalities of effective and sustained enforcement. [UK]	–	X	–	–	
Develop… an Inspection System which makes it possible to verify compliance with the legislation in force. [Cuba]	X	X	X	X	
Investigation by law enforcement agencies of counter- proliferation and bioterrorism issues can be very technical in nature. Scientific and technical support to the investigators is essential. [Australia]	–	X	–	X	
Agencies with specialised CBR technical expertise can greatly assist the prevention of CBR events. [Australia]	X	X	X	–	
Effective threat assessment must recognize that the deliberate or accidental release of a biological agent can manifest itself in one of two ways. First, an "overt release" describes a situation where the circumstances of the release plainly demonstrate a criminal intent (e.g., by the nature of the delivery system or the perpetrator announces the attack). Second, a "covert release" involves an unrecognized or unannounced release whereby the appearance of illness may be the first sign of a possible attack. [USA]					D
In assessing the overall effectiveness of an enforcement strategy, it is useful to measure that strategy against the likely scenarios law enforcement and public health authorities may encounter concerning the release of biological agents. Viewed collectively, the threats posed by the illicit use or transfer of biological agents or toxins may manifest themselves in one of five different scenarios. Listed in order of decreasing frequency of occurrence (and increasing severity of risk to public health), these scenarios include (1) "hoaxes" or false reports of biological agents being released; (2) illicit transfers involving certain particularly dangerous pathogens; (3) possession of an unreasonable quantity or type of a biological agent; (4) possession of a biological agent (or toxin) with the intent to use it as a weapon; and (5) the actual use or deployment of a biological agent or toxin as a weapon of mass destruction. [USA]	–	X	X	X	

2007 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
Threat / Risks [assessments should:] • Assess the intention • Assess the capability • Assess the vulnerabilities • Assess the consequences. [Interpol]	X	X	X	X	
Key considerations in quarantine decisions: [there are] 3 major questions examined within the specific context of a particular outbreak: • Do public health and medical analyses warrant the imposition of large scale quarantine? • Are the implementation and maintenance of large-scale quarantine feasible? • Do the potential benefits of large-scale quarantine outweigh the possible adverse consequences? [Interpol]	–	–	–	X	

International and regional cooperation and assistance
For considerations, lessons, perspectives, recommendations, conclusions and proposals, see the section on Agenda Item 6 below.

Transfers and export controls

2007 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
Strengthen controls over export, re-export, trans-shipment and transit of goods, technologies, material and equipment. [Pakistan]	–	–	X	–	
Stipulate in detail the classification and management of pathogens and microorganisms, the storage and transport procedures [for] bacteria, virus[es] and [associated] specimens, examination and grant procedures regarding the qualifications of laboratories and their activities, the supervision of liabilities, etc. [China]	–	–	X	–	
[Impose] effective export controls on dual-use biological agents and related equipment and technology. [Attach] great importance to the establishment of… effective [national] export control mechanism[s]. [China]	–	–	X	–	
Very important is the adoption and enforcement of effective export control measures by requiring all states to criminalise proliferation. [Georgia]	–	–	X	–	
Clear guidance for industry and academia on the implementation of national export licensing regulations and procedures, especially on intangible technology, is a vital principle for all States. [UK]	–	–	X	–	
Maintain records of electronic transfers. [UK]	–	–	X	–	
It is important to keep export control legislation and regulations up-to date in light of changing circumstances. [UK]	–	–	X	–	
[There is a] need for clear guidance for industry and academia on the implementation of national export licensing regulations and procedures, especially on intangible technology. [UK]	–	X	X	–	
Attention must ... be paid to the practicalities of effective and sustained enforcement. [UK]	–	X	X	–	
Provide examples of best practice, including an illustration of how companies might approach compliance procedures to deal with [legislation] [UK]	–	X	X	–	
All imports are [to be] regulated [RoK]	X	–	X	–	
Implementation and enforcement of regulations [might cover:] • Regulat[ing]… possession, transfer and multiplication of listed (human, animal plant) pathogens or their toxins… • Listing scientists, laboratories and industrial facilities to perform research or practical use of those pathogens • Obligations to report laboratory or industrial incidents involving release of those pathogens… including obtaining, processing and transport of biological material from such cases. [Poland]	–	X	X	–	

2007 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
For the sake of enhancing the effectiveness of national export controls give regular briefings to national exporters, in order to raise awareness and update them on new developments, and engage them in consultations, conferences and seminars to create an atmosphere of cooperation and partnership. [Russia]	–	X	X	–	

Agenda Item 6 - Regional and sub-regional cooperation on implementation of the Convention

2007 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
Adopt positive measures to promote technology transfer and international cooperation, in particular to the developing countries, for the benefit of all mankind. [Cuba / NAM]	X	X	X	–	
Provide, upon request, where in a position to do so, assistance to other States Parties in enacting and enhancing national legislation to implement the Convention. [Cuba / NAM]	–	X	X	–	
Facilitate cooperation, where in a position to do so, in particular capacity building, as well as technology transfer in the area of custom control to facilitate the implementation of relevant provisions of the Convention. [Cuba / NAM]	–	X	X	–	
[There is a need for] more effective realization of the objectives in Article X of the Convention. [Pakistan]					R
States Parties should actively support and take part in international and regional cooperation on implementing the Convention [China]	–	X	X	–	
On the basis of equality, cooperation and mutual respect, States Parties should exchange successful experience and practice and provide assistance to those countries in need through technological exchanges, financial support and regional workshop[s], to help improve implementation capacity. [China]	–	X	X	–	
[It is important] to cooperate with… countries to review legislation and draft legislative or administrative measures related to the BWC. [Portugal / EU]	–	X	X	–	
Conduct assistance activities at the sub-regional and national level among States that share language, legal and cultural traditions, have similar biotechnology industries and have a history of co-operation. [Netherlands & UK]	–	X	X	–	
[Pursue] international cooperation… through international agreements, information exchange, further development and strengthening of international cooperation in the area of biological and genetic safety. [Ukraine]	–	X	X	–	
Several States expressed the need for support in convincing their national key stakeholders of the importance of the BTWC. Creating interest in the Convention may be achievable when linked with assistance in improving public health, e.g. the development of local diagnostic and treatment capacities to deal with natural as well as unusual outbreaks of disease, or with technical assistance in capacity building for customs and immigration. [Portugal / EU]	–	X	X	–	
Outreach projects [can include:] • Exchange seminars • Study visits… • Legal review • Institutional capacity building • Industry outreach • Reference guidebook • Internet information centre • Feasibility study on electronic processing • Export control conference [Germany]	–	X	X	–	
An effective approach to enhance regional cooperation [includes measures to:] • Ensure active participation from relevant countries • Demonstrate the significance of participating in regional cooperation • Take into account regional characteristics [Japan]	–	X	X	–	
Informal cross-border network[s] among experts, etc, can be useful. [Japan]	X	X	X	X	

2007 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
Capacity building for persons working in national authorities and in the health sector [is important]. [Japan]	–	X	X	–	
Regional and international cooperation are essential. [Japan]	–	X	X	–	
International research and development collaboration… objectives [could] foster international linkages in biotechnology to: • Assist in implementation of national programmes through transfer of knowledge; • Open avenues for interaction in areas leading to acquisition of knowledge not available within the country; • Build bridges to promote and strengthen bilateral ties though participation in joint research and development programmes; • Build capacity in high-technology areas through training and exchange programmes; • Share expertise in science and technology and large scale facilities with developed and developing nations. [India]	–	X	X	–	
Regional and bilateral cooperation [could include:] • Joint research and development projects • Exchange of scientists • Training / fellowship of scientists • Exploratory visits • Consultative visits • Joint workshops / seminars • International / global meetings • Exchange of information • Electronic informatic networks • Exhibitions • Biotech products and trade related activities. [India]	–	X	X	–	
Need closer cooperation, not only in the global level but also at the regional level. [RoK]	–	X	X	–	
The Implementation Support Unit should collate information of expertise available with States Parties. [Pakistan]	–	X	X	–	
Due to the cross-border nature of bio-terrorism, it is critical to ensure effectively prohibition and prevention against biological weapons among neighbouring countries. [Japan]	–	X	X	–	
Assist partner countries in the region to understand the threat, enhance the security of their high-risk biological materials, and develop and implement enforcement legislation. [Australia]	–	X	X	–	
Promote cooperation and coordination between traditional security (policy and operational) agencies and new players such as health and agricultural agencies which, traditionally, have had little counter-proliferation or counter-terrorism involvement. These agencies have technical and administrative expertise and practises to mitigate the effects of natural diseases which can be adapted to protecting against deliberately propagated disease. [Australia]	–	X	X	–	
[Pursue] further cooperation, particularly in respect of [the] region, to share information to counter the threat of bioterrorism, and build capacity to: (i) assess the risks posed by individual biological agents; (ii) develop and enhance laboratory biosafety and biosecurity programs; (iii) develop and implement supporting legislation; (iv) detect, diagnose, contain and effectively report disease epidemics; and (v) ensure effective inter-agency and international communication and cooperation. [Australia]	–	X	X	–	
[There is] a need… for tailor-made interventions in individual countries – e.g.… legislative drafters doing separate country visits. [NZ]	–	X	X	–	
[Provide] assistance to implement Article IV, including development penal legislation, ensuring the safety and security of biological materials, strengthening disease surveillance capacities, and promoting training and awareness-raising raises barriers to bioterrorism. [Australia]	–	X	X	–	
Great value if member states shared their experiences and ideas of how to raise awareness of the convention and dual-use research. Like most topics relevant for the implementation of the convention this is also an area where regional and international cooperation would be highly beneficial. [Sweden]					D

2007 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
Objectives of BWC regional workshops [can include:] • Enable participants from regional BWC States Parties to meet and become involved in an ongoing regional dialogue and cooperation; • [Ensure] all States Parties in [the] region obtain the security benefits derived from full and effective implementation of the BWC…; • Help States Parties in [the] region become better engaged with the… Geneva-based BWC work programme; • Reduce the possibility of the inadvertent assistance by States in [the] region to biological weapons programmes being developed elsewhere; • Reduce the possibility of bioterrorism in [the] region. [Australia]	–	X	X	–	
[Follow-up activities from regional workshops include:] • Encouraging bilateral and regional sharing of information on national implementation measures and the provision of technical assistance focusing on the capacity building of States Parties; • Establishing regional partnerships on enhancement of biosecurity; • Strengthening national and international efforts and broadening existing mechanisms for surveillance, detection, diagnosis, and combating infectious diseases; • Exploring the possibilities of adopting a regional code of conduct for scientists; • Exploring the possibilities of taking regional concerted action to promote awareness among scientists; • Internet network of workshop participants; • Holding further workshops…; • Raise awareness of the relevant BWC issues; • Encouraging consideration of the most useful approaches in the region to address the requirements; • Developing guidelines and concrete steps by participants to assist the States Parties in the full and effective implementation of the BWC. [Australia]	–	X	X	–	
Key lessons [from regional activities include:] • Benefits of co-hosting • Benefits of regional perspectives • Inclusion of other organisations • [everyone] on a steep learning curve • no one size fits all • tailor made solutions. [Australia]	–	X	X	–	
Regional engagement activities [include:] • 'Traditional' regional seminars / workshops; • 'Specific issue' BWC regional workshops – tailored to specific requirements… or particular requests, including: legal requirements, security of pathogens and toxins, and bioterrorism prevention; • National workshops – awareness raising of issues among government officials from a range of departments and agencies who will have responsibilities for one or more of the various obligations… under the BWC; • National conferences – awareness raising among the broader biological sector, ranging from academic researchers, government scientists, research institutes, biotechnology industry; • Regional security meetings – inclusion of BWC-related agenda item(s) in broader regional security meeting, including: law enforcement meetings, counter-terrorism meetings, customs / border control meetings; • Other regional engagement activities – including inclusion of BWC-related agenda item(s) in ministerial level consultations, regular high-level bilateral consultations. [Australia]	–	X	X	–	
The relationship between Article IV on national implementation and Article X on cooperation is synergistic – encouraging international cooperation in assisting States Parties in national implementation of the Convention. [USA]	–	X	X	–	
Interpol plays a very important role in helping its member states, through their distinct channels, to strengthen their law enforcement capabilities in the bioterrorism area. [The United States views] Interpol's activities as complementary to those being pursued by BWC States Parties. Their activities demonstrate the urgency of our efforts, and as States Parties we are in a position to help Interpol in developing an accurate database of national legislation that underpins multinational efforts to catch and prosecute entities engaging in the use of biology as a weapon. [USA]	–	X	X	–	
Continued liaison between Parties, the OPCW and our newly established Implementation Support Unit – as well as Interpol and other organizations active in the area – will be key to our collective security grounded in comprehensive national legal mechanisms. [USA]	–	X	X	–	

2007 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
The importance of regional coordination and support can hardly be emphasized enough. Each region is confronted with its own particular threats ad challenges. As coordination is ongoing through trade and cultural channels, the same should be true regarding weapons of mass destruction. Those of us gathered here are most aware that biological dangers can stem from many sources, both natural and man-made, and do not respect national boundaries. [USA]	–	X	X	–	
[The United States] invest[s] considerable resources in the areas of disease surveillance, detection, diagnosis, and response ... it is in the interest of all countries to work together to address the threat of established as well as newly-emerging diseases. [USA]	–	X	–	X	
Strengthening preparedness for naturally occurring diseases is the best defence ... against the potential misuse of biological agents and toxins as weapons; thus, by helping other States Parties strengthen their health systems, we assist them in preparing for response to the use of biological weapons and therefore contribute directly to the objectives of the BWC. [USA]	–	X	–	X	
The denial to adhere to the Treaty, by those non-parties which are advanced in biotechnology, poses a serious threat to the international and regional peace and stability. [Iran]					R
National and regional BWC efforts can be significantly enhanced with the creation of the ISU – it is indeed a milestone for the advancement for the BWC. The ISU should be supported by a vigorous BWC community in Geneva. [Philippines]					P
Regional and sub-regional cooperation are crucial to the implementation of the Convention, particularly in the areas of strengthening of national institutions, coordination among law enforcement agencies and confidence-building measures (CBMs). [Nigeria]	–	X	–	–	

2008 suggestions

The topics under discussion in 2008 were:

> national, regional and international measures to improve biosafety and biosecurity, including laboratory safety and security of pathogens and toxins
>
> oversight, education, awareness raising, and adoption and/or development of codes of conduct with the aim to prevent misuse in the context of advances in bio science and bio technology research with the potential of use for purposes prohibited by the Convention

The two topics in 2008 were about pathogen security and codes of conduct. Most of the suggestions under pathogen security fall within the *Availability/Opportunity* dimension, there are also aspects that fall within the *Coherence/Engagement* dimension. The codes of conduct discussions followed on from those in 2005 where again much of this work falls within the *Availability/Opportunity* dimension, with aspects of the *Coherence/Engagement* dimension also being relevant. Again, efforts towards awareness raising would also impinge upon the *Threat Ambition* dimension in general terms. It therefore follows that most of the proposals within the 2008 Meeting of Experts would be defined as either – X X – or X X X –.

Agenda item 5: National, regional and international measures to improve biosafety and biosecurity, including laboratory safety and security of pathogens and toxins

2008 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
Biosafety ... is the set of practices and technologies aimed at protecting people from the hazards of occupational exposures to pathogens and toxins ... Biosecurity is ... related to the measures taken to guarantee the protection of the biological material, technologies and information from loss, theft, misuse, diversion and intentional release. [Cuba / NAM]	–	X	X	–	
Issues relating to biological security, in other words the principles, technologies and practices established to prevent unintentional exposure to biological agents and toxins or their accidental discharge, and issues related to biosafety, in other words protections, controls and traceability of biological substances employed to prevent unauthorized access to these substances, their loss or threat, malevolent use or abuse, are two complementary axes intended to minimize the risks and challenges arising for the Convention. [France / EU]	–	X	X	–	
"Biosecurity": Institutional and personal security measures and procedures designed to prevent the loss, theft, misuse, diversion or intentional release of pathogens, or parts of them, and toxin-producing organisms, as well as such toxins that are held, transferred and / or supplied by Biological Resource Centres. [OECD]	–	X	X	–	
Laboratory biosafety describes the containment principles, technologies and practices that are implemented to prevent the unintentional exposure to pathogens and toxins, or their accidental release ... Laboratory biosecurity describes the protection, control and accountability for valuable biological materials within laboratories, in order to prevent their unauthorized access, loss, theft, misuse, diversion or intentional release. [South Africa]	–	X	X	–	

2008 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
Biological safety (or biosafety) includes specialized practices, procedures and proper use of equipment and facilities, in order to assure the safe handling and disposal of infectious organism or biological material which may harbour infectious organisms. It includes the safe management of recombinant DNA (rDNA) activities ... Biosecurity is a growing discipline that leverages and institutes biosafety programs and professionals, and fuses physical security practices and technology to safeguard biohazardous materials such as microorganisms and toxins. [ABSA]	–	X	X	–	
"Biosafety" is a term used to refer to the appropriate containment of pathogens in the laboratory environment, both to prevent exposure of workers within the laboratory, and exposure of people, animals and other vulnerable organisms in the external environment. "Biosecurity" in this context is used to refer to the secure storage and use of dangerous pathogens and toxins to reduce the risk of malicious use. [UK]	–	X	X	–	
Biosafety describes the containment principles, technologies and practices that are implemented to prevent the unintentional exposure to pathogens and toxins, or their accidental release ... Laboratory Biosecurity describes the protection, control and accountability for valuable biological materials within laboratories, in order to prevent their unauthorised access, loss, theft, misuse, diversion or intentional release. [Canada / JACKSNNZ]	–	X	X	–	
Biosafety correlates to the obligation under the Convention to ensure that physical protection measures are taken, which prevent the accidental release of pathogenic microorganisms and strengthen personal protection, with a view to protecting population and the environment. In the setting of the Convention, biosecurity is commonly used to refer to security and oversight mechanism of pathogenic microorganisms and relevant resources, to prevent unauthorized acquisition, retention, use, transportation or deliberate release of these materials and bioterrorism activities. [China]	–	X	X	–	
Biosafety - is understood as measures taken for the safety of personnel handling pathogens and toxins and of others in the laboratory, including accident prevention, as well as for preventing the contamination of people and the environment outside the laboratory through the leakage of pathogens and toxins. In ensuring biosafety, the approach of safety management is employed .... Biosecurity - is understood as measures taken for preventing the illicit development, acquisition and use of pathogens and toxins and relevant information and technology for purposes that run counter to the aims of the BWC. In ensuring biosecurity, the approaches of non-proliferation and counter-terrorism are employed. [Japan]	–	X	X	–	
Biosecurity comprises measures that minimize the possibility of biological agents being deliberately used to cause harm. This distinguishes it from biosafety, which involves measures aimed at protecting people and the environment from unintentional impact of biological agents, and includes workplace health and safety issues and the prevention of the accidental release of such agents. The Biological Weapons Convention performs an important role in addressing bioterrorism threats, by obliging States Parties to strengthen national biosafety and biosecurity measures. An effective regulatory system, supported by communication and education strategies are important measures to improve security of biological agents. [Australia]	–	X	X	–	
Biosafety is ... the safety condition achieved through a series of actions designed to prevent, control, reduce or eliminate risks inherent to activities that may be hazardous to the health of humans, animals, plants and to the environment. [Brazil]	–	X	X	–	
In regard to ... biosecurity, Brazil agrees with the priority, given within the BWC, to both biosecurity in public health settings (which concerns "the protection of microbiological assets from theft, loss or diversion, which could lead to the inappropriate use of these agents to cause public health harm") and "Laboratory biosecurity" (as meaning "the protection, control and accountability for valuable biological materials within laboratories, in order to prevent their unauthorized access, loss, theft, misuse, diversion or intentional release"). It is necessary, however, that other aspects of biosecurity are also taken into account. [Brazil]	–	X	X	–	

2008 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
Among others, Brazil also deems relevant the analysis of biosecurity related to veterinary and agricultural fields (denoting "protecting biological resources from foreign or invasive species"). The lack of this type of biosecurity could lead, by means of criminal insertion of such foreign and / or invasive species, to the intentional destruction of crops and / or livestock, with deleterious effects not only to the economy but also - and most importantly - to food security around the globe. These concerns are related to the concepts of bioterrorism and biopiracy, which are also of relevance to the BWC. It is the Brazilian view, therefore, that the excessive narrowing of the definition of biosecurity should be avoided. [Brazil]	–	X	X	–	
This document defines biosecurity as "as set of scientific / organizational measures, including those related to people, and technical / engineering measures, including physical measures, designed to protect workers at the facility, the community and the environment from the risks involved in work with biological agents or the release of organisms into the environment, whether these are genetically modified or exotic; to minimize the effects they might have and to quickly counter their possible consequences in the event of contamination, adverse effects, leaks or losses". [Cuba]	–	X	X	–	
Cuba has high-ranking legal provisions to protect individuals and the property of institutions from various dangers. Thus, Decree-Law No. 186 / 1998, on the physical security and protection system, defines such a system as "a set of organizational and monitoring measures, security and protection personnel and resources, designed to guarantee the integrity and safety of persons, property and resources in the face of threats of various kinds". [Cuba]	–	X	X	–	
States Parties should take effective measures in the following areas: to strengthen laboratory protective measures and prevent unauthorized access to facilities with high risks; to reinforce management of pathogenic organisms; to establish accreditation system on the qualifications and capabilities of organizations and individuals engaged in biological research and development activities; to carry out risk assessments on the research of the life sciences. [China]	–	X	X	–	
Relevant national authorities should have the responsibility in defining and implementing such concepts, in accordance with relevant national laws, regulation and policies, consistent with the provisions of the Convention. [Cuba / NAM]	–	X	X	–	
Particular importance of strengthening the Convention through multilateral negotiations for a legally binding Protocol and universal adherence to the Convention. [Cuba / NAM]					R
The Convention on Biological and Toxin Weapons forms a whole and that, although it is possible to consider certain aspects separately, it is critical to deal with all of the issues interrelated to this Convention in a balanced and comprehensive manner. [Cuba / NAM]	–	X	X	–	
There is a greater necessity and urgency for the States Parties to the BWC to work towards strengthening and improving the effectiveness and implementation of this Convention so that together we can fully address the concern about the potential use and / or threats of use of biological agents and toxins as an instrument of war and terror. [Cuba / NAM]	–	X	X	–	
While some International Organisations, for instance the World Health Organisation (WHO), deal with biosafety and biosecurity issues, the adoption of decisions and recommendation of this matter within the framework of the BWC belong exclusively to the States Parties of the Convention. [Cuba / NAM]	–	X	X	–	
Biosecurity and biosafety should not serve as a pretext to hamper peaceful international cooperation enshrined in Article X of the Convention and thus leading to an unbalanced implementation of the provisions of the Convention or to unduly tightening national export controls. In fact implementation of Article X can contribute, inter alia, to realization of necessary standards for biosafety and biosecurity in each State Party. [Iran]	–	X	X	–	
There is an urgent need for taking appropriate measures not only for biosafety but also for biosecurity to prevent the development, acquisition and use of biological weapons. [Japan]	–	X	X	–	
The involvement of all stakeholders, including the relevant international organizations, NGOs, the scientific community, industry, and academia is vital. [Japan]	–	X	X	–	

2008 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
Effective biosafety and biosecurity in animal health laboratories is of great importance to global disease security. OIE and FAO provide guidelines on biosaftey and biosecurity in close cooperation and sharing a common approach with WHO. OIE sets standards, accepted by WTO as the reference international sanitary rules for animal health laboratory testing, for biosafety and biosecurity of veterinary microbiology laboratories and animal facilities and rules that Members can use to protect themselves from the introduction of diseases and pathogens via trade without setting up unjustified sanitary barriers. [OIE]	–	X	X	–	
Key Elements [include]: designated biosecurity officer ...; assessing the risk (potential for malicious misuse ' virulence) ...; risk management practices: concrete measures to secure the pathogens in a collection (including transport). [OECD]	–	X	X	–	
A reliable biosafety-biosecurity system would have the elements of preparedness and response in the event of deliberate or accidental releases, and an effective disease surveillance mechanism at the national, regional and international levels. [Pakistan]	–	X	X	–	
For a reliable and resilient biosafety and biosecurity regime, all stakeholders should be involved. These include governments, industry, life scientists, civil society, and international organizations, in particular WHO, FAO, OIE, OPCW, INTERPOL and UNESCO. [Pakistan]	–	X	X	–	
As we take these [biosafety and biosecurity] measures, we are required to review their effectiveness and update lists of agents and equipment relevant to safety, security and transfer regimes. [Pakistan]	–	X	X	–	
Biosafety tools are mandatory for peaceful use of biological materials. [Argentina]	–	X	X	–	
Insufficient biosecurity should be addressed with physical security measures, personnel security, material control and accountability as well as transport and information security. [Denmark]	–	X	X	–	
Even the wealthiest states cannot handle biological threats with national means: international cooperation can greatly add value. [Denmark]	–	X	X	–	
There is also a need to increase biosafety and biosecurity not only by strengthening physical structures, but also to increase understanding, coordination, and partnership of relevant actors, as well as enacting national legislation. [Indonesia]	–	X	X	–	
Regional cooperation ... could serve as an important bridge between national and international efforts to strengthen BWC. It also serves as a forum to build networks between stakeholders as well as to better understand and foster cooperation among countries in a region. [Indonesia]	–	X	X	–	
Biosecurity and biosafety strategy will require the establishment of a steering committee at both regional and national levels; the committee will be responsible for strategic leadership for development, implementation and oversight. [Morocco]	–	X	X	–	
Recommendations have to be made at an international level, given single governmental actions are not enough inside the frame of globalization of science. [Morocco]	–	X	X	–	
It is desirable to set-up international standards in the field of biosafety and biosecurity that take into consideration freedom of mobility for scientists, dignity and cultural pluralism. [Morocco]	–	X	X	–	
There is a need for global cooperation in the area of biological safety and biosecurity since the rapid expansion of biotechnology research has resulted in the global proliferation of dual-use materials, technologies and expertise. [Nigeria]	–	X	X	–	
Laboratory biosecurity and biosafety often overlap and should complement each other. [Nigeria]	–	X	X	–	
International standards should help ensure that facilities are well prepared to respond in the event that biological agents were released. [Norway]	–	X	X	–	
Biosafety and biosecurity are closely interlinked, and common systems are required to manage both effectively. [Norway]	–	X	X	–	
International standards play a vital role in the development of national regulations, guidelines and requirements. [Norway]	–	X	X	–	
External and independent certification may assist containment laboratories in establishing and implementing adequate level of biosafety and biosecurity. [Norway]	–	X	X	–	
Certified compliance with relevant international standards may confirm that appropriate measures are taken with regards to biorisk management. [Norway]	–	X	X	–	

2008 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
The scope of biosecurity should include select agents, equipment, transport, risk management, supervision, oversight and review. [Pakistan]	–	X	X	–	
Possession, use and transfer of specific biological agents should be guarded; high security and containment must be maintained. [Pakistan]	–	X	X	–	
Laboratory biosafety should be the foundation for biosafety and biosecurity. [South Africa]	–	X	X	–	
Biosafety concepts include: access control, procedures, personal protection, safe working procedures, lab management, personnel capabilities, structural requirements, equipment, agent transport. [South Africa]	–	X	X	–	
Biosecurity concepts include: access control, procedures, accountability, control, personnel security, structural requirements, equipment, agent transport. [South Africa]	–	X	X	–	
[There is a need for a] concerted effort to first improve biosafety standards and then improve biosecurity. [South Africa]	–	X	X	–	
Three main components to ensure that these issues are addressed and properly managed in biorisk facilities: 1) biosafety officers with sufficient knowledge and skills, 2) good microbiological technology, 3) a biorisk management system. [Switzerland]	–	X	X	–	
Switzerland recommends a compulsory or certified curriculum and the associated training programmes for biosafety officers. [Switzerland]	–	X	X	–	
Most countries have collections of naturally or artificially created microorganisms or other biological agents or toxins to be used for protective or other peaceful purposes. All necessary means have to be implemented for the safeguard and control of such collections for them not to be used for deliberate or nonintentional hostile purposes. [Ukraine]	–	X	X	–	
A single regulatory framework should govern work with human and animal pathogens. [UK]	–	X	X	–	
A common set of containment measures should apply to both animal and human pathogens. [UK]	–	X	X	–	
Senior managers should regularly review safety and security measures, ensure that all staff are trained in safety and security practices and ensure that there is scrupulous adherence to the relevant procedures. [UK]	–	X	X	–	
It is particularly important to avoid conflicts of interest between the regulators of (animal pathogen) facilities and the funder(s) of (animal pathogens) research and diagnostics. [UK]	–	X	X	–	
Should seek to develop a framework that is legally feasible and practicable; that is understood by facility personnel; and such that regulations can be enforced by the regulator. [UK]	–	X	X	–	
It is important to engage the relevant stakeholder communities and to develop a plan to communicate the changes to the regulatory framework. [UK]	–	X	X	–	
The way forward includes: advocacy / awareness for development of national policy and allocation of resources, technical support, training, national and institutional policy and independent review / appraisal. [WHO]	–	X	X	–	
Next steps include: support countries to enhance laboratory biosafety, strengthen biosafety and laboratory biosecurity in the regions, train trainers, and discuss introduction of biosafety as a scientific discipline into undergraduate / graduate studies. [WHO]	–	X	X	–	
A mix of voluntary compliance and performance-based regulations are likely to provide the highest level of biosecurity. [ABSA]	–	X	X	–	
BSL1 and 2 laboratories are low risk. Regulations will have significant impact on research, with little significant gain in protection. [ABSA]	–	X	X	–	
Key components assessed by an effective accreditation program would include: 1) the biosafety expertise and training of personnel managing and conducting research; 2) the adequacy and function of the biosafety management structure supporting its research activities; and 3) the adequacy and function of biocontainment measures, including facilities, equipment, practices and record-keeping systems, in place at the facility that is evaluated. [ABSA]	–	X	X	–	
Encourage pooling of resources / comparison of work practices and experiences. [Canada]	–	X	X	–	

2008 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
The issues of biosafety and biosecurity have evolved to different positions for different countries and regions. In many developing countries, the focus could still be on the fundamentals of biosafety. [APBA]	–	X	X	–	
To implement a systematic programme for biosafety and biosecurity that is effective and sustainable, a certain infrastructure at the regional level has to be in place to support and implement those programmes. [APBA]	–	X	X	–	
[These is a need to] support a Global (International) Biosafety and Biosecurity Framework; encourage the development of National Biosafety and Biosecurity Framework; encourage the formation of National Biosafety Association / Biosafety Work Groups; provide a common platform for training, networking and promotion of biosafety and biosecurity. [APBA]	–	X	X	–	
Should trace and standardize research activities in laboratory notebooks. [France]	–	X	X	–	
Licensing includes not only facilities in which the work is being conducted, but also the work itself and the principal investigators that are responsible for conducting the projects. The licensing process, if proper instruction to principal investigators about dual-use aspects of life sciences work is included, can go a long way not only towards minimizing risks but also in raising risk awareness among scientists and engineers carrying out the work. [INES]	–	X	X	–	
Licensing and oversight of activities are all part and parcel of an effective biosecurity regime to benefit us all. [INES]	–	X	X	–	
An important move towards meeting the challenges posed by the risks emerging from the life sciences revolution would be the international harmonization of basic biosecurity and oversight regulations. [INES]	–	X	X	–	
Reaching agreement on a set of basic international biosecurity and oversight regulations that can be presented as a negotiating package for consideration at the Seventh Review Conference in 2011. [INES]	–	X	X	–	
Biosafety and biosecurity procedures and practices vary enormously from country to country according to level of technological development and access to technology and materials as well as geological and climatic conditions that may affect the laboratory design and thus the requirements. Therefore a “one size fits all” approach should be avoided in dealing with the issue. [Iran]	–	X	X	–	
Ensure that the benefits of the life sciences are maximized while their risks are minimized. [IUBMB]	–	X	X	–	
Outreach and information sharing through blog sites can contribute to raise awareness on biosecurity issues. [Japan]	–	X	X	–	
[There is a need for] technical advisory boards and the establishment of Bio-safety and Bio-security officers. [Malaysia]	–	X	X	–	
Level 3 laboratories should have adequate control, including ongoing operating costs and maintenance. Worker infection and environmental release need to be prevented within the laboratory. Best practices should be tailored locally and should be shared. Regulators are key actors in the process. [Norway]	–	X	X	–	
Specific biological guidelines are necessary to strengthen legal standards. [France]	–	X	X	–	
“Dual use” potential of certain life sciences research requires consideration of biosecurity measures. [USA]	–	X	X	–	
Effective implementation of laboratory biosecurity practices requires the commitment of institutional management. [USA]	–	X	X	–	
The basis of good physical security is founded on the “3D principle” - Deter, Detect and Delay: Deter - the overt physical and electronic security measures that may provide a serious deterrent to a would-be intruder; Detect - alarm systems and cameras to detect the presence of an intruder;	–	X	X	–	
and, Delay - physical security measures that delay the intruder for a sufficient period to allow a response force to attend. [UK]	–	X	X	–	
The security procedures required for individual laboratories depend upon the nature of the organism being handled. [UK]	–	X	X	–	
[There is a need for] registration, licensing and supervision of both facilities and persons. [Germany]	–	X	X	–	
Any person to be entrusted with a security-sensitive activity must undergo prior security vetting. [Germany]	–	X	X	–	

2008 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
[Biosafety & biosecurity includes:] measures for safe / secure production, use and / or storage; measures for safe / secure transport; licensing / registration of facilities / persons handling biological materials; reliability / security check of personnel; regulations for genetic engineering work; control of importation and exports. [Germany / EU]	–	X	X	–	
The following elements are proposed: (i) Introduction of a full interdepartmental community including departments that lead on international obligations, as well as those departments that lead on domestic implementation; (ii) National standards or guidelines that describe appropriate: laboratory biosafety (worker safety), biocontainment (containment of infectious agents), and biosecurity (securing infectious agents); (iii) Training and certification for biosafety officers;	–	X	X	–	
(iv) Transportation of dangerous goods requirements that allow for shipping of infectious substances in a secure and contained fashion, both within and outside a state party's borders. Proper outreach on international obligations and how they translate into domestic responsibilities. [Canada / JACKSNNZ]	–	X	X	–	
The BTWC requires enforcement, health agencies and defence to work together at all times. A proper framework needs to be established, with a clear understanding of the mandates of each and every participating department or agency. (i) First step is outlining existing mandate and work currently undertaken by each department in the biological world. (ii) Second step is to outline all legislation currently enforced - the use of relevant resources, including the 1540 Matrix, would be very useful for this exercise. (iii) Third step is to establish an interdepartmental bio-working group. Once established, an early priority is an agreed strategy on the best outreach tools. Awareness-raising on international obligations and domestic obligations are a government's responsibility. Education and awareness-raising is a key step. [Canada / JACKSNNZ]	–	X	X	–	
[Biosafety and biosecurity] supplement and improve each other and should be enhanced at the same time. [China]	–	X	X	–	
[Biosafety & biosecurity include:] Laboratory Biosafety and Biosecurity; Personnel Protection and Biosecurity Measures; Control of Pathogenic Microorganisms; Emergency Response System. [China]	–	X	X	–	
Establish or improve laboratory standardized biosafety practice and strengthen laboratory protective measures with a view to preventing the accidental release of pathogenic microorganisms. Implement licensing approval on the access to facilities with high risks so as to prevent unauthorized access. [China]	–	X	X	–	
Reinforce security measures and management in the storage, wrapping, transportation and transfer of pathogenic microorganisms. [China]	–	X	X	–	
Organizations and individuals engaged in biological research and development activities which have high risks in biosecurity aspect should be accredited according to the evaluation of their qualifications and capabilities. [China]	–	X	X	–	
Organizations and individuals engaged in biological research and development activities which have high risks in biosecurity should be accredited according to the evaluation of their qualifications and capabilities. [China]	–	X	X	–	
Capabilities must be adapted to local needs, taking into account the complexities involved in setting up new laboratories, as well as the challenges associated with construction, on-going maintenance and running costs. [Indonesia & Norway]	–	X	–	–	
External certification and audit would improve safety and security standards. [Indonesia & Norway]	–	X	X	–	
The human element is the crucial part of the chain for many aspects of biosafety and biosecurity: good facilities and procedures are not sufficient if personnel are not adequately trained and do not clearly understand their roles and responsibilities. [Indonesia & Norway]	–	X	X	–	
A number of actors have important roles in promoting biological safety and security: governments, professional organisations, research institutions, international organisations, and international networks such as regional biological safety associations. Partnerships are encouraged. [Indonesia & Norway]	–	X	X	–	
Need to address the challenges posed by transport of dangerous material, including the ability to safely, securely and cost effectively ship samples and cultures by air. [Indonesia & Norway]	–	X	X	–	
Fully implementing the obligations set by the BTWC and the UN Security Council resolution 1540 is an essential component in providing biosafety and biosecurity. [Indonesia & Norway]	–	X	X	–	

2008 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
The highest level of safety needs to be ensured in the handling of pathogens and toxins for accident prevention, and to date measures have been taken for this purpose. [Japan]	–	X	X	–	
It has become crucial to strengthen security measures for the prevention of the development, acquisition and use of biological weapons. [Japan]	–	X	X	–	
Biosafety and biosecurity differ in their approach, there are quite a few common measures in their implementation. Particularly, in order to ensure biosecurity, first and foremost, it is required to take solid measures for biosafety. [Japan]	–	X	X	–	
National measures, as well as regional and international actions, for biosafety and biosecurity is important. [Japan]	–	X	X	–	
Regulations for risk management: (1) Control of pathogens and toxins - Since there is a risk of dangerous pathogens and toxins being directly employed for illicit purposes, their possession should be controlled strictly. For conducting controls, a list of such agents needs to be compiled in order to clarify which pathogens and toxins should be regulated. Further, in addition to the control of dangerous pathogens and toxins in the laboratory, appropriate control of their transport is necessary. Accordingly, to ensure appropriate control of pathogens and toxins, legal regulations including proper penal legislation should be taken. (2) Monitoring system - To make the appropriate control of pathogens and toxins effective, monitoring whether facilities that possess such agents are taking adequate measures is important. (3) Import-Export Controls - Controls on the import and export of pathogens and toxins should be considered as key measures from the viewpoints of both biosafety and biosecurity [Japan]	–	X	X	–	
Biosecurity manuals have yet to be adopted in many places and there is still significant room for improvement. [Japan]	–	X	X	–	
Personnel handling pathogens and toxins are required to acquire accurate knowledge and skills and to properly control such biological agents for biosafety and biosecurity purposes. Accordingly, the provision of education and training for appropriate workers is also an important measure. [Japan]	–	X	X	–	
As the potential effects of inadequate biosafety and biosecurity measures could spread beyond national boundaries, regional and international cooperation is indispensable. [Japan]	–	X	X	–	
Strengthen coordination with relevant international organizations, such as the WHO, as well as to engage in mutual feedback on the discussions concerning biosafety and biosecurity. [Japan]	–	X	X	–	
Hold biosafety and biosecurity workshops and seminars, since they contribute to the enhancement of awareness and capacity building of stakeholders in countries that have not taken adequate safety measures. In particular, since the consequences of accidents and terrorism involving biological agents have a high risk of spreading regionally, the convening of workshops to consider regional responses would be beneficial. [Japan]	–	X	X	–	
Not only coordination amongst governments, but also the establishment of researcher networks would facilitate and expedite information sharing, and thus should be promoted actively. Moreover, the meetings of international organizations and organizations for regional cooperation and relevant workshops and seminars could also serve as opportunities for developing researcher networks. [Japan]	–	X	X	–	
The concept of laboratory biosafety and biosecurity at an international level is still in its infancy, and the international community faces many challenges in achieving comprehensive implementation in this area. Hurdles range from a lack of capacity or necessary financial resources in many regions to operational and oversight laxity, personnel liability, and an overall low-level of awareness or concern. [USA]	–	X	X	–	
To reduce the biological risks associated with infectious disease laboratories, complementary and coordinated international measures are critical. [USA]	–	X	X	–	
Much work remains for states to establish necessary oversight of facilities holding dangerous pathogens and for the international community to increase its cooperative efforts to promote security of such facilities wherever they are located. [USA]	–	X	X	–	
Outreach and education are among the most effective tools for promoting responsible research and enhancing biosafety and biosecurity. [USA]	–	X	X	–	

2008 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
The EU supports capacity building in third states to ensure the safety and security of microbial or other agents or toxins in laboratories and other facilities, including during transportation, in order to prevent unauthorized access to and removal of such agents and toxins. [France / EU]	–	X	X	–	
Promote: networking among all national stakeholders, including the public health sector, justice, police, foreign affairs, and other relevant sectors; the involvement of relevant international and regional organizations; the membership of countries; stakeholders in regional professional biosecurity and biosafety associations; networking, especially in the regional context, among reference laboratories to promote transparency and to build confidence. [France / EU]	–	X	X	–	
Identify and analyze the potential occurrence of any commercial activity that might be considered illegal and / or prohibited under the international mechanisms that regulate transfers (exports or imports) of sensitive products or controlled technologies. [Brazil]	–	X	X	–	
Publish and publicize the lists of sensitive goods. [Brazil]	–	X	X	–	
Efforts towards biosafety and biosecurity should include training programs and initiatives to promote dialogue between the private sector and the government. A successful program could include technical visits to industries and state-owned companies whose activities are related to sensitive, dual-use assets and technologies. [Brazil]	–	X	X	–	
The involvement of operators in the control process raises awareness and favours the creation of a mindset focused on the adequate handling of sensitive goods, which is of particular importance in the case of biological agents that can be easily obtained. Such awareness is essential to the effectiveness of biosecurity strategies. [Brazil]	–	X	X	–	
Help identify any implications of exports or imports in areas of concern. [Brazil]	–	X	X	–	
International standards also play a vital role in the development of national regulations, guidelines and requirements. External and independent certification may assist containment laboratories in establishing and implementing adequate levels of biosafety and biosecurity. Certified compliance with relevant international standards may, moreover, confirm that appropriate measures are taken with regards to biorisk management. [Norway]	–	X	X	–	
Relevant management systems need not only cover the more traditional technically oriented areas such as facility design or personal protective equipment, but also consider human and organizational factors. [Norway]	–	X	X	–	
Discussions on biosecurity and biosafety as well as oversight, education, awareness raising and adoption and / or development of codes of conduct are welcome with the aim of preventing misuse in the context of advances in bioscience, technology research with the potential use for purposes prohibited by the Convention. [India]	–	X	X	–	
Our discussions should be aimed at helping States Parties improve their national standards in the fields of biosafety and biosecurity and should be implemented on national and voluntary basis. [India]	–	X	X	–	
Achieving such standards in the fields of biosafety and biosecurity can be facilitated by international cooperation and strengthening the implementation of Article X of the Convention. [India]	–	X	X	–	
Any regulation that is developed in the context of biosafety which has the potential to hamper international collaborative ventures should be carefully debated to ensure that they are not detrimental to the progress of science and the application of the benefits of science to humanity. [India]	–	X	X	–	
Promote international cooperation for peaceful purposes, including scientific-technical exchange. [Cuba / NAM]	–	X	X	–	
Achieving necessary standards in the fields of biosafety and biosecurity requires and is facilitated by international cooperation and strengthening of Article X of the Convention. [Cuba / NAM]	–	X	X	–	
OIE and FAO highlight that animal pathogens are a risk to both animal and human health (60% of human diseases are zoonotic). The most effective way of preventing bioterrorism using animal pathogens is to strengthen the ability and capacity of the national Veterinary Services of countries to early detect, diagnose and respond to incidental or deliberate disease incursions within the guidelines, recommendations and international standards of the OIE that are mandated by the World Trade Organisation (WTO). [OIE]	–	X	X	–	

2008 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
Laboratory capacity building plays an important part in ensuring adequate biosafety and biosecurity, particularly in areas where there is currently a lack of expertise. OIE and FAO support specific laboratory capacity building programmes. [OIE]	–	X	X	–	
It is important to create an early warning system for intended and unintended communicable diseases through collaboration with other countries and to harmonize our legislation and regulatory national documents with those of larger regional bodies. [Bulgaria]	–	X	X	–	
[There is a need for] individual countries to further enhance ... capabilities in addressing challenges such as emerging and re-emerging diseases which affect human, animal, and plants. These efforts to enhance capabilities must be adapted to local needs. [Indonesia]	–	X	–	X	
Facilitate communication between biosafety professionals and nurture networking. Develop and share training programmes. [Canada]	–	X	X	–	
Identify or establish such partners or channels that can assist in the implementation of [biosafety and biosecurity] programmes. [APBA]	–	X	X	–	
BSL 3 facilities need to be more widely available. Building quality, maintenance and levels of expertise need special attention. [Indonesia]	–	X	X	–	
Encourage State Parties who are in the position to do so to extend such assistance to other States Parties who need it. [Malaysia]	–	X	X	–	
Ad-hoc capacity building is too passive. Capacity building in curriculum development for primary, secondary and tertiary education is critical. [Nigeria]	–	X	X	–	
Researchers and laboratory technologists require capacity building and refresher courses in maintaining laboratory safety measures. It is important to provide training to technical personnel. Emphasis should be placed on long-term sustainability of training; trainees must be selected carefully to ensure this sustainability. [Nigeria]	–	X	X	–	
Need to have capacity building on information dissemination as well as effective public awareness strategies for biosafety and biosecurity. [Nigeria]	–	X	X	–	
To effectively entrench an issue in a system, it has to be taught. Make capacity building in curriculum development and mainstreaming biosafety and biosecurity in the curricula of ... basic, post-basic and tertiary education critical. [Nigeria]	–	X	X	–	
Would like to support adequate training and promotion of peaceful use of biotechnology. [Sudan]	–	X	X	–	
Legislative work, education and awareness raising, the improvement of analysis-laboratory capacities and the acquisition of new materials are important. [Turkey]	–	X	X	–	
States are required to adopt and reinforce laws which prohibit non-state actors to manufacture, acquire, posses, develop, transport, transfer or use biological weapons; and to prevent illicit trafficking of related materials through measures in accounting / security, physical protection, border and export controls. Countries need cooperation between government agencies, including those not traditionally involved in arms control. [1540]	–	X	X	–	
Countries are encouraged through UNSCR 1810 (2008) to submit action plans to the 1540 Committee as well as requests and offers of assistance. [1540]	–	X	X	–	
Support laboratory infrastructure and capacity building for research. [WHO]	–	X	X	–	
Facilitate local and regional networking. [WHO]	–	X	X	–	
Create mechanisms for sharing information on life science research programmes and findings. [WHO]	–	X	X	–	
Provide tools and support in such a way that they can be tailored to help countries to develop or strengthen research policies and strategies and related laws according to their needs and priorities. [WHO]	–	X	X	–	
All conferences that bring together specialists from countries working in the same field are very productive for capacity building. [Georgia]	–	X	X	–	
Capacity building in biosafety and biosecurity is important component of the process. [Pakistan]	–	X	X	–	
One of the purposes for exchanges and cooperation is to provide assistance and support to the countries which are in need. [China]	–	X	X	–	

2008 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
States Parties should further improve their biosafety and biosecurity systems and relevant capacity building, assuring pathogenic microorganisms and toxins be used for peaceful purposes not prohibited by the Convention, and not be used for biological weapon or bioterrorism purposes. [China]	–	X	X	–	
OIE and FAO support the use of risk management frameworks as a tool to contribute to decision making. Risk management frameworks must be flexible so that a range of developed and developing countries can apply them. The OIE has developed and published in the Terrestrial Animal Health Code international standards for conducting import risk analysis and guidelines on the methodology for risk assessments. A detailed manual has also been published by OIE to assist countries to conduct either qualitative or quantitative risk assessments. [OIE]	–	X	X	–	
Risk assessments may not be the only factor informing the decision making process and it must be acknowledged that zero risk is often unachievable, leaving a decision to be made on the level of acceptable risk to achieve an appropriate level of sanitary protection for animal and human health for the importing country. [OIE]	–	X	X	–	
Biosecurity and biosafety are not confined to physical security of laboratories, pathogens and toxins. They encompass risk awareness, measures to ensure that life sciences are committed to their benign use, and protection of know-how and technology against bioterrorism and biological warfare. [Pakistan]	–	X	X	–	
Elements of risk management: (i) people [including,,] security management of personnel, security management of visitors, incident response plan, staff training and developing a biosecurity-conscious culture; (ii) material [including,,] material control and accountability, supply of material, transport security; (iii) information [including,,] security of information. [OECD]	–	X	X	–	
Recommend international policy discussion about (the) broader spectrum of risks emanating from advances in life sciences and (aims) to describe a process and set of organizing principles by which risk associated with the malevolent use of technological advances might be managed in the longer term. [OECD]	–	X	X	–	
A highly accountable regulatory framework that is consistent, transparent, proportionate and targeted on activities where the greatest risks are should be developed. [UK]	–	X	X	–	
Risk assessment should be a key element of such a regulatory framework. [UK]	–	X	X	–	
Recommend a scientific risk appraisal system for pathogens and GMOs. [Cuba]	–	X	X	–	
Because of the leading role that engineers and scientists play in the development of science and technology, it is essential that they themselves be directly involved in this process of risk management. [INES]	–	X	X	–	
Risk assessment must guarantee human, vegetal and animal security, as well as the protection of environment. [Cameroon]	–	X	X	–	
Risk assessment must take into account the precautionary principle, and guidelines set by international organizations. [Cameroon]	–	X	X	–	
A good assessment of risks is essential for a good risk management, as well as the subsequent quality management system (overall traceability and competence of the staff). [France]	–	X	X	–	
Without risk assessment and quality management systems, no security for biological field. [France]	–	X	X	–	
Many laboratories are unsure how to conduct risk assessments and resources and guidance for doing so are limited. [USA]	–	X	X	–	
Risk assessment should be a key element. [UK]	–	X	X	–	
Carry out risk assessments on the research of life sciences and reduce the risks of abusing the achievements in this field. [China]	–	X	X	–	
The EU promotes bio-risk reduction practices and awareness,, –	X	X	–		
including biosafety, biosecurity, bio-ethics and preparedness against intentional misuse of biological agents ad toxins, through international cooperation and networking in this area. [France / EU]	–	X	X	–	

Agenda item 6: Oversight, education, awareness raising, and adoption and/or development of codes of conduct with the aim of preventing misuse in the context of advances in bio-science and bio-technology research with the potential of use for purposes prohibited by the Convention.

2008 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
States Parties should also promote international cooperation, including making full use of the resources and achievements of relevant international organizations with a view to improving the national oversight system of the life sciences. Meanwhile, the competent countries are encouraged to provide assistance to the countries which are in need. [China]	–	X	–	–	
The possibility of any use of bacteriological (biological) agents and toxins as weapons should be completely excluded, and the conviction that such use would be repugnant to the consciousness of humankind. [Cuba / NAM]					R
The potential for abuse of technological developments in the field of life sciences, as well as the risk of developmental use of a biological weapon by a state or a terrorist organization are major challenges for the international community and require both ongoing adaptation of tools and a strengthening of the sharing of experience among States Parties. [France / EU]					R
There is a need to strike a balance between national biosafety and biosecurity and open science research to avoid creating restrictions on the development of scientific research and on publishing the results of such research. [Iran]	–	X	X	–	
Relevant actors are to have a clear understanding of the content, purpose and foreseeable consequences of their activities, as well as of the need to abide by the obligations contained in the Convention. [Iran]	–	X	X	–	
The dual-use potential of bio-technology will always remain a minefield, requiring a careful balancing act, so as not to deprive states of the benefits of bio-technology. [Nigeria]	–	X	X	–	
[It is favourable to have] a healthy combination of government / institutional controls and regulation by scientific establishments and scientists themselves. [Pakistan]	–	X	X	–	
The objective should be to proscribe the use of the life sciences for malign purposes but not to stifle scientific inquiry and research for beneficial purposes. [Pakistan]	–	X	X	–	
In pursuing these goals, oversight must respect the principle of proportionality. [Pakistan]	–	X	X	–	
In pursuing these goals, oversight must ... explore the possibility of harmonization at the national and regional levels, through voluntary initiatives. [Pakistan]	–	X	X	–	
It is critically important to strike an important balance between protection from dangerous pathogens and toxins and preservation of an environment that promotes legitimate biological research (through organizational cooperation and research). [Nigeria]	–	X	X	–	
[Recommend] establishment of Scientific Advisory Body that could independently analyze global developments and their transparency in connection with the BWC. [Ukraine]	–	X	X	–	
Risks resulting from progress in modern biology have to be minimized. [Ukraine]	–	X	X	–	
Scientists who become aware of activities that violate the Biological and Toxin Weapons Convention or international customary law should raise their concerns with appropriate people, authorities and agencies. [IAP]	X	X	X	X	
Control over the work in both the proposal and execution stages is essential, and this could be carried out both by licensing and by a peer review process of oversight at the institutional level in cooperation with the principal investigator. [INES]	–	X	X	–	
Prevent any further undermining of public confidence in the life sciences or life scientists. [IUBMB]	–	X	X	–	
Should be cautious about measures that may cause excessive intervention in research activities ... bearing in mind that the need to prevent malign actions has to take into account the need for life saving advancements. All are aware of the importance of the Convention and of the risks that arise from undue use of science. Must not transform the necessary caution, however, into excessive fear that instead of protecting from harm would hamper scientific evolution at a high cost on lives, as new vaccines and treatments could remain undeveloped. [Brazil]	–	X	X	–	
The first obligation when discussing oversight must be, therefore, to ensure that efforts to mitigate risks are proportionate and do not unduly restrict science for peaceful purposes. [Brazil]	–	X	X	–	

2008 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
Exclusively top-down approaches might give enforcers a false sense of security, but they can never be effective if operators are not properly informed and conscious of all the potential results of their actions, as well as of their responsibilities entailed by their researches ... [Thus,,] the government should be primarily involved in education and awareness raising programs. The need for the protection of resources and scientific supervision must therefore be part of the education of our scientists, making institutional conscience the best path towards effective implementation of the BWC. [Brazil]	–	X	X	–	
The Brazilian government agrees with the Background Document on the Oversight of Science submitted by the ISU, when it states that, when bottom-up approaches results are achieved, they "are more flexible and better tailored to the demands of the community, are self-sustaining, more easily harmonised, and can be more comprehensive (as every member of the community becomes an agent for enforcement)". [Brazil]	–	X	X	–	
In the broad spectrum of different options for oversight, Brazil favours a combination of institutional and government control, giving institutions and scientists enough space without exempting the government of its responsibility to support and inform researchers. [Brazil]	–	X	X	–	
Stress dialogue between public and private sector. [Brazil]	–	X	–	–	
Legislation should improve the rules and the transparency in the relationship between researchers, between researcher and their employers and for bioethical purposes. [France]	–	X	X	–	
Articles should be published freely within the rules of respective journals. Research findings should be shared at home and abroad. [Germany]	–	X	X	–	
Misuse of dual use research is a serious potential risk for biological weapons and bioterrorism. Need a mix of policies that both enhance security and enable continuing scientific advances. [NAS]	–	X	X	–	
Biosafety and laboratory biosecurity are essential elements; best beginning for many countries. [NAS]	–	X	X	–	
Need for oversight throughout the life cycle of research – from proposals to publication and dissemination. [NAS]	–	X	X	–	
Mix of formal, including legal and regulatory, and informal, including self-policing and guidelines: "web of prevention" most likely to be effective. [NAS]	–	X	X	–	
Scientific community has a key role in helping to reduce the risks of misuse. Prefer self-governance by scientific community and guidelines by governments. Important role for "soft law" - norms, codes of ethics, conduct, and practice. [NAS]	–	X	X	–	
Importance of advice from scientific community in design and implementation of oversight systems. Significant role for scientific organizations at all levels in working with policy-makers. [NAS]	–	X	X	–	
Open databases on biological organisms can be a security risk, but biosecurity will be better served by policies that facilitate, not restrict, scientists' access to these databases. [NAS]	–	X	X	–	
Appropriate national and institutional oversight mechanisms / arrangements as well as guidelines are essential. [Pakistan]	–	X	X	–	
Responsibility of oversight needs to be jointly fulfilled by national authorities, scientific programme managers and investigators of life science projects. [Pakistan]	–	X	X	–	
National and institutional bodies also need to address issues related to possible misuse or diversion of scientific knowledge, materials or equipment towards biological weapons applications. [Pakistan]	–	X	X	–	
National protocols and institutional procedures should be continuously reviewed, updated and properly implemented. [Pakistan]	–	X	X	–	
It is important to review advances regularly and to develop appropriate oversight strategies. This helps ensure the responsible development and application of technologies, and increases awareness of the implications for the Biological & Toxin Weapons Convention that arise from these developments and applications. [UK]	–	X	X	–	
[There is a need for] the scientific community to lead in debating the implications of research and engaging early with civil society groups, social scientists and ethicists, and the public. A review of current regulations and guidelines to ensure that an appropriate governance framework was in place before the applications of synthetic biology were realised is also important. [UK]	–	X	X	–	

2008 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
A key issue is the early consideration of a wide range of policy, social and ethical issues in the development of strategies for the control, oversight and governance of emerging technologies and their applications. This enables an appropriate balance between the benefits and risks to be struck. An interdisciplinary approach, involving experts from across government, academia, industry, civil society, social science and ethics is essential to this process. [UK]	–	X	X	–	
Reviewing the regulatory framework would be one way of ensuring appropriate oversight and control mechanisms for activities that are of more immediate relevance to the risk of misuse under the BTWC. However, other mechanisms, including education and awareness-raising are also important. [UK]	–	X	X	–	
Scientists and physicians can convince themselves that ethical standards no longer apply to their work and that what they are doing is in fact for the common good. If there are no internationally recognised or uniformly applied standards, then this becomes much easier. [UK]	–	X	X	–	
Ensuring that life science research is compliant with the BTWC needs to be seen as a collective responsibility including funding bodies, researchers, institutions and publishers. [UK]	–	X	X	–	
Clear mechanisms are required for reporting deliberate or inadvertent misuse or misconduct in scientific research; people must have confidence that such systems work and that whistle-blowing will be without retribution. [UK]	–	X	X	–	
Measures taken in this context should not be seen in isolation: improved biosafety and biosecurity in laboratories, enhanced disease surveillance, effective national implementation of the Convention, improved investigative mechanisms for cases of alleged use and practical oversight of dual-use R&D all have a role to play in strengthening the BTWC. [UK]	–	X	X	–	
Development of any oversight mechanism for synthetic biology must balance the need to minimize the risk of misuse with the need to ensure that science and innovation are encouraged. [USA]	–	X	X	–	
Development of any oversight mechanism must involve engagement of the synthetic nucleic acid industry, the scientific community, and other stakeholders. [USA]	–	X	X	–	
Need to minimize the likelihood that biological research findings will be misused for production and enhancement of biological weapons. [USA]	–	X	X	–	
Goal: enhance biosecurity protections for life sciences research while ensuring that any impact to the free flow of scientific inquiry is minimized. [USA]	–	X	X	–	
The development of any oversight mechanism must balance the need to minimize the risk of misuse with the need to ensure that science, innovation, and trade are encouraged. The process for identifying options for any oversight mechanism for synthetic biology must involve engaging the synthetic nucleic acid industry, the scientific community, and other stakeholders. [USA]	–	X	X	–	
Develop, implement and monitor regulation, legislation, guidelines and standard operating procedures for laboratory biosafety, for laboratory biosecurity, and for assessing and managing the risks of dual use life science research. [WHO]	–	X	X	–	
Provide adequate financial resources. [WHO]					D
With awareness and appropriate guidance, scientists can apply their own expertise to judge the wider ramifications of their research and other activities. [Japan / JACKSNNZ]	–	X	X	–	
Safeguards policies and oversight mechanisms that require all scientists to take responsibility for biosafety / biosecurity should be promoted. [Japan / JACKSNNZ]	–	X	X	–	
All relevant actors must be mindful of their responsibilities. It is necessary to examine appropriate measures involving not only the scientists, who are obviously the principal actors, but also all other stakeholders, including the policy-makers, regulators, administrators of universities and research institutions, together with academic associations and the private sector. [Japan / JACKSNNZ]	–	X	X	–	
It is important to institute an oversight mechanism which is meaningful and does not create unnecessary burden. This is essential to make it acceptable for scientists and to forge ownership. [Japan / JACKSNNZ]	–	X	X	–	
Life scientists themselves need to be actively involved in constructing and instituting such oversight mechanisms in order to make them effective. [Japan / JACKSNNZ]	–	X	X	–	

2008 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
The following elements need to be included: appropriate management of personnel; appropriate management of pathogens and toxins; appropriate management of sensitive information and knowledge about research information and research outcomes; research funding; and the modalities of governance over research programs in universities, research institutions and academic associations. [Japan / JACKSNNZ]	–	X	X	–	
It is necessary to institute a legally-binding oversight mechanism over pathogens and toxins. [Japan / JACKSNNZ]	–	X	X	–	
With regard to the management of research information, knowledge and outcomes, there is a concern that a similar legally-binding oversight mechanism may not be appropriate since such measures could obstruct scientific development. [Japan / JACKSNNZ]	–	X	X	–	
Involve all relevant stakeholders including scientists and administrators in universities, research institutions and companies, as well as stakeholders in government and the media when appropriate. [Japan / JACKSNNZ]	–	X	X	–	
Study the establishment of a mechanism that enables scientists to consult on their research and to expand the opportunities where the scientific and security communities can communicate with each other. [Japan / JACKSNNZ]	–	X	X	–	
It should be encouraged for scientific research institutions to monitor voluntarily, with the help of academic association when necessary, whether research grants are being used for legitimate purposes and whether research projects are properly managed. In this regard, whistleblower systems can be of great importance to support such voluntary monitoring. [Japan / JACKSNNZ]	–	X	X	–	
It is important to examine how to apply and implement these means appropriately through national and international cooperation and coordination, in order not to hinder the development of science and technology ... but to protect the scientific activities of well-intentioned scientists. [Japan / JACKSNNZ]	–	X	X	–	
It is difficult to objectively quantify the dual-use risk of an experiment or project. Scientists would benefit from 1) increased awareness of dual-use issues, and 2) simple tools and guidelines that could help in an objective assessment of risk. Lack of clear and effective guidelines puts a heavy burden on those who are responsible for evaluating projects, proposals and reports for dual-use potential. [USA]	–	X	X	–	
Researchers and others involved in gene technology are advised to "minimise risks of harm or discomfort to humans and animals likely to be adversely affected by gene technology", "promote equitable access to scientific developments and sharing knowledge, and recognise the value of benefit sharing", "conduct research in a manner that promotes the benevolent and avoids the malevolent uses of gene technology", and "conduct gene technology research after appropriate consultation and ensuring transparency and public scrutiny of the processes". [Australia]	–	X	X	–	
Discussions on ... oversight, education, awareness raising and adoption and / or development of codes of conduct are welcome with the aim of preventing misuse in the context of advances in bioscience, technology research with the potential use for purposes prohibited by the Convention. [India]	–	X	X	–	
Raising awareness and improving capability should go hand in hand. [Indonesia]	–	X	X	–	
Raising scientific community's awareness in either state or private sectors with respect to the objectives enshrined in the BWC could be an important and effective element in promoting the national implementation of the Convention. [Iran]	–	X	X	–	
Scientific community and industry that play a significant role in the development and application of bio-technology should be involved in devising educational programs. [Iran]	–	X	X	–	
Scientists should be encouraged to convene seminars, workshops and prepare research papers to raise the awareness. [Iran]	–	X	X	–	
Policy makers, the scientific community, industry, academia, media and the public in general should all be part of this dialogue to make them aware of risks associated with biotechnology and the legal and ethical obligations incumbent upon them. [Pakistan]	–	X	X	–	
Suggest countries should ... strengthen awareness and education of the Convention amongst life scientists. [Ukraine]	–	X	X	–	
There is still a very limited awareness of the Convention amongst life scientists. Indeed, the awareness of life scientists is such that they cannot be expected to spontaneously initiate a "bottom-up" approach to the development and implementation of codes of conduct. [Ukraine]	–	X	X	–	

2008 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
Scientists should be aware of, disseminate and teach national and international law and regulations, as well as policies and principles aimed at preventing the misuse of biological research. [IAP]	–	X	X	–	
Scientists with responsibility for oversight of research or for evaluation of projects or publications should promote adherence to these principles by those under their control, supervision or evaluation and act as role models in this regard. [IAP]	–	X	X	–	
Enhance awareness of issues related to the potential malign use of life science research. [IUBMB]	–	X	X	–	
Reaffirm the importance of education and awareness raising in line with the Convention. The scope of education and awareness raising activities are done mainly through seminars and courses. [Malaysia]	–	X	X	–	
The government should be primarily involved in education and awareness raising programs. The need for the protection of resources and scientific supervision must therefore be part of the education of scientists, making institutional conscience the best path towards effective implementation of the BWC. [Brazil]	–	X	X	–	
Seminars at universities and informal settings should be promoted. [Germany]	–	X	X	–	
Codes of conduct should be to ensure that activities in the life sciences cause no harm and thus form part of a comprehensive integrated approach to ensuring compliance with international treaties, national laws and regulations such as those relating to life sciences, illicit drugs, chemical and biological weapons, banned and severely restricted chemicals, etc. [IUPAC]	–	X	X	–	
Codes of conduct should emphasise the importance that activities are both in compliance and perceived to be in compliance with the Convention and national implementing legislation. [IUPAC]	–	X	X	–	
Codes of conduct should emphasize that those engaged in the life sciences will not knowingly engage in activities prohibited by the Convention or national legislation. [IUPAC]	–	X	X	–	
Education projects for the life sciences should remind those engaged in the life sciences of the choices they face, that the life sciences can have multiple effects, and that decisions about how they are used, including not to be used as biological weapons, are the responsibility of each individual engaged in the life sciences. [IUPAC]	–	X	X	–	
There is a continuing need for awareness raising and education. [NAS]	–	X	X	–	
Appropriate measures should be taken to make scientists aware that their research and development activities have wider ramifications. [Switzerland]	–	X	X	–	
Researchers should be aware of the possible adverse social, environmental, health and security consequences of their work, and that they have both legal and ethical responsibilities in this regard. [Switzerland]	–	X	X	–	
Both governmental institutions and individual researchers should collaborate extensively to set up a system that encourages awareness-raising among the scientific community and that creates a framework of accountability for researchers. [Switzerland]	–	X	X	–	
Governments should not only target individual scientists but also academic institutions and associations, regulators and, private and commercial institutions. [Switzerland]	–	X	X	–	
Research institutions and professional association should assist the process by formulating policies, rules, guidelines, and standard operating procedures for those involved in dual-use research. [Switzerland]	–	X	X	–	
Raising awareness about the provisions of the Biological Weapons Convention is a central part of preventing the misuse of dual-use technologies, and thus in making researchers sensitive to the risks involved in their field of experience. [Switzerland]	–	X	X	–	
Training for personnel on ethical issues - not just in secondary and tertiary education - should be on-going and not limited to a single component in a degree course. Accessible teaching materials which address the BTWC and dual-use issues are required. [UK]	–	X	X	–	
Highlight the potential danger of synthetic biology, which is a dual use technology: while it has provided significant scientific, health, and economic benefits, it is a potentially enabling technology for the de novo reconstruction of dangerous pathogens, either in part or in whole. [USA]	–	X	X	–	
The next step after raising awareness will be implementation for States ... However, awareness-raising is still needed for parliamentarians and politicians in a position to allocate resources for implementation. [1540]	–	X	X	–	

2008 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
Promote information exchange and laboratory networks and foster dialogue among stakeholders in different sectors and agencies at country level (agriculture, industry, environment, defense, etc). [WHO]	–	X	X	–	
Areas of interest and research, levels of investment and many aspects related to biotechnology vary greatly from country to country, demanding different responses from training programmes and codes. [Brazil]	–	X	X	–	
There are three parallel activities which have closely similar goals yet are facing the same problems of lack of awareness and lack of education in essentially the same target audience: (i) biosafety and biosecurity and risk management to meet the obligations and goals of the BTWC; (ii) WHO's biosafety and biosecurity programme and risk assessment; and (iii) UNEP Convention on Biological Diversity Cartagena Protocol on Biosafety programme of capacity building / risk assessment of GMOs. There would be significant benefits in all three activities working together on awareness-raising and education. Although there are some differences, consideration should be given to a harmonized effort amongst these three activities to address awareness and education. [IUPAC]	–	X	X	–	
Awareness raising and greater cross-communication among diverse stakeholders of life sciences is essential to promote and strengthen the BWC regime. [Pakistan]	X	X	X	–	
Interactive sessions are required to share knowledge, practices, procedures, lessons learnt through personal as well as institutional experiences. [Pakistan]	–	X	X	–	
Promoting awareness amongst research institutions is also necessary to apprise all stakeholders about obligations under relevant international conventions / treaties and national legislation. [Pakistan]	–	X	X	–	
Education and awareness raising about BTWC is an ongoing process - continuing professional education. Capacity building in biosafety and biosecurity is important component of the process. [Pakistan]	–	X	X	–	
National experts (should be) encouraged to participate in regional / international seminars and workshops. International experts (should be) invited (to) national awareness raising activities to benefit from best practices. [Pakistan]	–	X	X	–	
In concert with oversight, education, and awareness raising, laying out common understanding among the States Parties will be conducive to developing effective codes to deter scientists from engaging in activities prohibited by BWC. [RoK]	–	X	X	–	
Develop awareness raising audiovisual materials for students, being the researchers and scientists of the future. [Netherlands]	–	X	X	–	
States Parties are encouraged to actively engage in education and awareness raising of the implementation of the Convention through various forms including holding seminars or training courses. [China]	–	X	X	–	
States Parties are also encouraged to strengthen information exchanges and draw useful experiences from each other through international cooperation. [China]	–	X	X	–	
States Parties should further promote the awareness of the Convention, educate biological scientists and raise their awareness of self-discipline so as to minimize the risks of the proliferation of biological weapons related materials and technologies at the initial stage. Meanwhile, a full play should be given to the scientific society and professional associations on their role of supervision. [China]	–	X	X	–	
It is desirable to develop a program for education and awareness raising swiftly. [Japan / JACKSNNZ]	–	X	X	–	
Programs for education and awareness raising among scientists are a basic means for preventing the misuse of biotechnology. [Japan / JACKSNNZ]	–	X	X	–	
The direct effects gained through programs for education and awareness raising may vary depending upon the integrity of the scientific community, which is underpinned by the conscience of individual scientists and their mutual trust. Therefore, from the viewpoint of ensuring the effectiveness of such programs, it is necessary to reflect and institutionalize the outcomes of these programs in an oversight mechanism and the contents of codes of conduct. [Japan / JACKSNNZ]	–	X	X	–	
In developing the content of programs for education and awareness raising, it is important to deal with the following subjects: ethical and moral principles; awareness of the dual-use risks of biotechnology; management of sensitive research information, knowledge and outcomes; and legal obligations under the relevant treaties and associated domestic legislation. [Japan / JACKSNNZ]	–	X	X	–	

2008 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
Targets of education must include students (both in universities and secondary schools), researchers at universities, research institutions and private companies, health care workers, etc., who are / will be involved in science now and in the future. It would be also important to include the managers and administrators of universities, research institutions and private companies. [Japan / JACKSNNZ]	–	X	X	–	
Since the effectiveness of educational programs can be significantly influenced by the quality of the education practitioners, it is essential to secure personnel with appropriate qualifications. In this light, it is also important to examine what qualifications are required and how to train personnel as education practitioners. [Japan / JACKSNNZ]	–	X	X	–	
Since the content of education should cover many topics, it is necessary to include not only the views of scientists but also the views of other relevant stakeholders. [Japan / JACKSNNZ]	–	X	X	–	
It is essential to secure personnel with appropriate qualifications. In this light, it is also important to examine what qualifications are required and how to train personnel as education practitioners. [Japan / JACKSNNZ]	–	X	X	–	
Outreach and education are among the most effective tools for promoting responsible research and enhancing biosafety and biosecurity. [USA]	–	X	X	–	
Appropriate training should be provided to the various levels of understanding, in order to raise the overall level of awareness. [USA]	–	X	X	–	
Education on dual-use topics should be provided early and continually reinforced. [USA]	–	X	X	–	
The long-term goal would be to develop a "culture of responsibility" that would include a shared general awareness of security concerns. [USA]	–	X	X	–	
Outreach and awareness activities should have the following goals, among others: (i) to inform businessmen on existing government controls in the area of non-proliferation of weapons of mass destruction, and to stress the importance of working with the Government at a national level; (ii) to increase the quality of biosafety and biosecurity controls; (iii) to identify and analyse the potential occurrence of any commercial activity that might be considered illegal and / or prohibited under the international mechanisms that regulate transfers (exports or imports) of sensitive products or controlled technologies; (iv) to publish and publicize the lists of sensitive goods; (v) to help identify any implications of experts or imports in areas of concern. [Brazil]	–	X	X	–	
Model programs should achieve national scope and reaching different types of operators, as well as public and private industries, laboratories and research institutions. Brazil proposes an unprecedented form of interaction with such operators, by not limiting their involvement to the mere accountability in the event of the wrongful manipulation of risky biological agents. In fact, the national program's main goal should be the incorporation of agents and experts as partners in the control of sensitive goods and supervision of science. [Brazil]	–	X	X	–	
Safety related to access to information and dual-use technology as well as control over such access depends directly on education and awareness. Protection of resources and scientific supervision should be part of the training of scientists. That is what could be called "institutional conscience", something fundamental to the effective implementation of the BWC. [Brazil]	–	X	X	–	
Along with ethics education and training programs, codes of conduct can help promoting a culture of responsibility and raise awareness, like other aspects of education, codes of conduct are closely related to local, variable characteristics. [Therefore,,] such codes are to be developed nationally, tailored according to the reality of each country. [Brazil]	–	X	X	–	
There is, of course, a common basis that underlines all codes of conduct in this area, and that is the concern with undue use of science and the need to minimize risks while enhancing positive results. However, areas of interest and research, levels of investment and many aspects related to biotechnology vary greatly from country to country, demanding different responses from training programs and codes. To try to internationally harmonise detailed rules might turn out to be an artificial and ineffective response. [Brazil]	–	X	X	–	
Discussion on this and other topics brought up during this Meeting of Experts should always take into consideration Article X of the BWC. Codes of conduct should in no way come in the way of technology transfers for peaceful purposes. [Brazil]	–	X	X	–	

2008 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
Raising awareness of the Convention's prohibitions among scientific and technical communities is important, given their exposure to emergent biotechnologies with potential dual-use applications such as gene technology. [Australia]	–	X	X	–	
Given the varying level of economic development of States Parties, education and awareness raising could be facilitated by strengthening international cooperation under Article X of the Convention. [India]	–	X	X	–	
Since different countries have different scientific development levels and various management systems, States Parties are encouraged to adopt codes of conduct according to their own national situations on a voluntary basis. [China]	–	X	X	–	
It remains the prerogative of the States Parties to decide on the content, promulgation and adoption of the code in accordance with relevant national laws, regulations and policies, consistent with the provisions of the Convention. [Cuba / NAM]	–	X	X	–	
Codes of conduct should avoid any restrictions on exchange of scientific discoveries in the field of biology for prevention of disease and other peaceful purposes. [Cuba / NAM]	–	X	X	–	
All necessary precautionary measures need to be taken to avoid hampering the economic or technological development of States Parties to the Convention or international cooperation in the field of peaceful bacteriological (biological) activities, while devising national codes of conduct. [Cuba / NAM]	–	X	X	–	
It remains the prerogative of States Parties to decide on the content, development and / or adoption of codes. However, the development and adoption of such codes of conduct could be effective and useful, when complemented with the involvement and assistance of national scientific community. [Iran]	–	X	X	–	
Codes of conduct should not leave individuals and scientists with the impression that codes are designed against them or their scientific activities. [Iran]	–	X	X	–	
Wider contributions by the scientists in promotion, establishment and adoption of codes would effectively remove any such misunderstandings and would enhance the implementation of codes. [Iran]	–	X	X	–	
Codes of conduct should also avoid impeding scientific discovery, placing constraints on research or international cooperation and exchange for peaceful purposes. [Iran]	–	X	X	–	
Each State Party needs to intensify its efforts to involve life scientists, policy makers and relevant international organizations to develop flexible but effective codes of conduct containing elements of ethics, education and training programmes. [Pakistan]	–	X	X	–	
The most critical part of this effort would be cooperation between governments and scientists. [Pakistan]	–	X	X	–	
Five workable guiding principles are: awareness; safety and security; education and information; accountability; and oversight. [Pakistan]	–	X	X	–	
Codes of conduct should not only focus on existing tangible and intangible technologies, but fast developing disciplines such as synthetic biology and genomic technology. [Pakistan]	–	X	X	–	
The professed purpose of such codes is to guide the scientific research in such a way that its peaceful results may not be used for malevolent purposes against the will and intention of scientists. [Russia]	–	X	X	–	
It is believed that the codes must include inter alia such elements as the criterion to define dual use research, a list of fields of science that pose the greatest risk in terms of yielding sensitive discoveries, and - the most difficult one - a framework to monitor and administer dual use research. [Russia]	–	X	X	–	
Codes may not serve as a means of constraining the freedom of peaceful scientific pursuits. [Russia]	–	X	X	–	
During the discussion on codes of conduct it is advisable to exchange views on how States Parties approach issues such as dual use biological research, research fields that have the highest risk potential in terms of generating and disseminating sensitive findings, and the ways of setting up and running oversight over dual use biological research. [Russia]	–	X	X	–	
Suggest countries should foster the development and implementation of codes of conduct. [Ukraine]	–	X	X	–	
Codes of conduct should include consideration of the following principles: awareness; safety and security; education and information; accountability; and oversight. [IAP]	–	X	X	–	

2008 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
Information which could be used by terrorists should not be published or shared. [France]	–	X	X	–	
Early education in biosecurity ... increase the level of student consciousness on their future scientific responsibilities regarding dual use of technologies and armament proliferation. [France]	–	X	X	–	
Oaths and symbols have their own strengths - a "Hippocratic oath for scientists" (would have) a strong moral and ethical individual value to deter misuse of science. [France]	X	X	X	–	
Recommend that seminars should be organized more at universities. [Germany]	–	X	X	–	
Code of conduct for dual-use research is important because it complements Government's efforts to effectively oversee all scientific activities. A rational approach is required to encourage organizations and / or scientific bodies to develop and adopt their respective codes according to their specific circumstances and requirements. [Pakistan]	–	X	X	–	
There can be problems in devising and implementing meaningful codes in multidisciplinary environments where there is a diverse range of scientific and engineering research activity. Development of new codes, or guidance within institutions working in the life sciences, should involve all stakeholders, including ethicists and philosophers of science as well as scientists. [UK]	–	X	X	–	
Different cultures approach issues from their own particular perspectives; this is an important consideration when institutions operating at a global level are seeking to develop codes and guidelines that would apply at all of their facilities. [UK]	–	X	X	–	
To overcome problems associated with developing detailed codes that could apply internationally, it may be better to provide general overarching principles on awareness, education and oversight etc, and leave it to national bodies and individual institutions to take it forward in their own particular scientific areas. [UK]	–	X	X	–	
Codes of conduct for scientists and awareness raising campaigns do not offer a foolproof defence against the misuse of the life sciences for hostile purposes. But what they can do - along with measures on oversight and education - is to heighten the levels of awareness in the academic and research communities of the need for care; highlight the nature of the Convention's legal prohibitions; and promote the need to address issues such as technology governance on a continuing basis. [UK]	–	X	X	–	
Best practice is to add elements to existing codes, as opposed to creating new codes, e.g. convergence of codes for CWC and the BWC. [Australia]	–	X	X	–	
Codes are very difficult to be implemented via administrative way as they are dealing mainly with ethic and moral categories and to agree with them and to follow them strongly depends on the personal characteristics of one scientist, his education, professional qualification, social and political orientation, his moral standards and criteria, etc. [Bulgaria]	–	X	X	–	
[There is a need for] all national institutions, organizations, universities companies etc. involved in life science research and manufacturing activities, supported by the government and using the international experience as well, to combine their efforts and to elaborate for all people working in this field an acceptable and applicable code of conduct. [Bulgaria]	–	X	X	–	
Codes should be include: compliance with basic guidelines for scientists; investigating scientific misconduct. [China]	–	X	X	–	
Desired outcome: creating a culture of responsibility and accountability; educating current and future scientific community; raising awareness of their professional, ethical and social responsibility; foster an institutional culture of ethos and responsibility. [India]	–	X	X	–	
Codes of conduct have to strike a delicate balance and look at both sides of scientific research: encourage research and development on one hand and at the same time keep an eye on its misuse. [India]	–	X	X	–	
Codes would weave a safety net to promote best practices in the conduct of research. [India]	–	X	X	–	
A code of conduct contributes to raising awareness. A code of conduct does not replace existing rules and laws. [Netherlands]	–	X	X	–	
The contents of a code of conduct have to be linked up with relevant scientific, social and political developments and ... with daily practice of persons and organizations involved. [Netherlands]	–	X	X	–	

2008 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
Code of conduct should be developed in an intensive dialogue with stakeholders and not in the ivory towers of science or politics. [Netherlands]	–	X	X	–	
Target groups: researchers and other professionals in life sciences; organizations, institutions and companies where life sciences research takes place; organizations, institutions and companies that offer education in the life sciences; organizations and institutions that offer licenses for life science research and that fund, facilitate, inspect or evaluate research; scientific and professional unions, organizations of employers and of employees in the field of life sciences; organizations, institutions and companies where dual use biological agents or toxins are stockpiled or transported; actors, editors and publishers of life science publications and administrators of life science websites [Netherlands]	–	X	X	–	
Contents of the code of conduct: raising awareness; research and publication policy; accountability and oversight; internal and external communication; accessibility; shipment and transport. [Netherlands]	–	X	X	–	
International follow-up should include: activities in context of the InterAcademy Panel; presentations at international conferences and workshops; publishing scientific articles. [Netherlands]	–	X	X	–	
The code of conduct element can serve as a guideline for scientists to deter scientists from the misuse of biotechnology. [RoK]	–	X	X	–	
A code must provide guidance to relations within the scientific community and between scientists and the public. [Ukraine]	–	X	X	–	
The code establishes basic principles for scientists' evaluation of ethical aspects in their research and the research of their colleagues. [Ukraine]	–	X	X	–	
The government cannot possibly police all activities of all scientists in their labs, nor would [it] want to. It is a much more desirable situation to motivate scientists to be mindful of their own responsibilities to science and society, and codes of conduct can play an important role in that regard. [USA]	–	X	X	–	
A code of conduct offers the greatest opportunity for improving the security of research at the level of the individual scientist: increases understanding of biosecurity concerns and issues; persistent reminder of moral and ethical responsibilities; creates a "culture of responsibility and accountability". [USA]	–	X	X	–	
While not as binding as laws or regulations, codes of conduct do define professional standards that can nonetheless have weight in courts of law when there are violations of these standards. [USA]	–	X	X	–	
A code of conduct provides behavioural guideposts for people who want to do the right thing. [USA]	–	X	X	–	
Codes of conduct may have negligible impact on intentionally malicious behaviour. [USA]	–	X	X	–	
Successful implementation of a code of conduct is contingent on a clear understanding of the subject matter, and so for dual use research, education on the criteria for identifying dual use is key. [USA]	–	X	X	–	
Participation by the research community during the development of a code is key to broad acceptance. [USA]	–	X	X	–	
According to the US National Science Advisory Board for Biosecurity (NSABB) recommendations for a code of conduct for dual use life science research, scientific societies and professional associations are encouraged to: adapt elements as appropriate to their memberships and research-related activities; discuss a code on dual use research at annual membership meetings at part of its development and adoption - enhances awareness of the issue - promotes general acceptance of the code; use the document for formal educational and training purposes. [USA]	–	X	X	–	
At any stage of life sciences research, individuals are ethically obligated to avoid or minimize the risks and harm that could result from malevolent use of research outcomes. Towards that end, scientists should: assess their own research efforts for dual use potential and report as appropriate; seek to stay informed of literature, guidance, and requirements related to dual use research; train others to identify dual use research of concern and manage it appropriately and communicate it responsibly; serve as role models of responsible behaviour, especially when involved in research that meets the criteria for dual use research of concern; and be alert to potential misuse of research. [USA]	–	X	X	–	

2008 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
A code of conduct defines specific standards of responsible conduct for the following phases and elements of the research process: proposal development; research administration and oversight; scientific and editorial review; conducting experimentation; collaboration; communicating results; educating and mentoring. [USA]	–	X	X	–	
Target audiences identified by the US National Science Advisory Board for Biosecurity (NSABB) in its recommendations for a code of conduct for dual use life sciences research: life sciences societies and associations; research institutions; industry; research leadership; individual life scientists; technicians, students, and others involved in the research process; funding agencies; journal editors, reviewers, and publishers. [USA]	–	X	X	–	
If a code of conduct is to have its intended effect, the content has to link up with relevant scientific, social and political developments and ... with the daily practice of scientists and their organizations. [Netherlands]	–	X	X	–	
One of the main principles underlying the Code of Conduct: to raise awareness about possible dual use of life sciences research. [Netherlands]	–	X	X	–	
[A code of conduct] should be a concise document, which should concentrate on the main issues that are related to this dual use. [Netherlands]	–	X	X	–	
The Code of Conduct offers rules for responsibilities and gives suggestions for regulation and sanctions on the following issues: raising awareness, research and publication policy, accountability and oversight, internal and external communication, accessibility, shipment and transport. [Netherlands]	–	X	X	–	
Another way of disseminating the Code of Conduct is by organizing debates and conferences. [Netherlands]	–	X	X	–	
There needs to be clear leadership from senior personnel across organizations. Employers have a clear responsibility here; there needs to be commitment and a sustained vision. However, individuals have a personal responsibility to act ethically. There needs to be a shared value system. [UK]	–	X	X	–	
Provide some general overarching principles on awareness, safety and security, education and information, accountability and oversight and leave it to national bodies and individual institutions to take it forward in their own particular scientific areas. [UK]	–	X	X	–	
Codes of conduct and the relevant laws and regulations should supplement each other. [China]	–	X	X	–	
Since different countries have different economic and scientific development levels and various management systems or practice, States Parties are encouraged to adopt codes of conduct according to their own national situations on a voluntary basis. [China]	–	X	X	–	
Codes of Conduct may cover the following basic elements: (i) All those who conduct the scientific research in the life sciences or related fields should comply with the basic guidelines for scientist, i.e., scientific activity should be based on benefitting the welfare of human beings and society and the preservation of nature. (ii) All those related personnel should be fully aware of the purposes and objectives of the Convention and strictly abide by its provisions. They should firmly oppose the research, production or use of biological weapons and should not participate in or assist such activities. (iii) Scientific research bodies and laboratories should adopt and abide by the biosafety and biosecurity operation practice, strengthen the administration on pathogenic microorganisms and the related personnel so as to foresee, assess and maximally prevent the negative consequences on human kind, nature and society caused by the technical achievements. (iv) If some activities violate the provisions of the Convention or might cause harm to human kind, society or nature, the personnel related should report to the competent authorities immediately. Once the violation or the dishonourable behaviour is confirmed, measures of punishment should be imposed accordingly. [China]	–	X	X	–	
Codes of conduct can contribute to increasing awareness and commitment towards the BTWC. Such codes should be flexible and adapted to local circumstances, while retaining a core message. [Indonesia & Norway]	–	X	X	–	
In order to make codes of conduct effective, it is important when formulating and propagating codes to emphasize the positive impact of "protecting legitimate research activities of well-intentioned scientists". [Japan / JACKSNNZ]	–	X	X	–	

2008 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
It is viewed of great significance to encourage the participation of as many scientists as possible in the process of drafting codes of conduct so that they will share and enhance awareness of the issues mutually through discussions. [Japan / JACKSNNZ]	–	X	X	–	
The contents of codes of conduct cannot be established independently of oversight mechanisms and programs for education and awareness raising, but rather need to be closely associated with the latter two means. [Japan / JACKSNNZ]	–	X	X	–	
When formulating codes of conduct, it is important to emphasize in particular the necessity of incorporating skilfully the two aspects of improving the awareness of scientists and establishing procedures and rules for the management and control of pathogens and toxins, as well as sensitive research information, knowledge and outcomes. [Japan / JACKSNNZ]	–	X	X	–	
[There is advantage in having] "layers" of codes of conduct representing various national, institutional, professional and other stakeholder communities. These codes will complement rather than compete with each other. It is desirable that stakeholders be encouraged to develop their own codes, applicable to their own circumstances, and articulated to their own audiences. [Japan / JACKSNNZ]	–	X	X	–	
Forming a common understanding among the States Parties on the important elements of codes of conduct may be more effective. [Japan / JACKSNNZ]	–	X	X	–	
Codes for scientists can be beneficial, but cannot on their own solve the problem posed by the threat of the use of biological weapons. In the final analysis, such codes should be part of a comprehensive, non-discriminatory multilateral process that leads to a genuine and effective strengthening of the BWC. [Cuba]	–	X	X	–	
Codes of conduct serve to assist practitioners to apply sound judgment in assessing the impact of their activities on broader ethical, safety and security issues. [Australia]	–	X	X	–	
Codes of conduct cannot be substitute for legally binding measures to ensure strict implementation and compliance with the provisions of the Convention. However, an exchange of views to draw up best practices so as to increase awareness, especially with regard to the multifaceted nature of dual use material and technology, can be of benefit to all. [India]	–	X	X	–	

2009 suggestions

The topic under discussion in 2009 was:

> with a view to enhancing international cooperation, assistance and exchange in biological sciences and technology for peaceful purposes, promoting capacity building in the fields of disease surveillance, detection, diagnosis, and containment of infectious diseases: (1) for States Parties in need of assistance, identifying requirements and requests for capacity enhancement, and (2) from States Parties in a position to do so, and international organizations, opportunities for providing assistance related to these fields

The topic in 2009 related to disease surveillance. As disease surveillance is a key element is response to deliberate relase, the proposals primarily fall within the *Resilience* dimension with elements that fall within the *Coherence/Engagement* dimension. Improvements in measures that would identify a deliberate release would only impinge upon the *Threat Ambition* dimension in very general terms. Very little within this topic falls within the *Availability/Opportunity* dimension except in very general terms that there might be fewer possibilities to handle pathogens without being detected. Therefore, most of the proposals in the 2009 Meeting of Experts would be defined as – X – X.

I. Aims

2009 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
Changes in ecosystems and habitats are resulting in new infectious diseases as well as an expanding number of non-infectious, chronic diseases and conditions [Gupte]	–	X	–	X	
Infectious disease emergence is facilitated by increasing interfaces between wildlife, domesticated animals and humans as a result of globalization, climate and associated landscape changes [Gupte]	–	X	–	X	
Urgent need for global ecohealth (not disease) surveillance [Gupte]	–	X	–	X	
Integrate ecohealth concept and surveillance in Article X implementation [Gupte]	–	X	–	X	
A major pillar of the international disarmament regime, the BWC has also a unique role to play in capacity building for disease surveillance, detection, diagnosis and containment of infectious diseases. [Bangladesh]	–	X	–	X	
Forge new and improve existing North-South, South-South and North-North partnerships, with a view to enhancing and better coordinating global capacity for disease surveillance, detection, diagnosis and containment. [Canada]	–	X	–	X	
A great number of developing countries are facing common difficulties such as under-developed infrastructure, inadequate pathogen detection capabilities and medical care service. Emergency response system needs to be improved…. International cooperation needs to be further strengthened. [China]	–	X	–	X	
- Any major public health threats such as infectious disease etc. can not be effectively addressed in the absence of collective efforts of the international community. - It is essential that the members of the international community actively develop and constantly deepen cooperation in the field of epidemic surveillance and control. [China]	–	X	–	X	

2009 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
Global epidemic surveillance and control pose a serious challenge: new infectious diseases are emerging, infectious diseases once considered under control are making a comeback, pathogenic mutation is developing at a fast pace and some pathogens are becoming more drug resistant, epizootic pathogens are frequently breaking species barriers and being transmitted to humans, and ever-increasing cross-border travel is contributing to the spread of infectious diseases worldwide. [China]	–	X	–	X	
No country can effectively address any major public health threats such as pandemic infectious diseases alone. It is therefore essential that the members of the international community actively develop and constantly deepen cooperation in the field of epidemic surveillance and control… countries with greater capacity should help countries in need enhance their capacity for epidemic surveillance and control and that such help and assistance should be provided on the basis of equality, cooperation and mutual respect. [China]	–	X	–	X	
Overcome obstacles hampering the full implementation of Article X of the Convention [Cuba / NAM]	–	X	–	X	
Given the increasing prevalence of some infectious diseases during last decade; the need for capacity building for diagnosis, prevention, treatment and control of diseases in all States Parties as well as the enhancement of all States Parties' capabilities to combat infectious diseases; and the global environment imposing restrictions in this field which makes difficult for the developing countries to observe the national and international obligations; the States Parties of the Non Aligned Movement and other States Parties call upon all States Parties to the Convention to take actions to overcome these problems [Cuba / NAM]	–	X	–	X	
Basic framework and some capacity is in place but desperately short of resources [for dealing with plant diseases] [FAO]	–	X	–	X	
A rapid and effective response to potential outbreaks relies on a qualitative global surveillance system and international collaboration. By contrast, inadequate surveillance and response by one country poses a potential risk to the region and international community. [Georgia & USA]	–	X	–	X	
While disease surveillance and mitigation remain primarily a national responsibility, it is recognised that disease and epidemics do not respect national borders and biological agents need to be tracked so that they do not enter new regions. This has made international collaboration crucial for epidemic control. [India]	–	X	–	X	
States Parties should facilitate the fullest possible exchange of equipment, materials and scientific and technical information for the uses of bacteriological (biological) agents and toxins for peaceful purposes consistent with their obligations under the Convention. This would benefit developing countries to meet their development needs, including improving public health and in building a robust biotechnology industry. [India]	–	X	–	X	
The promotional aspects of Article X are a crucial element in strengthening the BWC and in achieving universal adherence. [India]					R
International cooperation important for developing countries to meet their development needs, including improving public health and build a robust biotechnology industry [India]	–	X	–	X	
Transboundary ramifications of disease and pandemics make effective international cooperation between national systems imperative. National capacity and preparedness go hand in hand with international cooperation [India]	–	X	–	X	
Need to recognize that international cooperation and national capacity building go hand in hand; cooperation must be long term and systematic [India]	–	X	–	X	
International cooperation is the most effective way to ensure adequate response to these challenges. [Indonesia]	–	X	–	X	
The enhancement of capacity, especially for developing countries is imperative if we are committed to resolve these threats globally. It should also be underlined that the capacity building will not only benefit developing countries but will also contribute to global efforts in the detection, diagnosis and containment of infectious diseases. [Indonesia]	–	X	–	X	
Management of disease is not simple, needs strong disease surveillance and fundamental research – some countries with diverse population share same problem [Indonesia]	–	X	–	X	

2009 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
Health is deeply interconnected with the environment, trade, economic growth, social development, national security and human rights and dignity. [Indonesia & Norway]	–	X	–	X	
The full and effective implementation of all the provisions of the BWC, … could make significant contribution in meeting health and development objectives [Indonesia & Norway]	–	X	–	X	
The importance of Article X and transparency in achieving specific public health and security objectives and in meeting UN Millennium Development Goals. [Indonesia & Norway]	–	X	–	X	
A well-functioning national health system would constitute the best defence in the case of intentional spread of diseases, and would ensure that scarce resources are used more effectively, including through an "all hazard approach". [Indonesia & Norway]	–	X	–	X	
Animal and plant health are considered as important global public goods, and essential for food safety and security. Recent experience has demonstrated that human health cannot be considered in isolation from animal and plant health. [Indonesia & Norway]	–	X	–	X	
Surveillance and Detection is: A continuous process for systematically collecting and analyzing data from various sources to provide comprehensive situational awareness that can identify patterns and trends and recognize anomalies of significance Key is a positive feedback loop: when collection and analysis of surveillance data identifies an anomaly, authorized investigators collect additional information that feeds back into the analytic process in order to better analyze what has happened Output should provide stakeholders with a comprehensive appreciation of threat environment so that those stakeholders can make coordinated and effective decisions rapidly [ISBI]	–	X	–	X	
Integrate host country epidemiologists and scientists into the international public health community [IVI]	–	X	–	X	
Overcome limitations in developing countries to develop a specialism given financial constraints [IVI]	–	X	–	X	
Collaborative projects can provide adequate motivation and necessary support for field workers in the area of disease-specific surveillance for infectious diseases [IVI]	–	X	–	X	
Lack of proper implementation of Article X prevents the less developed and developing States Parties from fulfilling their plans to fully control and eradicate infectious diseases. Therefore, the States Parties should support international cooperation and assistance for combating and eradicating the emerging diseases in humans, animals and plants and to support other specific programs to improve the effectiveness of national, regional and international efforts on the diagnosis, surveillance, prevention, control and treatment of diseases caused by either natural or deliberate release of microbial and other biological agents and toxins, in particular infectious diseases, including collaborative vaccine research and development as well as relevant training programs. [Iran]	–	X	–	X	
Capacity Building is a necessity to prevent, control, and eradicate the infectious diseases. [Iran]	–	X	–	X	
There is an increasing need to improve cooperation in the field of the use of bacteriological and viral agents and diagnostic kits for peaceful purposes and the politically-motivated restrictions should be removed.. [Iran]	–	X	–	X	
The purpose of monitoring and detecting infectious diseases is to identify outbreaks or to observe a disease with a view to its treatment and prevention in humans, animals and plants. [Iraq]	–	X	–	X	
Since the early detection of infectious diseases is vitally important in reducing the spread and containing the geographical reach of epidemics, concerted efforts must be focused on the early detection, diagnosis, identification and eradication of diseases, together with relevant training provision and resource allocation. [Iraq]	–	X	–	X	
Promoting capacity building in the fields of infectious disease surveillance, detection, diagnosis and containment is of great importance for ensuring national implementation of the BWC… it is essential that States Parties in need of assistance as well as States Parties in a position to offer assistance demonstrate their own commitment to capacity building. [Japan]	–	X	–	X	

2009 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
Infectious disease surveillance aims to (1) monitor trends in epidemic diseases, (2) detect outbreaks, (3) evaluate infectious diseases control measures, and (4) predict future trends and epidemics. Disease surveillance can thus also be an indispensable measure for decreasing biological threats. [Japan]	–	X	–	X	
• Detect sudden changes in disease occurrence and distribution • Monitor trends and patterns • Portray the natural history of a disease • Generate hypothesis, stimulate research • Monitor changes in infectious agents • Detect changes in health practices • Evaluate control measures • Facilitate planning [Kenya]	–	X	–	X	
Communicable diseases and public health threats pose major challenges to humanity. These challenges cannot be restricted and contained unless we have an effective surveillance and early warning system in place, unless we have necessary equipment and expertise to detect and diagnose disease and unless we have proper medicines and facilities to treat them. [Pakistan]	–	X	–	X	
There are huge gaps in terms of national resources, both financial and technological, and capabilities. Therefore, it is important to bridge these gaps. The best and durable solution is to share resources, enhance capabilities and assist each other in realizing this objective. [Pakistan]	–	X	–	X	
The international community needs to take more active actions to prevent infectious diseases in impoverished areas and improve the treatment of infectious diseases. [Rep Korea]	–	X	–	X	
Separate states can no longer adequately prevent the spread of infectious diseases, even if they posses the capabilities to diagnose and control infectious diseases. We believe it important to develop and strengthen the Convention's potential for international cooperation in the peaceful uses of advances in bioscience. [Russia]	–	X	–	X	
Globalization, growing migratory processes, increasing trade, shared borders and other factors mean that it is necessary to have integrated and coordinated joint actions taken to combat the threat of a spread of dangerous infectious agents beyond the frontiers of endemic territories. [Russia]	–	X	–	X	
…it is more appropriate than ever to focus on international cooperation and support to strengthen national structures and capabilities for preventing, detecting and treatment of infectious human, animal and plant diseases. [Sweden / EU]	–	X	–	X	
…it is of extreme importance to enhance international cooperation, assistance and exchange in biological sciences including biotechnology for peaceful purposes [Sweden / EU]	–	X	–	X	
International cooperation and information sharing of the advancements	–	X	–	X	
in the life sciences are the only options for successful and sustainable control and eradication of new and old infectious diseases that continue to emerge world wide. [Sweden / EU]	–	X	–	X	
The progress in life sciences will provide further possibilities for international cooperation and assistance in the areas relevant for combating infectious diseases as well as for supporting the BTWC [Sweden / EU]	–	X	–	X	
The sustainability of proposed activities is key. To this end, the EU promotes local and regional ownership of projects, networking among all national stakeholders and reference laboratories, the involvement of relevant international and regional organizations and membership in regional professional bio-security- and bio-safety associations. [Sweden / EU]	–	X	–	X	
A key area for action is the need to work for better global health security, which includes reducing the threat from infectious disease. In this context… promoting wider adherence to the Convention and agreeing practical measures to enhance its effectiveness are key objectives, and this includes capacity building in the fields of disease surveillance, detection, diagnosis, and containment. [UK]	–	X	–	X	
The International community needs to work out how we best contribute to improving both animal and human surveillance systems in vulnerable countries… The development of surveillance and diagnostic capabilities is an important part of comprehensive health systems. [UK]	–	X	–	X	
The need for surveillance techniques to identify rapidly new threats is a priority. [UK]	–	X	–	X	

2009 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
Developing effective and sustainable partnerships between richer and poorer countries that help provide infrastructure, technologies and skills to support detection, identification and monitoring activities are key objectives; as are encouraging the development and deployment of new detection, identification and monitoring systems nationally and internationally. [UK]	–	X	–	X	
The submission of information by States Parties for Confidence Building Measure B, on outbreaks of infectious diseases and similar occurrences caused by toxins, is dependent on robust disease surveillance and notification capabilities. [UK]	–	X	–	X	
…promoting the safe, secure and sustainable expansion of national disease surveillance capabilities, the sharing of pertinent outbreak information consistent with the revised International Health Regulations, and the preventions, containment and mitigation of the consequences of human and animal diseases for both human health and national security. [USA]	–	X	–	X	
- To protect vulnerable people: secure their food source, their livelihoods, the economies in which they live - Improve animal health with well planned control programs to ensure secure food sources, livelihoods and economies [USA]	–	X	–	X	
The rapid detection and containment of biological threats, whether of natural, accidental, or intentional origin, is crucial both for the health of populations as well as the security interests of states. Since rapid detection and reporting of events is vital to mounting an effective response, to containing the spread of disease, and to limiting morbidity and mortality, a weakness in the surveillance system for infectious disease events in any one country is potentially a risk to all countries. [USA]	–	X	–	X	
Building core capacity for surveillance, detection, reporting, and response around the world helps all populations. This not only enables a coordinated global response to public health emergencies of international concern (whether natural or intentional), but also strengthens every nation's ability to provide basic public health functions for its people. [USA]	–	X	–	X	
The world is interconnected and public health threats do not respect borders. Therefore it is the international community's obligation to assist when it is able, by developing core capacity for surveillance and response. [USA]	–	X	–	X	
Reduce vulnerability and strengthen resilience, provide redundancy. Alleviate costs, by improving the use / mobilization of resources, and providing surge capacity.	–	X	–	X	
Strengthen transparency and credibility, enhance dialogue and build trust. [WHO]	–	X	–	X	
To extend the network of expertise • Priority regions and diseases • Global geographical coverage of expertise, focused on developing and transition countries • Better global disease surveillance • Greater access for more countries to high quality diagnostics and expertise for early detection and rapid response [OIE]	–	X	–	X	

II. Mechanisms

2009 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
…integrates and analyzes the whole information in this field, develops intensive international relationships for exchange of information being an active member of the different international networks for surveillance and early warning. [Bulgaria]	–	X	–	X	
Development of Program: - Determine core needs for agenda development - Establish time available - Scope resources and timeframe [Canada]	–	X	–	X	
Regional capacity building: Collaboration with WHO, Association of Southeast Asian Nations, other donors. And Workshops, training courses, conferences. National capacity building: National ministries of Health (legislation, Standards and guidelines) [Canada]	–	X	–	X	

2009 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
Four activity areas: - Laboratory Systems and capacity - Surveillance, outbreak, investigation and response - Emergency preparedness and response - Communications [Canada]	–	X	–	X	
Capacity building: joint planning / combine the competences regarding projects in order to obtain best results. States parties could prepare their own list of projects. Those lists would be posted on the ISU's website, for consultations to prepare for the MSP in December. [Canada]	–	X	–	X	
Continue to strengthen and improve the existing disease notification mechanisms. Information about any outbreak of acute infectious diseases should be shared in accordance with the current practice of relevant international organizations. [China]	–	X	–	X	
Efforts are made to strengthen exchange and cooperation between States Parties and international organizations such as the World Health Organization (WHO), World Organization for Animal Health (OIE), Food and Agriculture Organization of the UN (FAO), so as to make full use of their available resources and services [China]	–	X	–	X	
International Cooperation in the Field of Human Infectious Disease Surveillance and Control - Cooperation with relevant international organizations - Regional cooperation - Bilateral cooperation and assistance [China]	–	X	–	X	
Share information about epidemics more widely. Continue to strengthen and improve the existing disease notification mechanisms. Information about any outbreak of acute infectious diseases should be shared in a prompt and effective way in accordance with the current practice of relevant international organisations, and mutual consultation and coordination should be strengthened. [China]	–	X	–	X	
Strengthen exchange and cooperation with international organisations. States Parties should continue to strengthen cooperation with WHO, OIE, FAO and other international organisations, making full use of their resources and achievements available. International organisations, for their part, can provide technology, funding and information to countries that have practical difficulties in implementing relevant standards and norms. [China]	–	X	–	X	
Coordinate cooperation with other relevant international and regional organizations for the financial and technological support of the activities for the use of bacteriological (biological) and toxin agents for peaceful purposes [Cuba / NAM]	–	X	–	X	
The States Parties of the Non-Aligned Movement and other States Parties recommend establishment of a mechanism under the Convention open to participation of all States Parties, to perform the following tasks: (i) Identify and address the needs in terms of equipment, materials and scientific and technological information regarding the use of the bacteriological (biological) and toxin agents for peaceful purposes; (ii) Overcome the obstacles hampering the full implementation of Article X of the Convention; (iii) Mobilize the necessary resources, including financial resources, to facilitate the widest possible exchange of equipment, material and scientific and technological information regarding the use of bacteriological (biological) and toxin agents for peaceful purposes, in particular from developed to developing States Parties; (iv) Facilitate the development of human resources in developing States Parties in the implementation of the Convention, taking into account the special situation faced by them; (v) Coordinate cooperation with the other relevant international regional organizations for the financial and technological support of activities for the use of bacteriological (biological) and toxin agents for peaceful purposes; (vi) Establish sponsorship programme in the BWC to support participation of developing States Parties in the meetings and other activities of the Convention. This sponsorship programme could also be utilized, depending upon the availability of resources to enhance participation of non States Parties in order to promote the goal of universalization of the Convention. [Cuba / NAM]	–	X	–	X	
As an Agency of the EU, ECDC can provide assistance through Outbreak Assistance Teams to countries and international organizations regarding administrative and logistical support, field response reporting and evaluation. [ECDC]	–	X	–	X	
Cooperation could focus on the establishment of early warning systems with real time information sharing. [France]	–	X	–	X	

2009 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
Assistance can be provided by inter-institutional cooperation as well as international cooperation. [France]	–	X	–	X	
Multifunded projects could be encouraged aiming at improving coordination among donors. [France]	–	X	–	X	
Thematic cooperation under subnetworks could be put in place [France]	–	X	–	X	
System requirements for disease surveillance: •Sensitive (detect intended health events) •Specific (low false positive / negative reporting) •Representative •Timely •Simple (easy to understand and implement) •Flexible (customizable) The implementation of the consistent policies, operating procedures and the operational and technical capacity required by the WHO International Health Regulations will help to ensure early warning and efficient international management of a biological incident, whether naturally occurring or deliberate in nature. [Georgia & USA]	–	X	–	X	
Infectious disease know no geographic boundaries, neither should we in combating them. [Georgia & USA]	–	X	–	X	
A qualitative surveillance system should be sensitive (detect intended health events), specific (low false positive / negative reporting), representative, timely, simple (easy to understand and implement), flexible (customizable), and acceptable. [Georgia & USA]	–	X	–	X	
• Exit strategy – Lessons learned to maintain sustainability of collaboration projects • Research cooperation: criteria for ethical issues are sometimes discrepant,, • Enhancing international collaboration: different motivations (money, scientific career, positions),, • Capacity-building: brain drain, competition with NGOs and International Organizations,, • Technological exchange: educated personnel needed,, • Sustainability: research project funding mostly limited to max. 3 years,, • Quality: reliable and uncomplicated communication infrastructure is crucial,, • Disease control: needs in countries different from what is expected, [Germany]	–	X	–	X	
Internal and external quality assurance exercises need to be implemented as an ongoing process as a prerequisite for all biological laboratories for demonstrating in-house experience and reliability of their diagnostic results. [Germany]	–	X	–	X	
Value in the fusion and visualization of distributed electronic resources [HealthMap]	–	X	–	X	
Importance of multi-lingual, collaborative approach that minimizes information overload and engages users [HealthMap]	–	X	–	X	
The strengthened implementation of the provisions of Article III would ensure that the cooperation envisaged under Article X is not abused. [India]	–	X	–	X	
Effective export controls are essential component of international cooperation to ensure that disease causing organisms and pathogens do not fall into the hands of terrorists and are used only for peaceful purposes. [India]	–	X	–	X	
Effective and efficient disease surveillance system is necessary to detect cases of alleged use of biological weapons and suspicious outbreaks of diseases. [India]	–	X	–	X	
While all bilateral and multilateral avenues for cooperation must be explored; the framework provided by the Convention must be fully implemented; especially implementation of Article X. [India]	–	X	–	X	
Close Co-operation between animal and human health departments [India]	–	X	–	X	

2009 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
Capacity Building Through: Multilateral Arrangements, including: - Exchange of information through international databases on disease control and public health - Direct assistance from multilateral organizations - Cooperation under regional organization Capacity Building Through Bilateral Arrangements, including: Cooperation Agreements / MOUs between various organizations. Training / Education Workshops / Seminars Private Sector: - Industry Requirements:- "Globalization in biotech is largely India-centric…it will not just be about business opportunities but capability development that will expose India to actively learn the expertise of the partner" - Public-Private Partnership (PPP) crucial to address challenges of disease surveillance and mitigation [India]	–	X	–	X	
…to enhance understanding of different needs and challenges confronted by state parties as well as in identifying possible steps to bolster international cooperation [Indonesia]	–	X	–	X	
Expanding the use of safe and modern diagnosis – National capacity building in fundamental and translational research [Indonesia]	–	X	–	X	
Participation in infectious disease surveillance networks – Sharing quality data / information – Need quality assurance of data collection [Indonesia]	–	X	–	X	
New vaccines, antibiotics and a basic understanding of pathogenic nature of diseases are critical for health security – invest in basic science and fundamental research [Indonesia]	–	X	–	X	
Build a safe, secure and sustainable capacity [Indonesia]	–	X	–	X	
Capabilities must be adapted to local needs [Indonesia]	–	X	–	X	
Increased cooperation between countries – make use of existing capabilities and resources [Indonesia]	–	X	–	X	
- Network with interagency counterparts, personal in health, academia, law enforcement, defense and multiple stakeholders including industry, medical, professional organizations, and the media - Regional cooperation is necessary not only in the field of biosafety and biosecurity but also in infectious diseases research and surveillance. - Strengthening cooperation between developed and developing countries and opportunities among developing countries. [Indonesia]	–	X	–	X	
Recognised the importance of the revised WHO International Health Regulations (IHR) for effectively addressing current and emerging health security challenges. [Indonesia & Norway]	–	X	–	X	
Full implementation of the IHR requires mobilisation of national and international resources for capacity building to meet the national capacity requirements in the given IHR timeframe. Article 5 and Annex 1 of the IHR provide the requirements for national capacity which could be supported in the context of Article X of the BWC. [Indonesia & Norway]	–	X	–	X	
Insufficient mobilisation of resources for animal and plant health. Donor countries were encouraged to provide more long-term, sustainable and predictable funding. Initiatives and capacity building programmes carried out by the FAO and the OIE were greatly appreciated. [Indonesia & Norway]	–	X	–	X	
Further strengthening existing international organizations and networks working on infectious diseases, in particular those of the WHO, FAO, OIE and IPPC, within their respective mandates. [Indonesia & Norway]	–	X	–	X	
Strengthening health security required sustained and long-term investment in human resources, infrastructure, and standard operating procedures, adapted to local needs and circumstances. [Indonesia & Norway]	–	X	–	X	
It was noted that early investment to build capacity and preparedness was much more cost-effective than responding to events as they occurred [Indonesia & Norway]	–	X	–	X	
Integrated, cross-sectoral approach to funding, in view of the need to pool resources from the different national and international agencies working in public health, agriculture, law-enforcement and security. [Indonesia & Norway]	–	X	–	X	
Need for partnerships with relevant stakeholders, and recognised the important role that could be played by the private sector, academia and NGOs in building capacity for health security. [Indonesia & Norway]	–	X	–	X	

2009 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
Continued cooperation, dialogue and constructive engagement among all relevant actors will be required to effectively manage the complex issues surrounding sharing of viruses and production and access to vaccines, in the interest of building national health capacities worldwide. [Indonesia & Norway]	–	X	–	X	
The need for strengthened cooperation between developed and developing countries; there were also important opportunities for increased cooperation among developing countries. [Indonesia & Norway]	–	X	–	X	
Promote sharing of public health data on regional and global level [IVI]	–	X	–	X	
Cooperation between public and private sector on implementation of surveillance and reporting of cases of communicable diseases under surveillance has important impacts and should be encouraged. Participation of medical institutions in the surveillance process should be improved. [Iran]	–	X	–	X	
The relevant international organizations and bodies (WHO, OIE, FAO and ICRC) within their mandates on monitoring global public health and humanitarian assistance, regardless of epidemic sources, could play a coordinating role in providing and mobilizing technical and financial assistance and aids. It goes without saying that the above-mentioned mechanism is not a substitute to the obligations of the States Parties under Article X of the BWC. [Iran]	–	X	–	X	
Application of biotechnology and scientific research and development, for the prevention, surveillance, detection, diagnosis, prophylaxis and treatment of diseases caused by microbial and other biological agents or toxin, in particular infectious diseases, as well as unknown diseases should be available for States Parties on a non-discriminatory basis. [Iran]	–	X	–	X	
Adopt national measures including enacting national legislation in order to: (a) Facilitate cooperation with other Parties away from politically motivated consideration and on a non- discriminatory basis; and (b) Rule out any biological cooperation with non- Signatories. [Iran]	–	X	–	X	
[States Parties should] Undertake to review their national regulations governing international exchanges and transfers of equipment, materials (including biological agents and toxins), as well as scientific and technological information for peaceful purposes to ensure their consistency with the objectives of the Convention specifically the provisions of Article X and in order not to hamper the development of other States Parties. [Iran]	–	X	–	X	
Any possible additional measures to the Convention should be consistent with the Convention and must be multilaterally negotiated in a comprehensive manner. [Iran]	–	X	–	X	
The imposition of restrictions on dual use application of know-how, materials and equipment necessary for promoting capacity building in the fields of disease surveillance, detection, diagnosis, and containment of communicable diseases including production of some vaccines and other biological material is considered as a blatant discriminatory action in gross violation of Article X. Nevertheless the implementation of this fundamental Article by certain States Parties has regrettably been subjected to the politically motivated considerations in contravention of the provisions of the Convention. A State Party to the Convention should have the right to seek to redress the situation and settlement of disputes through institutionalized measure if it is denied receiving equipment and materials for peaceful application of biology and bio- technology by another State Party. Therefore a mechanism should be devised to deal with the issue of settlement of disputes arising from transfer denials. In this regard a standing committee could be established under the Convention to consider the cases of transfer denials. The members of the committee should be duly experienced and competent, composed of well qualified governmental individuals and appointed on the basis of balanced geographical distribution. [Iran]	–	X	–	X	
Need for all States to introduce comprehensive and practical national measures to contain the spread of diseases in humans, animals and plants and to combat and treat such diseases promptly. [Iraq]	–	X	–	X	
Monitoring involves an extensive and systematic process of gathering information on combating and preventing disease. Therefore, a database is of vital importance in identifying outbreaks of any new diseases or the recurrence of any endemic or non-endemic diseases, together with any other diseases that have the potential to trigger an epidemic. [Iraq]	–	X	–	X	

2009 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
Monitoring plays a very important role in the planning, identification and formulation of strategies to control infectious diseases. Strong investigative and detection capacities, including good laboratory resources, modern and appropriate technologies and skilled personnel, are necessary in order to secure swift and decisive results. [Iraq]	–	X	–	X	
States parties which have advanced and modern monitoring systems and measures in place and the international institutions and organizations concerned must assist other States in this domain, including through: training courses to build the capacities of public health personnel; support for the use of information techniques and technology to collect and analyse data on infectious and epidemic diseases; strengthening of national and local disease monitoring programmes; and the improvement of early warning, monitoring, protection and response capacities. [Iraq]	–	X	–	X	
Strengthening disease surveillance : Assessment of current surveillance system Revitalization of routine surveillance Enhancing early detection Maintaining international partnership [Japan]	–	X	–	X	
Encourage the ownership of the recipient country so that the provision of assistance could eventually lead to generating a self-sustainable mechanism in the recipient country. [Japan]	–	X	–	X	
In order to support the improvement of surveillance, detection, diagnosis and containment capabilities, it is important to take into consideration each country's priorities concerning public health policy, and to clarify their position within the overall picture of the health systems strengthening. [Japan]	–	X	–	X	
It is essential to make improvements in not only priority areas but also in areas that are expected to produce results based on each country's burden of disease and the situation of its health system. [Japan]	–	X	–	X	
Link surveillance to action: • Outbreak Investigation • Disease control o Vaccination / prophylaxis o Elimination of cause o Interruption of transmission • Development, targeting of programs (education, risk reduction, etc.) • Development of policies, regulations [Kenya]	–	X	–	X	
Capacity building must be based on more solid and modern epidemiological systems in the light of new needs and the need to cope with the emerging events which incorporate the idea of a syndrome monitoring system concerning serious occurrences of contagious diseases [Mexico]	–	X	–	X	
Another crucial aspect to contribute to worldwide health safety is appropriate interchanges of information and transparency in cooperation. [Mexico]	–	X	–	X	
A key to successful defence against threat to public health, whether naturally occurring or deliberately caused, is: early detection; identification; monitoring of disease progression in a community. [Nigeria]	–	X	–	X	
Strengthen the linkage between public health and veterinary epidemiology [Nigeria]	–	X	–	X	
Conduct research activities on priority public health problems [Nigeria]	–	X	–	X	
Improve communications and networking within the country and throughout the region on public health issues [Nigeria]	–	X	–	X	
Governments, with the support of all stakeholders, must work collectively at the international level to promote cooperation and at the national level to enhance capacity building to counter and overcome these challenges. [Pakistan]	–	X	–	X	
Capacity building at national, provincial and district levels in terms of :… human resource development; guidelines and standard operating procedures for complex emergencies; [Pakistan]	–	X	–	X	
Lessons for donor countries: there are still areas of duplication (e.g. lots on interest in training first responders but less in training technicians); and there should be systems of monitoring by donors (to ensure that donors are aware that resources are being used effectively which encourages further collaborations). [Philippines]	–	X	–	X	
A disease-specific approach alone can neither improve health care services for the people in developing countries nor facilitate the implementation of a regionally integrated health system. [Rep Korea]	–	X	–	X	

2009 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
To cope with these infectious diseases more effectively, disease-specific international organizations and vertical funds need to be horizontally integrated so that they can contribute to improving the primary health care system of developing countries. Although such organizations and funds have been successful in reducing the outbreak rate of specific diseases such as the "Big 3,„" it seems that they have failed to promote capacity building of individual developing countries in terms of general health level in the areas. Thus, the international health community is required to cooperate more actively with each other and, in the longer term, to invest their funds into more comprehensive health care programs to improve the level of health in the developing world. [Rep Korea]	–	X	–	X	
That the control of infectious diseases can be sustainable only when it is based on the enhancement of the primary health care system of each country. [Rep Korea]	–	X	–	X	
The health level of developing countries can be improved through such elementary prerequisites as constructing health infrastructure, training local health staff and strengthening the primary health care system. [Rep Korea]	–	X	–	X	
An improvement in the system of epidemiological surveillance and monitoring of infectious diseases, and this includes crossing points over State boundaries, in our opinion is one of the key elements in a strategy aimed at curbing the development of epidemics and averting threats related to infections emerging once again. [Russia]	–	X	–	X	
… promote cooperation against the outbreaks and spread of infections, import and sales of goods, biological, chemical, radioactive and other materials dangerous to human health, substances, materials and waste that require measures of sanitary protection of the territory of CIS member states [Russia]	–	X	–	X	
… one of the topics for cooperation within the Shanghai Cooperation Organization is joint work in the area of health and first and foremost the establishment of a unified system for monitoring infectious diseases and the prevention of epidemics. [Russia]	–	X	–	X	
We see the following prospects for cooperation between States Parties to the BWC: first, developing accelerated methods and means for setting up indicators for agents of infection; second, establishing a new generation vaccine; third, developing new disinfecting preparations and medicines; and, lastly, coming up with new treatments to deal with infectious diseases. [Russia]	–	X	–	X	
The effectiveness of international cooperation among States Parties in the area of combating infectious diseases should be ensured on the basis of joint research programmes and projects or agreements on particular issues at the request of Member States that require such assistance, as well as reciprocal agreements and understandings or other reciprocal procedures showing full compliance with all the provisions laid out in the Convention. In our opinion, such cooperation should be built on the basis of an honest, just and, to the greatest extent possible, a broad geographical basis [Russia]	–	X	–	X	
Strengthening of international cooperation as well as supporting the efforts already under way by appropriate international organizations [Russia]	–	X	–	X	
International cooperation with countries whose economies are developing, developing countries in other words, and this includes through the network of cooperating centres at the World Health Organization, and it has considerable organizational and scientific potential for enhancing the effectiveness of measures taken to resist infectious diseases. [Russia]	–	X	–	X	
The development of inter-State and inter-agency cooperation in this arena makes it possible to maximize every use of existing resources and to have a multiplier effect on them through scientific and technological exchanges and it also provides for mutual assistance in the development of effective mechanisms for joint work when it comes to warding off the spread of epidemics. [Russia]	–	X	–	X	
The effectiveness of international cooperation among States Parties in the area of combating infectious diseases should be ensured on the basis of joint research programmes and projects or agreements on particular issues at the request of Member States that require such assistance, as well as reciprocal agreements and understandings or other reciprocal procedures showing full compliance with all the provisions laid out in the Convention. In our opinion, such cooperation should be built on the basis of an honest, just and, to the greatest extent possible, a broad geographical basis. [Russia]	–	X	–	X	
The States Parties to the BWC have different levels of scientific and technological capacity. Given the situation, it is important to work to strengthen the capacities of developing countries in the area of epidemiological surveillance through promoting international cooperation, including South-South cooperation [Senegal]	–	X	–	X	

2009 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
Assistance should be given in a sustainable manner. This means that the receiving country should have ownership and all relevant stakeholders should be involved. [Sweden / EU]	–	X	–	X	
…should identify needs and requests from States Parties in need of assistance… These indications of need would allow States Parties, the EU and other international organizations which are in a position to provide assistance to identify assistance opportunities [Sweden / EU]	–	X	–	X	
International cooperation involving and supporting international organizations like WHO, FAO, OIE and IPPC as well as with non- governmental actors working in infectious diseases will also in the future be key to strengthening structures and capacities in disease surveillance, detection, diagnostics and containment of infectious diseases. [Sweden / EU]	–	X	–	X	
A new EU Joint Action in support of the WHO will promote bio-safety and bio-security and preparedness against intentional misuse. Activities under the Joint Action will include regional workshops, initiating country-focused operational initiatives, country visits and a longer-term project in one country. The EU seeks the involvement and the partnership of BTWC States Parties in this initiative. [Sweden / EU]	–	X	–	X	
Other financial instruments can also be used in support of EU activities in the biological field. For instance, under its Seventh EC Framework Programme for research (2007-2013), the EU will support cooperative trans-national research activities, open to third States to develop technologies and knowledge for building capabilities to ensure the security of citizens. [Sweden / EU]	–	X	–	X	
A range of direct investment and incentive mechanisms are needed to ensure that appropriate and affordable health technologies are developed for diseases that are prevalent in developing countries. [UK]	–	X	–	X	
Projects involving cooperation between host institutes and donor country bodies, with a view to ensuring sustainable and legitimate future for institutes working on public, animal or plant health, potentially have benefits both for the institutes and their host governments and also for the donor country through better understanding of new health threats and improved health security. [UK]	–	X	–	X	
WHO, OIE and FAO communicate with each other and each has developed its own early warning and response system. These are all brought together under the umbrella of the Global Early Warning and Response System, which adds value to the international community. We must therefore ensure that this system is made increasingly effective. [UK]	–	X	–	X	
Key Lessons: • Countries must promptly report diseases with potential to spread internationally. • Political leadership is important in combating disease. • WHO has a key role in sharing information and providing the best public health advice. • Scientists, clinicians and public health experts must work together to tackle global health challenges. • Strong health systems are essential: weaknesses in one country means vulnerability for all. [UK]	–	X	–	X	
Sustainable and strategic linkages need to be further developed between the two communities (human and animal health). This is beginning to happen, but much more could usefully be done. [UK]	–	X	–	X	
'One Medicine' partnerships for the detection and identification of diseases that infect both humans and animals are an essential first step in any future control of emerging infections. [UK]	–	X	–	X	
Global initiatives and funds need to increase the effectiveness of their aid, for example, by providing support in ways that strengthen systems and dovetail with national planning processes and timelines. [UK]	–	X	–	X	
Global initiatives should aim to work collaboratively with other organizations and initiatives and with UN agencies, rationalizing the number of initiatives, where possible, to achieve effective and sustainable outcomes. [UK]	–	X	–	X	
We need to foster an inter-disciplinary approach to infectious disease problems, incorporating traditional biomedical science with economic, social sciences, demographics and agricultural science. [UK]	–	X	–	X	
We need to build effective and sustainable partnerships between developed and developing countries that help provide infrastructure, technologies and skills to support infectious disease control activities. [UK]	–	X	–	X	

2009 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
We need to encourage the development and deployment of new tools and technologies for surveillance, detection, diagnosis, and containment of infectious diseases. [UK]	–	X	–	X	
Meaningful progress is only possible if there is sustained commitment from governments, non-governmental organizations, industry and the international community. Only by working together can sustainable improvement sin combating infectious diseases be achieved. [UK]	–	X	–	X	
Work in the BTWC context cannot hope to match the efforts underway in the relevant international organisations, nor should it seek to duplicate it. However, it can help reinforce, publicise and promote best practice, highlight priorities and act as an additional catalyst. [UK]	–	X	–	X	
Information on disease outbreaks is often available on government websites an on those of international organizations to which member states are required to notify disease outbreaks including WHO,,OIE and FAO. The ready availability of such information on official websites can be advantageous in facilitating the collection and presentation of disease outbreak information for CBM B. [UK]	–	X	–	X	
It is important to mobilize the integrated international security and health resources to build capacity for disease surveillance, detection, diagnosis and response at the national, regional and international levels. It is also important that we all assist the WHO and Member States in the implementation of the IHR, recognizing that a well functioning IHR system is the best defense in case of intentional spread of diseases, just as it is for natural outbreaks and pandemics. Progress in public health capacity-building can best be assessed by monitoring and reporting on the national implementation of IHRs. [USA]	–	X	–	X	
Disease control must be cost effective and protect livelihoods while getting rid of disease. [USA]	–	X	–	X	
National and international efforts must be sustainable: Effective programs are sustainable through: –disease control –market price stabilization –ensuring livelihoods –maintaining trade, and –protecting human health [USA]	–	X	–	X	
There is now the acknowledgement that human and veterinary medical professionals must work together for the benefit of all species. [USA]	–	X	–	X	
The benefits of a “One Health” approach have been expanded and embraced during avian influenza and pandemic preparedness. This approach enhanced the worldwide response to avian influenza. This also helps ensure synergy of ideas, reduce redundancy and improve efficiency. [USA]	–	X	–	X	
1) Preparedness and Communications, 2) Surveillance and Detection, and 3) Response and Containment. These areas support international economic development to protect vulnerable societies, secure food sources and improve livelihoods. The side benefits of this are improving animal health while protecting human health. This approach must be cost effective and protect the economic viability of agriculture while getting rid of disease. [USA]	–	X	–	X	
Effective animal health programs are sustainable through, disease control, market price stabilization, ensuring livelihoods, maintaining trade, and protecting human health. [USA]	–	X	–	X	
Foster global partnerships: WHO, all countries and all relevant sectors (e.g. health, agriculture, travel, trade, education, defence) are aware of the new rules and collaborate to provide the best available technical support and, where needed, mobilize the necessary resources for effective implementation of IHR (2005) [WHO]	–	X	–	X	
Investing in • Human resources (training, distance learning, twinning programmes …) • Infrastructure (buildings, equipments, logistics …) • Standard Operating Procedures (investigation, response, biosafety …) [WHO]	–	X	–	X	
Building on • National and Regional strategies [WHO]	–	X	–	X	

2009 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
Concept: • Mutual understanding between both partners • Consideration given to laboratories with potential to achieve improvement • Geographical distribution, common language and appropriate matching • Fit different laboratory situations and follow stepwise approach to attain objectives • Mutual benefit to both partners • Independent steering committee for selection of twinning projects and evaluation progress made • Long-term vision: a partnership network What needs to be done: • Potential partners express interest in taking part in a twinning project • Candidate laboratory to identify needs, set up objectives and project plan • Roles and responsibilities of each partner are clearly defined in the twinning proposal and the MOU. • Twinning should be endorsed by institutions / Labs directors and higher health authorities in developing countries • WHO facilitates and assures communication between partners • Measurable indicators and activity reports to document progress [WHO]	–	X	–	X	
• Assist countries with disease control efforts by ensuring rapid appropriate technical support to affected populations • Investigate and characterize events and assess risks of rapidly emerging epidemic disease threats • Support national outbreak preparedness by ensuring that responses contribute to sustained containment of epidemic threats [WHO]	–	X	–	X	
Early detection and a rapid response are essential for prevention and control • An effective strategy (surveillance and response) • Authority, resources and expertise to implement • Public and private sector involvement [OIE]	–	X	–	X	
A global strategy for preventing and managing risks at the human- animal interface - Cooperation is important particularly for predictions, prevention and response [OIE]	–	X	–	X	
• Strengthen links within animal health network and with human health network • Share data, viruses and information • Develop better diagnostics [OIE]	–	X	–	X	

III. Infrastructure

2009 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
Constant external international quality control [Bulgaria]	–	X	–	X	
… strengthening the capacity of our health system for effective surveillance and organization of modern computerized network for reporting of communicable diseases, including HIV / AIDS and tuberculosis [Bulgaria]	–	X	–	X	
Canada - Lab Design and Function - Biosafety and Biosecurity Program Management - Laboratory Acquired Infections - Facility Operation and Maintenance -Commissioning - Ventilation systems - Personal protective equipment - Biological Safety Cabinets - Sterilization, Disinfection & Decontamination - Emergency Spill Response - Lab Accident / Incident Response - Medical Surveillance - SOP (Standard Operating Procedures) [Canada]	–	X	–	X	

2009 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
- consolidate and secure the countries collection of dangerous pathogens - will serve as the central repository consolidating all BSL3 activities - conduct human and animal health diagnostics in a secure and safe manner - capacity building [Canada & Kyrgyzstan]	–	X	–	X	
Inadequate laboratory facilities pose a security risk and do not allow proper disease surveillance, detection, diagnosis and containment of infectious diseases. [Canada & Kyrgyzstan]	–	X	–	X	
States Parties that are better off are encouraged to share their knowledge and experience with other States Parties through exchange of bacteria (virus) samples, provision of vaccines and equipment [China]	–	X	–	X	
Improving the nationwide epidemic surveillance system: • Monitoring statutorily reportable diseases in accordance with the relevant laws and regulations • Formulated disease-specific monitoring programmes • Extended its influenza surveillance network in response to the onslaught of pandemic influenza A (H1N1) • Set up national Internet-based reporting system for infectious diseases and public health emergencies National Internet-based reporting system for infectious disease [China]	–	X	–	X	
Developing emergency response capability • Established a public health emergency response system • Strengthened equipment and reserve capacity • Upgraded pathogenic microorganism laboratories. [China]	–	X	–	X	
Strengthen exchange and cooperation in the field of science, technology and equipment related to epidemic surveillance and control. States Parties with greater capacity are encouraged to strengthen cooperation with other States Parties in the diagnosis, detection, prevention and treatment of infectious diseases through exchange of bacteria (virus) samples, provision of vaccines and equipment, and joint development of research project, and to share findings of scientific research. [China]	–	X	–	X	
Mobilize the necessary resources, including financial resources, to facilitate the widest possible exchange of equipment, material and scientific and technological information regarding the use of bacteriological (biological) and toxin agents for peaceful purposes, in particular from developed to developing States Parties [Cuba / NAM]	–	X	–	X	
Renovate / repair key lab / infrastructure Procure appropriate equipment [Georgia & UK]	–	X	–	X	
Internal and external quality assurance of laboratory diagnostics requires wet labs and ring trials, the provision of appropriate reference materials, training assistance, and procedural improvements. The readiness to take over the responsibility for preparing and conducting an external quality assurance project is limited. [Germany]	–	X	–	X	
Establish a decentralised system of disease surveillance for timely and effective public health action; improve the efficiency of disease surveillance for use on health planning, management and evaluating control strategies. [India]	–	X	–	X	
Build capacity to detect, diagnose and track outbreaks of highly infectious diseases [Indonesia]	–	X	–	X	
Surveillance and detection systems require: - Diverse and continuous data streams - Easy and rapid episodic notification and information sharing capacities - Robust information management system, including corps of skilled experts, for analyzing large quantities of data to provide situational awareness and alert response authorities [ISBI]	–	X	–	X	
Some countries are still using manual systems for data collection, reporting, analyzing, feedback and dissemination. Reporting data through appropriate electronic systems would facilitate the integration of surveillance activities especially if the system is user-friendly and does not use multiple and different data sets that result in extra workload and subsequent abandoning. Each State Party could try to establish computerized system for information management such as Geographic Information System (GIS). [Iran]	–	X	–	X	
Detection facilities: sensitive, specific and time (losing time can be catastrophic) [Iran]	–	X	–	X	
Preventing the transfer of the diseases : borders and immigrants control is a challenge [Iran]	–	X	–	X	

2009 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
We are facing with restrictions such as denial of sending standard bacteria (such as Pertussis, tetanus, Diphtheria, ...), viruses (such as Mumps, measles, Rubella, Influenza, ...), cell lines and diagnostic kits. These restrictions imposed in the field of peaceful uses of standard bacteria are in clear contradiction to the Convention and also to any norm of international cooperation and therefore should be removed. [Iran]					R
In light of rapid scientific and technological development in biology, the importance of strengthening international cooperation in this area in order to bridge the existing gap between countries in the fields of biotechnology, genetic engineering, microbiology and other related areas is ever increasing. The afore-mentioned gap between countries is a source of concern and requires all States Parties, particularly those possessing advanced biotechnology to adopt positive measures to promote technology transfer and international cooperation on an equal and non- discriminatory basis, in particular with developing countries. [Iran]	–	X	–	X	
The introduction of adequate biosafety and biosecurity measures in laboratories and facilities which handle pathogens and toxins and the adoption of the relevant standards of international organizations will prevent these sources from being stolen or lost or from escaping or being used in various ways to harm public health. The adoption of these and other measures will reduce to some extent the incidence and facilitate the monitoring and detection of infectious diseases. [Iraq]	–	X	X	X	
What we have to do 1. It is necessary that the governments authorize few laboratories in their territory. 2. It is necessary to regulate the number of scientist that learn to manipulate dangerous agents. 3. It is necessary to have few groups composed by scientists with full time contract. And what we can obtain 1. A good control of personnel 2. The concentration of pathogen agent strains in few places 3. Increasing of the security and reduction of the costs [Italy]	–	X	X	X	
…reiterate the importance of technical assistance to address the identified gaps especially in… acquisition and installation of ICT system to update and manage the disease surveillance and response in the country [Kenya]	–	X	–	X	
…reiterate the importance of technical assistance to address the identified gaps especially in… strengthening the laboratories systems and networks on biosafety and biosecurity measures [Kenya]	–	X	–	X	
• Assessment of existing surveillance system • Preparation of Strategic Plan • Implementation of Action Plan • Monitoring and Evaluation [Nigeria]	–	X	–	X	
Strengthen capacity to respond to emergencies [Nigeria]	–	–	–	X	
Strengthen public health and veterinary surveillance systems [Nigeria]	–	X	–	X	
Strengthen laboratory participation in surveillance and field investigation [Nigeria]	–	X	–	X	
Infectious diseases are preventable provided an early warning system is in place. Lab support is also critical for successful disease surveillance, forecasting, planning, preparing and controlling. [Pakistan]	–	X	–	X	
Disease Early Warning System: • Early detection of outbreak • Syndromic Case Definitions, Reporting Forms and watch charts help in disease monitoring • Data analysis at facility / local level [Pakistan]	–	X	–	X	
Shift in approach from: isolated to integration; paper reports to electronic system for efficient data transmission; too much information to selected useful (bare minimum) but high quality data; central to peripheral data analysis and response arrangements [Pakistan]	–	X	–	X	
strengthening isolation facilities; logistic and IT support to surveillance and response units, including strategic stockpiles; data quality checks; … equipment, kits and reagents and other supplies; mobile labs for field investigations [Pakistan]	–	X	–	X	
We see the following prospects for cooperation between States Parties to the BWC : first, developing accelerated methods and means for setting up indicators for agents of infection ; second, establishing a new generation vaccine ; third, developing new disinfecting preparations and medicines ; and lastly, coming up with new treatments to deal with infectious diseases. [Russia]	–	X	–	X	

2009 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
Identifying the list of notifiable communicable diseases, determining the case definitions, establishing a notification system based on an appropriate communication web structure, with the aim of preventing and controlling communicable diseases [Turkey]	–	X	–	X	
Maintaining the communication between the Ministry of Health and local health authorities responsible for collecting ther relevant data [Turkey]	–	X	–	X	
Maintaining constant communication between the Ministry of Health and local health authorities for an early warning and response system via appropriate equipment [Turkey]	–	X	–	X	
Improving general or specific surveillance mechanisms or programs for diseases [Turkey]	–	X	–	X	
Protecting Human health: Public information is key Systematic disease surveillance must be supported by -Proficient diagnostic testing services -Emergency management services -Essential policies for economic recovery [USA]	–	X	–	X	
Systematic disease surveillance must be supported by proficient diagnostic testing services, emergency management services and essential policies for economic recovery when diseases are found. [USA]	–	X	–	X	
Earth-observing space satellites record data on environmental and climate conditions that influence infectious disease epidemiology, affording opportunities to predict, mitigate, prevent, and understand epidemics. [USA]	–	X	–	X	
Focusing on • Laboratory quality system (EQA programmes, biosafety, specimen collection, lab regional network …) • Event-base surveillance system (epidemic intelligence, field investigation, data analysis, risk assessment, reporting …) • Communication (social mobilization, media, web …) [WHO]	–	X	–	X	
Accurate and reliable diagnostics are essential for surveillance and early detection [OIE]	–	X	–	X	

IV. Human resources

2009 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
Revision of education curricula and training: human, veterinary, conservation and military medicine; border control police (military and civilian) and customs. [Gupte]	–	X	–	X	
Development of ecohealth capacity, particularly, in wildlife health, gene ecology, disease ecology, socio-economic situational analysis and biosafety in terms of sustainable development, health and biosecurity. [Gupte]	–	X	–	X	
Hands-on Exercises: - PPE (Personal Protective Equipment) - BSL3 Familiarization (mechanicals tour) - Transportation of Dangerous Goods. [Canada]	–	X	–	X	
Gender Equality is fundamental to the reduction of health risks. - Gender sensitive training, public education, communication, reporting, and service delivery. - Identification, control and containment of emerging infectious diseases [Canada]	–	X	–	X	
States Parties that are better off are encouraged to share their knowledge and experience with other States Parties through… joint development of research projects [China]	–	X	–	X	
States Parties are encouraged to promote contact and experience sharing between professional institutions, [China]	–	X	–	X	

2009 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
Developing emergency response capability: • Set up a roster of experts, disease-specific advisory committees and emergency response teams • Organized tailor-made training programmes and contingency drills [China]	–	X	–	X	
Facilitate the development of human resources in developing States Parties in the implementation of the Convention, taking into account the special situation faced by them [Cuba / NAM]	–	X	–	X	
Establish sponsorship programme in the BWC to support participation of the developing States Parties in the meetings and other activities of the Convention. The sponsorship programme could also be utilized, depending upon the availability of resources, to enhance participation of non States Parties in order to promote the goal of universalization of the Convention. [Cuba / NAM]	–	X	–	X	
Networking is one of the cornerstones to strengthening capacity building and should be done at several levels in order to provide as much flexibility as possible. [France]	–	X	–	X	
Employ and retrain the core scientific staff [Georgia & UK]	–	X	–	X	
Staff / management training in sustainability [Georgia & UK]	–	X	–	X	
• Multi-disciplinary approach to integrated management • Modular • Focus on practical training • Video assisted trained • Orientation to recent standard of knowledge • Didactical sustainability [Germany]	–	X	–	X	
Good facilities and good procedures are not sufficient if personnel are not adequately trained and do not clearly understand their roles and responsibilities: - Lab biosecurity training, complementary to biosafety training is provided – protection, assurance and continuity of operations - Should not be a one-time event – offered regularly and taken currently. To refresh memories and to learn about new developments and advances in different areas [Indonesia]	–	X	–	X	
Devise necessary document templates, training programs and material [Indonesia]	–	X	–	X	
Manpower development through training, specific workshops and seminars [Indonesia]	–	X	–	X	
Improve general knowledge of epidemiology and clinical training [IVI]	–	X	–	X	
In the fulfilment of important task of surveillance, detection and diagnosis in an effective manner, special training of national experts capable of reporting and responding to the communicable diseases is essential. In this regard international organizations and States Parties with advanced capabilities in surveillance and are expected to positively respond to requests for technical assistance. [Iran]	–	X	–	X	
Though national authorities are responsible for infectious disease surveillance and response, it is incumbent upon the international health institutions to provide technical and financial support to States Parties, in particular developing countries, especially aiming at exchange of experience and capacity building on surveillance, detection, diagnosis, prophylaxis and treatment of unknown diseases [Iran]	–	X	–	X	
States Parties to the Convention with advanced surveillance system and relevant international institutions should, particularly through providing the training courses, assist other States Parties on strengthening their health manpower capacity and support use of information technology for collection and analysis of data on infectious diseases. [Iran]	–	X	–	X	
Development of well trained expert teams on Rapid Health Assessments in emergency situations, and epidemiological investigations for rapid and in time responses to outbreaks should be supported by relevant international institutions. [Iran]	–	X	–	X	
Revitalization of routine surveillance: lecture and training [Japan]	–	X	–	X	
Even if equipment or hardware may be provided, it would be useless unless appropriate human resources could handle them. [Japan]	–	X	–	X	
Assistance should be provided in accordance with the capacity of the recipient of the country: training of the human resources is essential, some of the regulations related to the prevention of bioterrorism should be considered in organising the technical training. [Japan]	–	X	–	X	

2009 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
Although BSL3 laboratories are important facilities for disease surveillance, it is also necessary to be mindful of the importance of personnel training to develop technical experts that can safely handle pathogens. [Japan]	–	X	–	X	
…reiterate the importance of technical assistance to address the identified gaps especially in… training and human resource development [Kenya]	–	X	–	X	
Areas of support for capacity building • Training of health personnel in surveillance data management including data quality, analysis, interpretation, use of information and feedback. [Kenya]	–	X	–	X	
• Sensitization of programme managers • Training of epidemiologists, DSNOs, M & E officers, Clinicians / Health workers at all tiers of government [Nigeria]	–	X	–	X	
The EU is committing considerable financial resources to support the BTWC. In its second Joint Action in support of the BTWC, which promotes universalization, national implementation, CBMs and the intersessional process, two persons are recruited for a limited period of time and financed by the EU, helping UNODA / ISU to implement this EU initiative. [Sweden / EU]	–	X	–	X	
Determining diagnostic methods required for detection and control of epidemics [Turkey]	–	X	–	X	
Continued innovation in disease diagnostics and detection tools and technologies is required. [UK]	–	X	–	X	
We should be emphasizing the need for strong coordination between human and animal health services, especially strengthened animal health services and laboratories, better and cost effective monitoring of wild animal populations, enhanced virus detection and research, improved inspection and support on outbreak containment plans, and the teaching of good farming practices. [UK]	–	X	–	X	
Training – whether provided or supported by national, regional or international sources – is an essential element in developing sustainable capabilities and as such is key to all the aspects of diseases control under the headings surveillance, detection, diagnosis and containment. [UK]	–	X	–	X	
•Informational exchanges •Training and orientation programs •International meetings, seminars and learning opportunities •Classroom & laboratory instruction •Travel assistance for participants •Courses in native languages •Laboratory equipment •Subject matter experts [USA]	–	X	–	X	
Support scientist-to-scientist engagements in many countries and laboratories, including WHO and OIE collaborating centers, to improve human and animal health [USA]	–	X	–	X	
• Joint research [WHO]	–	X	–	X	
	–	X	–	X	

V. Standard Operating Procedures

2009 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
Case Studies on standard operating procedures (SOP), Biosecurity Risk Assessment, Transportation of Dangerous Goods. [Canada]	–	X	–	X	
Measures for Quality Assurance (QA): Internal and external QA of laboratory diagnostics include: Wet labs, ring trials, Appropriate reference material, Training, ptimization of procedures [Germany]	–	X	–	X	
The final aim is to determine a minimum detection standard ("Gold Standard"). [Germany]	–	X	–	X	

2009 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
For making India's Integrated Disease Surveillance Programme IHR 2005 compliant… demonstrate establishment and operation of surveillance system meeting performance standards – timelines, human resources, quality, strengthen analysis and use of surveillance data and response [India]	–	X	–	X	
Management System is the key for a good laboratory practice in Biosafety. [Indonesia]	–	X	–	X	
Establish an effective, best practice management system, incorporating safety and security management process and associated procedures [Indonesia]	–	X	–	X	
Quality control and sustainability of the operation is very important [Indonesia]	–	X	–	X	
Standards in relation to BWC implementation, such as safety, security and control, may contribute in enhancing confidence, while taking into account respective national legislation. [Indonesia & Norway]	–	X	–	X	
International health institutions should support national efforts on establishing standard bio-safety rules in laboratories and in the transportation of biological materials. [Iran]	–	X	–	X	
Revitalization of routine surveillance : Revision of surveillance protocol, considering core capacity requirement of the IHR [Japan]	–	X	–	X	
Adaptation and production of Technical Guidelines and reporting forms [Nigeria]	–	X	–	X	
Building confidence: exchanging information; sharing best practices, policies; harmonizing protocols; trust across borders [GHSI]	–	X	–	X	
Quality assurance including biosafety [Pakistan]	–	X	–	X	
Technical assistance and training for manufacturers: - GMP (Good Manufacturing Practice) training - GMP facility design - Hands-on GMP training: Production Quality control testing Quality assurance - Follow-up consultancies [Rep Korea]	–	X	–	X	
Need to strengthen capability and capacity in developing countries and to develop internationally agreed protocols for the Rapid Sharing of Information. [UK]	–	X	–	X	
Systematic disease surveillance must be supported by proficient diagnostic testing services, emergency management services and essential policies for economic recovery when diseases are found. [USA]	–	X	–	X	
• Transfer of laboratory techniques • Development and validation of new tests • Quality assurance and quality standards [WHO]	–	X	–	X	
… seek to promote the highest standards of professional performance in the field. [WHO]	–	X	–	X	
International Standards • Surveillance • Safe trade in animals and products • Diagnostic tests and vaccines • Veterinary Services [OIE]	–	X	–	X	

VI. Problems,, challenges and needs

2009 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
We need to set up high security laboratories. We want to twin these laboratories with well-known international laboratories. We want to set up containment units. We need an exchange of experts and to research training. We need to set up new networks and we need to twin them with international networks and we need to update our communications networks to make sure that we have rapid exchange of information. [Algeria]	–	X	–	X	

2009 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
Challenges and opportunities: - Emerging issues and threats - Targeting assistance to specific needs - Multilateral collaboration for rapid response and coordination [Canada]	–	X	–	X	
The need for enhanced coordination among states parties providing assistance related to these fields, as well as better internal communication within such states on their own assistance projects. [Canada]	–	X	–	X	
Global epidemic surveillance and control pose a serious challenge: - New infectious diseases are emerging, infectious diseases once considered under control are making a comeback. - Pathogenic mutation is developing at a fast pace and some pathogens are becoming more resistant. - Epizootic pathogens are frequently breaking species barriers and being transmitted to humans. - Ever-increasing cross-border travel is contributing to the spread of infectious diseases worldwide. [China]	–	X	–	X	
In the field of epidemic surveillance and control: - Relatively weak infrastructure in areas of epidemic surveillance, diagnosis, prevention and control - Inadequate pathogen detecting capacity - Medical care and support capacity to be further enhanced - Emergency response mechanism to be improved [China]	–	X	–	X	
Lessons Learned: - Highly cost effective to build capacity before anything happens - Donors support wanes drastically after 5-10 years when it is needed most - Emergency response is good for donors and good PR • Not seen sustainability yet • Sustainable rehabilitation key (overlap & expansion to other key diseases) [FAO]	–	X	–	X	
- Technological buildup: Educated personnel needed - Capacity building: Brain drain, competition with NGOs, International Organizations - Different Motivations: Money, scientific career, permanent position - Sustainability of projects: Research project funding mostly limited to max. 3 years - Research cooperation: Criteria for ethical issues sometimes discrepant - Quality: Reliable communication and transport infrastructure crucial [Germany]	–	X	–	X	
The grade of laboratory preparedness for the detection of highly pathogenic bacteria varies at international level. Primarily the correct identification of samples including more complex matrices should be improved. [Germany]	–	X	–	X	
There is a need for comparable evaluation of existing in-house and commercial assays and instruments for the detection of selected agents. This requires appropriate accessible reference materials including pure agents as well as clinical and environmental samples (surrogate substances). [Germany]	–	X	–	X	
The specific challenges include: (iii) an agreement between the collaborating laboratories for providing reference materials,, (ii) aspects of biosafety and biosecurity,, (iii) transportation of samples / reference materials, including export / import / transfer controls. [Germany]	–	X	–	X	
While there are several examples of international cooperation, it is also a fact that denial of materials, equipment and technology related to peaceful uses of biotechnology including disease surveillance, and control continue to exist and hamper legitimate uses of biological materials for peaceful purposes. [India]	–	X	–	X	
Difficulties continue to exist in obtaining materials, equipment and technology related to peaceful uses of biotechnology including disease surveillance and control, such as: - Viruses for preparing antigens for developing diagnostic tests - Equipment for advanced laboratories - Training opportunities for working in advanced laboratories - Restrictions on collaborative R&D in the areas of vaccine development and therapeutics against listed BW agents and emerging and re-emerging diseases with pandemic potential [India]	–	X	–	X	
Complexities in setting up new lab, challenges associated with construction, on-going maintenance and running costs. [Indonesia]	–	X	–	X	

2009 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
Any politically motivated measures such as arbitrary export control regimes which restrict transfer, development and promotion of equipment, materials and scientific and technological knowledge for peaceful purposes would hamper the economic and technological progress of States Parties and clearly violate Article X of the Convention and therefore should be removed. Furthermore, any possible additional measures to the Convention should be consistent with the Convention and must be multilaterally negotiated in a comprehensive manner. [Iran] • Improvement of data and information flow through innovative approaches in ICT such as phones for health & installation of relevant ICT systems. • Strengthening of laboratory capacity (technical, human resources, equipment, reagents & supplies) • Development of more laboratories to BSL 2 and BSL 3. [Kenya]	–	X	–	X	
• Provision of Infection Prevention & Control capacities, including isolation & quarantine facilities. • Provision of support in implementation of international Health Regulations (2005) • Support Mobilization of finances to support rapid response teams with necessary logistics & supplies for effective surveillance & outbreak response. • Sensitization of programme managers • Assessment of existing surveillance system • Preparation of Strategic Plan • Adaptation of guidelines and Training modules • Implementation of Action Plan • Monitoring and Evaluation • Adaptation and production of Technical Guidelines and reporting forms • Training of epidemiologists, DSNOs, M & E officers, Clinicians / Health workers at all tiers of government [Nigeria]	–	X	–	X	
Problems: deterioration which occurred over the years; demand for maintenance of the primary health care system is enormous; lack of infrastructure, skills and capacity [Nigeria]	–	X	–	X	
Challenges: • Double disease burden due to communicable and non- communicable ailment • Prone to natural calamities Needs: • Support for the implementation of integrated disease surveillance and public health laboratory network project. [Pakistan]	–	X	–	X	
Impediments to surveillance in developing countries; severe challenges in detection and reporting: • Private sector and traditional medicine are often not included • A large proportion of the population do not access formal health care (can be as high as 60%) • Often multiple surveillance systems collecting data from the same people, using slightly different reporting time frames and data formats • Over the last 15 years there have been numerous attempts to overhaul surveillance systems Has sometimes led to some confusion and a feeling at the grassroots level that the system is always changing and does not really work Many of the routine reporting systems are quite fragile and are unlikely to be used for any research purposes Face severe challenges in linking surveillance with response and providing adequate feedback: [WHO] • Ability to investigate limited by resources / skills / infrastructure • Training materials may be pitched at too high a level • Too few staff work at the clinical and public health level • Health care staff are often low paid and therefore have several jobs – leaving very little time for surveillance activities • Lack of diagnostic capacity often means inability to respond with correct control measures at early stage in the event Need rapid, multivalent, diagnostics at national and local levels To extend the network of expertise • Priority regions and diseases • Global geographical coverage of expertise, focused on developing and transition countries • Better global disease surveillance • Greater access for more countries to high quality diagnostics and expertise for early detection and rapid response [OIE]	–	X	–	X	

2010 suggestions

The topic under discussion in 2010 was:

> provision of assistance and coordination with relevant organizations upon request by any State Party in the case of alleged use of biological or toxin weapons, including improving national capabilities for disease surveillance, detection and diagnosis and public health systems

The topic in 2010 was about responses to allegations of deliberate use of disease as a weapon which primarily falls within the *Resilience* dimension with aspects that fall within the *Coherence/Engagement* dimension. Therefore, most of the proposals in the 2010 Meeting of Experts would be defined as – X – X.

2010 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
The BTWC can never disregard one of the characteristics of its membership: the difference between its States Parties regarding the level of development and their national capabilities and resources. [Cuba / NAM]					R
The BTWC as the first disarmament multilateral treaty banning a whole category of weapons of mass destruction, shows a relevant example of what can be achieved through multilateral negotiations in response to the challenges faced by mankind. [Cuba / NAM]					R
There is an urgency for all States parties to the BTWC to work towards the universal adherence, as well as the strengthening and improving of the effectiveness of the implementation of the Convention, in order to be in a position to really address this concern. [Cuba / NAM]	–	X	–	–	
Regrettably the long sought aspiration of member states for resumption of the negotiation for convening a legally binding instrument to comprehensively strengthen the convention was rejected again during the last December meeting. We urge the responsible of that situation to reconsider its policy towards this convention in the light of persistent requests of other parties. [Cuba / NAM]					R
The only sustainable method to achieve this goal is though multilateral negotiations aimed at concluding a non-discriminatory, legally binding agreement, dealing with all the Articles of the Convention in a balanced and comprehensive manner that can not exclude the negotiation and establishment of a verification mechanism. [Cuba / NAM]					R
Although one of the main purposes of the implementation of Article X of the Convention is precisely to narrow these gaps, the BTWC lacks an adequate mechanism for effective implementation of Article X… At the 2009 Expert Meeting our Group introduced a Working Paper on the establishment of a mechanism for an effective implementation of Article X (BWC / MSP / 2009 / MX / WP.24). We consider that its content is directly related with the topic we will discuss, and contains several proposals that could be a good basis for future agreements. [Cuba / NAM]					R
The topic of this year's Meeting of Experts … is of utmost interest not only to our Group but also to all States Parties to the Convention, particularly developing countries. [Cuba / NAM]					R
It is fundamental to promote regional and international cooperation to provide an efficient response and deliver timely assistance to the affected countries. [Belgium / EU]	–	X	–	X	

2010 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
[Issues to be explored:] exchanging lessons learnt with partners as regards detection and response, identifying best practices to respond to requests from States Parties in need of assistance and ways to rapidly channel this assistance, improving cooperation and coordination mechanisms as regards preparation, detection and response with international partners in case of an alleged attack or exploring ways to strengthen detection, surveillance and diagnosis capabilities. [Belgium / EU]	–	X	–	X	
The risks and threats of CBRN incidents could be of natural, accidental or intentional origin, including terrorist acts. While so far major incidents involving CBRN materials have been relatively few, the potential consequences of such incidents could be particularly serious and of a multiple nature. [Belgium / EU]	–	X	–	X	
Mitigating the effects of CBRN incidents require early detection and diagnosis, followed by prompt activation of an effective response. [Belgium / EU]	–	X	–	X	
National implementation of the WHO International Health Regulations deserves particular attention since the IHR aim to prevent, protect against, control and respond to the international spread of disease while avoiding unnecessary interference with international traffic and trade. [Belgium / EU]	–	X	–	X	
International cooperation involving and supporting international organizations like WHO, FAO, OIE and Interpol as well as with non-governmental actors working on infectious diseases will also in the future be the key to strengthening structures and capacities in disease surveillance, detection, diagnostics, and containment of infectious diseases. Such cooperation is both consistent with the BTWC, and serves to support and strengthen the Convention. [Belgium / EU]	–	X	–	X	
Effective action on the provision of assistance cannot begin with a case of use or alleged use. It is the steps that we take before an event that determine how successful we will be in dealing with an attack, or other disease outbreak, should it take place. [USA]	–	X	–	X	
The more rapidly and accurately a state can identify a threat, assess its needs, and communicate with the international community, the more effective international assistance and response can be. This suggests that some of the most important measures to achieve effective international assistance and coordination in response to alleged use of biological weapons are measures that are undertaken before an event: training, capacity building and the sharing of experiences and best practices that will promote local preparedness. Not because such preparedness is an alternative to international assistance in the event of a biological incident, but because it is critical to ensuring effective international assistance. [USA]	–	X	–	X	
It is important to work before such an event to identify and resolve legal, regulatory, and other barriers to effective multilateral cooperation, such as inconsistent standards for forensic identification of agents, vaccine liability, and licensing for emergency use of medical countermeasures. [USA]	–	X	–	X	
Response to a suspicious outbreak or BW attack is likely to involve many sectors of government and society. There are investigatory elements, through which we may seek to determine what sort of illness we are confronting, whether it has been deliberately caused, and if so, by whom. There are public health elements, including the rapid identification and treatment of those who have been exposed, and evidence-based steps to prevent further spread. Depending on the circumstances, there are also very likely to be other legal, political, and security-based elements to response. [USA]	–	X	–	X	
Consideration and adoption of necessary measures to prevent and eliminate the outbreaks of infectious diseases are the domestic prerogative of States. [Russia]	–	X	–	X	
To ensure preparedness for possible outbreaks of dangerous infectious diseases, States Parties should take appropriate national measures with a view, in particular, to improving the means of indication and identification of biological agents, diagnosis, methods of infections treatment, and the creation of adequate supplies of vaccines and drugs. [Russia]	–	X	–	X	
National epidemiological services must focus their efforts on timely diagnosis of an infectious agent, localization of an outbreak, provisions of medical assistance and prevention of new diseases, ensuring of sanitary and epidemiological stability in the emergency zone. [Russia]	–	X	–	X	
If a State does not have adequate resources, it can appeal for help to other BWC States Parties or to international organizations such as WHO, FAO, OIE. [Russia]	–	X	–	X	

2010 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
The mechanism of UN Secretary-General provided for by the UNGA resolution A / 447561 of 4 October 1989 is the main international instrument to investigate the alleged use of biological weapons in violation of the 1925 Geneva Protocol or other relevant norms of customary international law. [Russia]	–	X	–	X	
A State Party to the Convention can only appeal for an investigation of the alleged use of biological and toxin weapons on its own territory. In order to avoid abuses, we should exclude the possibility of initiating an investigation at the request of one State Party on the territory of another State Party. [Russia]	–	X	–	X	
The existing international legal framework for providing assistance to a State in case of alleged use against it of biological or toxin weapons is not sufficient. There is no full understanding of how to act in case there is a necessity to investigate a possible use of bioweapons. There are no clear procedures for submitting requests and providing assistance. These issues are extremely important and should be discussed at the Seventh BWC Review Conference and, in case a relevant decision is adopted, be included in the agenda of the meeting during the next intersessional period. [Russia]	–	X	–	X	
Indonesia Every individual state should assume responsibility for the safety and security of all biological materials and facilities, related to both humans and animals, in their respective countries. We must all work to ensure that such materials and facilities are safe and secure from theft, sabotage, unauthorized release and other illicit activities. [Indonesia]	–	X	–	X	
As clearly stipulated in Article X of the BTWC, any State party has the right to participate in the fullest possible exchange of equipment, materials and scientific technology relating to the peaceful use of biological agents and toxins. Further scientific development in biological agents and pathogens would significantly contribute to the prevention and cure of existing and emerging diseases. [Indonesia]	–	X	–	X	
The intentional and unintentional release of dangerous biological materials or pathogens presents a serious risk not only to the public and the environment but also to the scientists and practitioners working with these dangerous materials. [Indonesia]	–	X	–	X	
Therefore, it is important for the researchers and practitioners, such as those who work in laboratories or research facilities, to understand their role and to fully understand the critical importance of taking safety and security precautions. [Indonesia]	–	X	–	X	
A major challenge in global disease surveillance and detection ... is not just the detection and reporting of well-known infectious diseases, but also the ability to detect novel, emerging, or reemerging infectious diseases in relatively low-tech environments. There is also a corresponding need to develop complementary detection systems for infectious diseases which go beyond the realm of the more traditional surveillance systems and approaches. [Indonesia]	–	X	–	X	
Timely and effective response and assistance maintain close relevance to the provisions of the investigation and assistance of the Convention and also a kind of practical need of many States Parties. [China]	–	X	–	X	
States Parties bear primary responsibilities in response to and investigation of alleged use of biological weapons. Therefore States Parties should take appropriate measures to establish and improve response and investigation mechanisms according to their own circumstances and enhance their capacity building in disease surveillance, anti-bioterrorism, public health response and investigation. [China]	–	X	–	X	
According to Article VII of the Convention, States Parties may provide assistance upon request of the State Party in the face of danger as a result of alleged use of biological weapons. [China]	–	X	–	X	
The relevant international organizations, such as the World Health Organization, World Organization for Animal Health, and Food and Agriculture Organization of the United Nations can play an active role in helping States Parties enhancing their capacity building in the field of disease surveillance, control and response. Upon requests from States Parties, the above-mentioned international organizations may, within their mandates, provide assistance in public health and humanitarian field to States Parties which have practical difficulties. [China]	–	X	–	X	
Investigation of alleged use of biological weapons is a complicated and sensitive issue. Any State Party may lodge a complaint with the Security Council according to Article VI of the Convention. If the Security Council decides to initiate an investigation, such investigation should be conducted under the aegis of the Security Council. [China]	–	X	–	X	

2010 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
Encourage other States Parties who are in a position to do so, to extend such assistance to other States Parties who need it, as this would inevitably improve national capabilities for disease surveillance, detection and diagnosis and public health systems. [Malaysia]	–	X	–	X	
In countries with deficient capacities and weak public health systems, disease surveillance, detection and diagnosis are serious challenges, which can be overcome only through cooperation and assistance amongst the States Parties and through coordination and support from the relevant organizations in accordance with their mandates. [Pakistan]	–	X	–	X	
We should not treat this issue as part of the North versus South divide. Rather this should be pursued as a joint venture to ensure global safety and security. [Pakistan]	–	X	–	X	
International cooperation, assistance and information and technology exchanges in the field of disease surveillance, detection, diagnosis and containment in the context of the BWC framework is therefore, of pivotal importance for successful implementation of the Convention. It will also facilitate compliance with the revised International Health Regulations (IHR). But we must remember that the IHR and BWC are two distinct frameworks with different parameters and the two have been negotiated with different scopes and purposes. [Pakistan]	–	X	–	X	
No country is safe unless everyone is safe and a collective and cooperative effort is the only recipe. [Pakistan]	–	X	–	X	
National capacity of a state to effectively deal with any disease resulting from a biological weapon attack is essentially dependent upon the level of development of its health facilities and expertise. Development of national capacity to response to exigent and emergent challenges from a possible biological weapons attack forms the cornerstone of the national implementation strategy. [Pakistan]	–	X	–	X	
The mechanism of Review Conferences has enabled the BWC to remain in step with the changes in the field of sciences as well as the transformed global strategic landscape. The Review Conference must positively address the issue of a verification protocol, seek enhanced implementation of the Convention, particularly Article X and promote universalization. [Pakistan]	–	X	–	X	
Assistance to any State Party which has been exposed to danger as a result of violation of the Convention by another Party or by a non Party, irrespective of sources, should immediately be provided upon its request. [Iran]	–	X	–	X	
Consider the detailed procedure for assistance in order to ensure that States Parties, if requested, would provide timely emergency assistance. Should a request for assistance be made, the procedure shall facilitate the prompt response by States Parties in order to dispatch timely emergency assistance and humanitarian assistance to the requesting State Party which has been exposed to a danger as a result of the threat or use of biological weapons. The next Review Conference would be an excellent opportunity to further discuss this issue and to make a decision on developing such a procedure and in this context mandate the United Nations relevant body to establish an inventory of the types of assistance that States Parties could provide pursuant to Article VII if requested. [Iran]	–	X	–	X	
The main responsibility for providing assistance, if the provisions of Article VII of the Convention is invoked, lies with States Parties. [Iran]	–	X	–	X	
The United Nations, with the help of States Parties as well as appropriate intergovernmental organizations such as the Food and Agriculture Organization, the World Organization for Animal Health, the World Health Organization subject to full observance of their mandates, could play a coordinating and complementary role. [Iran]	–	X	–	X	
States Parties' national preparedness considerably contributes to enhancing international capabilities for response, investigation and mitigation of outbreaks of disease, including those due to alleged use of biological and toxin weapons. [Iran]	–	X	–	X	
Strengthening national preparedness of States Parties, in particular that of the developing countries is a matter of high importance. Enhancing the national capabilities of the States Parties requires international cooperation as provided for in Article X of the BWC. [Iran]	–	X	–	X	
International and regional peace and security would be enhanced though universal adherence to the Convention. There are still a number of non parties with advanced biotechnology and a policy of biological ambiguity, situated in volatile regions which have neither signed nor ratified the Convention and therefore pose a serious threat to the international and regional peace and security. [Iran]	–	X	–	X	

2010 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
It is a source of concern and a matter of regret that lack of proper implementation of Article X prevents the less developed and developing States parties from fulfilling their programs in this regard, including their plans to improve the effectiveness of national capability and preparedness for diagnosis, surveillance, prevention, control and treatment of diseases caused by incidental as well intentional outbreaks of diseases as referred to by Article VII of the Convention. [Iran]	–	X	–	X	
Institutional mechanisms for combating of outbreaks of infectious diseases remain the same, irrespective of whether the outbreak is natural or a result of deliberate use of biological weapons. However, surveillance and detection of a natural or deliberate outbreak of disease will have implications with respect to the Convention. [India]	–	X	–	X	
Facilities for detection, diagnosis, production of prophylactic vaccines and effective treatment need to be developed and established for establishing proper biodefence measures. [India]	–	X	–	X	
International cooperation is an imperative both in cases of investigating alleged use of biological weapons and mitigation and control of the effects of the attack. Full and effective implementation of Article X of the Convention is therefore important. [India]	–	X	–	X	
The primary responsibility for surveillance and combating of outbreaks of infectious diseases rests with the States Parties. [India]	–	X	–	X	
Encourage States Parties to the Convention … to provide ready assistance to other States Parties in need for developing national capabilities in accordance with the provisions of the Convention. [India]	–	X	–	X	
Encourage … the concerned international organizations to provide ready assistance to other States Parties in need for developing national capabilities in accordance with the provisions of the Convention. [India]	–	X	–	X	
The development of human capacity for oversight of illness [is] important, … early warning [is] important, and the recognition of new diseases and risks are key for the appropriate preparedness to face threats such as the threats posed by biological weapons. It is in this framework that international cooperation is key. [Mexico]	–	X	–	X	
Strengthen synergies between the international organizations that are competent in this matter and the instruments that make up the international legal framework operating in this area and the Convention that brings us together. [Mexico]	–	X	–	X	
The promotion of assistance and coordination in the context of the Convention will be a key factor to strengthen the universality thereof. [Morocco]	–	X	–	X	
Assistance and cooperation in the context of building national capacities in the areas of oversight and screening and diagnosis of illnesses would make it possible to fight in a coordinated fashion against the use of WMD. [Morocco]	–	X	–	X	
It is key for the States to strengthen the capabilities of their health systems in general and the capabilities of their laboratories in the areas of surveillance screening and diagnosis of illness. This can only occur, especially for developing countries, through the assistance of those countries that are able to provide assistance and through regional cooperation and international cooperation. [Morocco]	–	X	–	X	
The need to give a coordinated response on the part of States Parties to the Convention so as to prevent and combat the possible use of biological weapons cannot but take into account the role played by existing organizations. [Argentina]	–	X	–	X	
Both from the viewpoint of security (so as to investigate the origins of the alleged use as well as to identify and prosecute the culprits) and also from the viewpoint of the health response – that is, mitigating and monitoring the effects of a possible attack – we have at our disposal a significant number of tools which need to be identified so as to strengthen our national, regional and global capacities. These capacities are of fundamental importance for us to be able to achieve in a comprehensive way the objectives of this Convention. [Argentina]	–	X	–	X	
The investigating mechanism established under the United Nations Secretary General is the method of investigating cases concerning the presumed use of biological weapons which, at the same time, makes it possible to channel international aid, allowing for a rapid response and to contain the attack. This mechanism, taken together with what is provided for in Article VI of the Convention, ensures that these investigations are carried out in a systematic, scientific and objective way. [Argentina]	–	X	–	X	

2010 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
Highlight the WHO's public health emergency programme in which this organization commits itself, inter alia, to maintaining an ongoing cooperation mechanism with the Office for Disarmament Affairs so as to provide technical support to the investigating mechanism into the alleged use of biological weapons. WHO's role is vital in terms of capacity to respond to supposed use, developing systems to coordinate the activities among Member States and to enhance warning mechanisms, detection and response mechanisms, inter alia. [Argentina]	–	X	–	X	
Uphold the importance acquired by other organizations such as INTERPOL in the area of investigating so that, when dealing with an emergency, one does not leave the task of investigating and searching out the perpetrators to some sort of secondary status. [Argentina]	–	X	–	X	
It is necessary to carry out major efforts to strengthen the training of experts at national, regional and international levels and it is also important to have continuity in the preparations and security of professionals and methods of contracting have to be looked into. [Argentina]	–	X	–	X	
Need to improve national monitoring and diagnostic and recovery procedures for diseases as well as improving public health systems. [Algeria]	–	X	–	X	
[Aim for] a joint understanding of the tools necessary and commitments that need to be undertaken in order to allow States to exercise their international responsibilities in this area as pursuant to Articles V, VI, VII and X of the Convention. In this context, we need to expose objective mechanisms that can determine and trigger the necessary assistance in cases of allegations that might involve security dimensions and means that an attack has been launched. [Algeria]	–	X	–	X	
Think about possibilities for updating and improving the investigation mechanism under the auspices of the Secretary-General of the United nations in order to take into account developments in biology and biotechnology. [Algeria]	–	X	–	X	
Relevant international organizations, such as the World Organization for Animal Health, the Food and Agriculture Organization and the International Plant Protection Convention could also provide valuable assistance in coordinating and supplying assistance. [Algeria]	–	X	–	X	
Need to have further improvements made in the mechanisms relating to national response capacities and above all the capacities for the identification and monitoring of a possible incident of the use of biological or chemical or toxin weapons. [Brazil]	–	X	–	X	
Although events of this kind are not common, it is vital for a country to be prepared in the form of an effective national plan of action which it can put into place in a swift manner. [Brazil]	–	X	–	X	
Under Article VI of the BWC, it is also relevant for there to be efficient coordination between States and the relevant international organizations in the cases of assistance and investigation in particular. [Brazil]	–	X	–	X	
Strengthen technical capacities, training of specialists, and this is particularly in the area of forensic science, and also assessing the strengths and weaknesses of laboratory networks. [Brazil]	–	X	–	X	
Day to day preparedness against ordinary disease outbreaks offers the best protection against unusual, deliberate, and accidental releases. Therefore assessments in mechanisms to prevent and respond to natural disease events will protect against accidental and deliberate release, and ultimately this is more sustainable. [Brazil]	–	X	–	X	
Global disease surveillance networks are of critical importance in facilitating a response to a disease event, whatever the source, and the OIE is responsible for transparency of the global animal disease situation. Its Members have a legal obligation to report outbreaks of the most important and severe animal diseases, including those threatening human health, and emerging diseases to OIE so that OIE can alert the international community early allowing a rapid and effective international response. [Brazil]	–	X	–	X	
The OIE sets Standards to ensure early detection of disease and to prevent further international spread through trade and movements of animals, animal products and animal pathogens. OIE also sets standards, in collaboration with WHO, for diagnostic testing, safe vaccine production, and biosafety and biosecurity for Veterinary Laboratories and Animal Facilities. Ultimately, compliance with OIE standards will provide disease security and will reduce the health and economic costs of animal disease. [Brazil]	–	X	–	X	

2010 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
The OIE Experts play a key role in the international response to animal disease events. They are responsible for providing international support for accurate and rapid disease confirmation followed by characterisation of the disease agent, which may elucidate the source of the outbreak and whether it was the result of bioterrorism. In cases where animal disease pathogens are alleged to have been used as bio-weapons OIE may offer expertise to UNODA to assist in confirming or denying this. OIE experts are also responsible for reporting positive laboratory results to OIE, for capacity building in developing countries, and for the production and distribution of diagnostic reagents. [Brazil]	–	X	–	X	
Global security from animal diseases needs universally strong and well governed Veterinary Services because a disease outbreak, deliberate release of pathogen or a breach in laboratory biosecurity in one country can threaten many others. [Brazil]	–	X	–	X	
Today many countries suffer from weak and poorly governed Veterinary Services and there is an urgent need to address this. [Brazil]	–	X	–	X	
OIE and FAO have also established mechanisms with WHO to facilitate rapid and efficient sharing of information and to ensure a coordinated response to public health threats posed by animal diseases including zoonoses. These international response mechanisms account for threats from deliberate or accidental release of pathogens as well as from natural events. [Brazil]	–	X	–	X	
Coordination at the international level is essential to ensure global disease security through bio-threat reduction. [Brazil]	–	X	–	X	
Effective coordination and technical assistance with local governments will be essential for early detection and effective response to biological events. • Tools to assist early detection of the events • Tools to assist rapid and accurate laboratory diagnosis • Easily applied in the local governments and laboratories. [Japan]	–	X	–	X	
Cooperation and planning between public health (PH) and law enforcement (LE) can lead to successful multi-agency approaches for biosecurity at mass gathering and high security events. This team approach enhances both PH and LE abilities to respond effectively to unexpected outbreaks or criminal acts pertaining to biosecurity. [Canada]	–	X	–	X	
Food is a vulnerable target for intentional contamination and we all need to work together to mitigate this vulnerability. [Canada]	–	X	–	X	
Proper identification is central in preventing and properly treating mass infections. Rapidly available diagnostic tools can help identifying the origin and the routes of transmission of a new agent. [France]	–	X	–	X	
Transmission of information within all the competent national laboratories is crucial to share knowledge and ensure a rapid and adequate response when a new agent is detected. It also helps ensuring that the national capabilities are not overwhelmed in case of major crisis. [France]	–	X	–	X	
Coordination between judiciary authorities and law enforcement authorities is crucial in the operational decision process and during the procedure. [France]	–	X	–	X	
A regular communication between all relevant stakeholders at all levels (national, local) should be encouraged in order to ensure the coordination of the response. Links should be established in advance, for example through joint exercises, in order to ensure mutual understanding. [France]	–	X	–	X	
Regularly review the documents and procedures put in place at the national and local level in order to ensure an adequate response and training of the relevant stakeholders. [France]	–	X	–	X	
A successful defence against these threats to a nation's public health, whether naturally occurring or deliberately caused, would demand urgent action, early detection warning systems, identification and monitoring of disease progression. [Nigeria]	–	X	–	X	
Investigations require coordination between public health (PH) and law enforcement (LE) • Identify the biological agent • Prevent spread of disease • Apprehend those responsible. [USA]	–	X	–	X	

2010 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
Challenges: Separate and independent investigations • Mutual awareness or understanding • Information exchange Lack of cooperation between PH and LE may hinder the response • May causes delays in response.[USA]	–	X	–	X	
Goals: • Improve global access to the life sciences to combat infectious disease regardless of its cause • Establish and reinforce norms against the misuse of life sciences • Implement a coordinated approach to influence, identify, inhibit, and interdict those who seek to misuse the life sciences • Reinvigorate the BWC as the premier forum for global outreach and coordination. [USA]	–	X	–	X	
Joint Investigations: Purpose: For PH and LE agencies to work jointly when responding to biological threats: • Information sharing • Risk / threat assessments • Interviews. [USA]	–	X	–	X	
Take measures to mitigate and control the effects of the attack (the health response) [and] investigate the origin of the attack and identify those responsible (the security response). [Kenya]	–	X	–	X	
Needs: • More BSL-3 laboratories • International expert assistance • Well trained health workers • Quarantine facilities • Training of all security forces on biosafety and biosecurity • First responder Unit • Enhanced communication • Collaborative research on early detection equipment • Secure dual-use research laboratories • Secure drinking water sources and food from sabotage • Stockpile personal protective equipment for first responders • Assess national capacity to manage health risks from the deliberate use of biological agents. [Kenya]	–	X	–	X	
In order to have a good prevention strategy, a combination of biosafety, biocontainment, and biosecurity is required. [Canada]	–	X	–	X	
National preparedness contributes to international capabilities. [Pakistan]	–	X	–	X	
Objectives: • Detection • Response • Investigate • Mitigate [Pakistan]	–	X	–	X	
Existing surveillance mechanism needs to be augmented in line with international best practices through: • Rapid chemical and biological detection and protection • Early warning systems • Comprehensive laboratory diagnosis for novel / emerging pathogens • Regional collaborative networking for better response [Pakistan]	–	X	–	X	
Requirements: • Surveillance [including] Static Centers [and] Mobile • Expertise [including] Advanced training [and] Facilitation to cope up with deficiencies • Equipment [Pakistan]	–	X	–	X	
Equipment: • Sampling equipment • Diagnostic equipment • Decontamination equipment • Availability of proper personal protective equipment • Evacuation / Shelter • Treatment and preventive modalities [Pakistan]	–	X	–	X	

2010 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
Bilateral, multilateral, regional and international cooperation significantly enhance our ability not only to minimize the effects of disasters and ensure preparedness, but also to respond effectively and recover easily through the transfer of technology as well as sharing information and resources. [Turkey]	–	X	–	X	
That does not exclude provisions of assistance and coordination with relevant organizations upon request by any State Party in the case of alleged use of biological and toxin weapons. [Turkey]	–	X	–	X	
An effective and efficient disease surveillance system is crucial for detecting cases of natural or suspicious outbreaks of diseases and planning a response. [India]	–	X	–	X	
For management of biological disasters, advanced diagnostic laboratories, sufficient stock of appropriate antibiotics, antiviral substances, immune modulators, vaccines, isolation facilities and other prophylactic measures are needed to be planned. [India]	–	X	–	X	
National efforts must go hand in hand with international cooperation. [India]	–	X	–	X	
The framework provided by the Biological Weapons Convention, especially Article X, must be fully implemented. [India]	–	X	–	X	
Global public health security requires coherent and collective actions to develop the systems, networks, tools and interventions needed for timely and effective management of epidemic risks and events. Global systems and networks that can manage and respond to the threats are needed alongside core infrastructure and capabilities in every country to detect, report and respond to public health risks at their source. [WHO]	–	X	–	X	
IHR defines a risk management process where Member States work together and through the WHO to collectively manage acute public health threats. An effective IHR will protect international public health security by ensuring that events are detected early; reactions are appropriate and based on well-founded risk assessments; the international community is provided timely accurate information; and effective international assistance is brought rapidly to bear to control threats at their source to reduce human suffering, economic and social losses. [WHO]	–	X	–	X	
The WHO's mandate in global public health security bestows the responsibility to assist member states with the public health response to any event regardless of its origin. [WHO]	–	X	–	X	
What are perceived as gaps between health and security can be transformed into opportunities to build strong public health capabilities that serve to deal with epidemics and public health emergencies whatever their origins. [WHO]	–	X	–	X	
WHO's primary role in responding to the intentional release of a biological agent will be to manage the public health and consequences of such an event, in support of affected states, and to communicate real-time public health risk assessments and recommendations to member states. To this end WHO has developed and tested specific standard operating procedures for response to alleged use, including specific indicators of non-natural sources of infection. [WHO]	–	X	–	X	
As the specialized UN agency for health with the technical and scientific capacity for detection, characterization, risk assessment and containment of epidemics, WHO recognises its role to provide technical support to the UN and international community in the investigations of alleged use. [WHO]	–	X	–	X	
Closer technical collaboration between the WHO and UNODA includes contribution to the relevant review process of the Secretary-General's investigative manuals, training and procedures. WHO has also developed mechanisms aimed at providing relevant support to a UNSG investigation, inter alia, by seconding experts, sharing necessary equipment, field experience, and lessons learned. [WHO]	–	X	–	X	
[UN Secretary General's investigative mechanism:] • Is an impartial and effective tool for investigation of alleged use; • Is not a permanent body but relies on Member States contributions and cooperation in preparation and conduct of investigations; • Builds upon the highest level of expertise (experts and laboratories) provided by Member States; • Is currently being reinvigorated • Involves training as UN fact-finding teams • Involves partnership with international organizations • Requires appropriate resources to make the mechanism fully operational, including sustainable funding from Member States. [UNODA]	–	X	–	X	

2010 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
The UNSG investigative mechanism is a tool of Member States. Their support and efforts are essential. The roster of experts and laboratories should be regularly updated to preserve their relevance. Experts in the UN investigative team need to be well trained to be able to operate effectively in challenging fields and environments. [UNODA]	–	X	–	X	
Sweden hosted the first training course for the Secretary-General's Mechanism roster experts in 2009. Trained teams of experts are essential for the UNSG Investigative Mechanism to be fully operational and it is important to provide training for additional roster experts appointed by Member States. [Sweden]	–	X	–	X	
As regards the UNSG investigative mechanism, we request that UNODA publishes the appendices so that they are available to State Parties. [South Africa]	–	X	–	X	
Public health emergencies, terrorism, and the proliferation of weapons of mass destruction defy borders and can only be addressed through concerted regional and international cooperation. [Georgia & USA]	–	X	–	X	
The need to address common security concerns provides an opportunity for diverse communities, within and across borders, to work collaboratively and build understanding and confidence. [Georgia & USA]	–	X	–	X	
Established partnership and communication channels between law enforcement and public health (both at the national and the international level) are critical elements for "connecting the dots" early in a potential bio threat / incident. [Georgia & USA]	–	X	–	X	
General areas for consideration: • Prevention / Deterrence • Emergency Assessment / Diagnosis • Emergency Management / Response • Hazard Mitigation • Evacuation / Shelter / Movement Restrictions • Victim Care • Public Health Investigation / Law Enforcement Apprehension • Recovery / Remediation -Environmental -Decontamination / Cleanup -Personal Decontamination -Site Restoration • Implications -Secondary Hazards / Events -Fatalities / Injuries -Property Damage -Service Disruption -Economic Impact -Long-term Health Issues. [Georgia & USA]	–	X	–	X	
National Response Plans offer the framework for coordination and response to biological incidents, whether natural or deliberate, and were validated during the H1N1 national responses. [Georgia & USA]	–	X	–	X	
Gaps in capabilities and assets may still exist, in particular with regard to providing mental health services, specialized law enforcement units (for collecting, transporting, and testing biological crime scene samples), and sharing information (in particular between public health and law enforcement). [Georgia & USA]	–	X	–	X	
Since real-world experience does not come often, there is a strong need for more inter-sectoral (including media) training. [Georgia & USA]	–	X	–	X	
Early warning and efficient mitigation of biological incidents are contingent on effective implementation of WHO IHRs and national legislation (i.e. on UNSCR 1540 and BWC implementation) to prevent and criminalize activities of non-state actors who seek to acquire and proliferate WMD. [Georgia & USA]	–	X	–	X	
There is no mandatory requirement for national law enforcement to pass information to Interpol in case of potential terrorist events even though they may potentially be of international concern. Could law enforcement apply the example of revised WHO IHRs notifications? That is, pass information to Interpol as "law enforcement information of potential international concern" and let Interpol decide whether it is so. [Georgia & USA]	–	X	–	X	

2010 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
Elements of a joint approach: • Training • Contact • First response • Recognition • Investigation • Action • Communication [Germany]	–	X	–	X	
Relevant international organizations such as WHO, OIE and FAO are expected to intensify their supports and assistance towards developing countries on capacity building in the area of disease surveillance and control, strengthen analytical capacities of infectious disease and veterinary laboratories of such countries, and provide them with technical training on epidemiology. [China]	–	X	–	X	
Relevant international organizations are encouraged to provide technical supports on prevention and control of the importing infectious diseases, host technical training on diagnosis technology and risk assessment, and coordinate cooperation between International Reference Laboratories and research institutions of developing countries on research and development of vaccines and diagnostic reagents. [China]	–	X	–	X	
Relevant international organizations should strengthen their assistance on construction of bio-laboratories for developing countries and raise their bio-safety and bio-security capacities by providing the most advanced biological protection equipments and technologies. [China]	–	X	–	X	
Mechanisms for disease detection and control for a natural, deliberate or accidental release of animal pathogen or emerging pathogen are virtually the same. [OIE]	–	X	–	X	
Broad range of areas of FAO involvement: • epidemiology, including role of wildlife • preparedness and contingency planning • disease surveillance and control • veterinary laboratories • animal production and marketing hygiene • socio-economic impact of animal disease • rapid response. [FAO]	–	X	–	X	
FAO desires for plant health: • Would like to establish an appropriate GLEWS and CMC equivalent for plant pests and diseases; • Resources are the primary constraint –nowhere near as much funding as for animal diseases; • Expand and build on the existing IPPC system for surveillance, diagnostics and reporting and to include other relevant partners. [FAO]	–	X	–	X	
We know what to do and how to do it, we just need resources to do it and it would not take much to get the basics in place on which we can all build. [FAO]	–	X	–	X	
Errors as approach to improve: • Failure management culture as cornerstone of preparedness planning • Exercises as chances for error collection • Importance of sharing error insights from uncommon threat situation [both] interdisciplinary and internationally. [Germany]	–	X	–	X	
A key to successful defence against threat to public health is: • Early detection • Identification • Monitoring progression in a community. [Nigeria]	–	X	–	X	
• Enhance Efforts towards strengthening global laboratory network with integrated components for zoonotic disease diagnosis and reporting. • Develop new and improve existing interdisciplinary educational and training programs • Establish a technical multi-disciplinary panel to review current scientific information on drivers of disease emergence. • Provide incentives for disease outbreak notification and also reduce the social and economic repercussions for such early reporting • Convene routine meetings of representatives from the public, private, and civil sectors to help build trust towards useful information. [Nigeria]	–	X	–	X	
There is need to do a lot more not only for early detection of the disease but also to monitor the ecology and epidemiology of he disease in order to manage it effectively. [Nigeria]	–	X	–	X	

2010 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
Preparedness is key: the best international assistance may be assistance before an attack. [Switz & USA]	–	X	–	X	
Overall responsibility and authority for response lie with national governments. [Switz & USA]	–	X	–	X	
The ability of the international community to provide effective support depends on affected state's ability to assess and communicate its needs. [Switz & USA]	–	X	–	X	
Communication: Affected country needs ability to share information about situation, needs, quickly and clearly. [Switz & USA]	–	X	–	X	
Not always clear who to share information with: relevant entities and how to access their capabilities not always obvious. [Switz & USA]	–	X	–	X	
Response: Many entities have relevant capabilities; no comprehensive source of information or mechanism to request assistance at global level. (Some exist at regional level or are sector-specific). [Switz & USA]	–	X	–	X	
Capacity building: Wide range of programs through many organizations. Increase awareness, support and strengthen programs. [Switz & USA]	–	X	–	X	
Limitations: Lack of expertise, procedures for operating in CBRN environment could severely limit international organizations' ability to respond in some scenarios. [Switz & USA]	–	X	–	X	
Information exchange: governments and organizations should develop processes for standardized, streamlined exchange of information. [Switz & USA]	–	X	–	X	
Raise awareness about international capabilities: Organizations / governments with response or capacity-building capabilities should make information more readily accessible. Ideally, all key information accessible in one place. [Switz & USA]	–	X	–	X	
Build national capacity: Assess, strengthen key capacities before they are needed. [Switz & USA]	–	X	–	X	
Develop CBRN procedures: Organizations should review, develop, harmonize procedures, regulations, and equipment. [Switz & USA]	–	X	–	X	
Increasing coordinated activity between different local, regional and global agencies involved in managing the crisis. [Interpol]	–	X	–	X	
National level: early activation of the counterterrorism organization. [Interpol]	–	X	–	X	
Need multidisciplinary groups at national and international levels. [Interpol]	–	X	–	X	
Framework for sharing information in place between law enforcement and public health. [Interpol]	–	X	–	X	
Media management: • Decide what information will reach media • Joint elaboration of reports • Presentation of exact and precise information to the media • Open and honest about actual threat assessment • Pro-active in order to prevent panic and / or irresponsible or tendentious use of information. [Interpol]	–	X	–	X	
INTERPOL Emergency planning (pre- and post- attack) • Countries should review their plan in terrorism especially bioterrorism • Many countries might not have a post attack contingency plan • Importance of communicate and teach on these plans. [Interpol]	–	X	–	X	
Training and preparation of personnel: • Via seminars, international workshops and courses • Frequent, permanent • Programs in police academies. [Interpol]	–	X	–	X	
• Proper equipment necessary • Countries who lack financial backing will have difficulty to implement full-scale bioterrorism prevention measures. [Interpol]	–	X	–	X	
• Boost needed for the public health services and response systems (equipment-human resources) • Strengthening actions of migration / customs control • Improving the capacity of laboratories • Increasing intelligence and investigative efforts • Preventive action by controlling and applying physical security measures in high-profile, mass-audience events. [Interpol]	–	X	–	X	

2010 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
• Establishing of prevention services in high-profile events which would shorten response time • On hand reserves of vaccines • Preparing for installations / areas which would guarantee the isolation and quarantine of those infected. [Interpol]	–	X	–	X	
Needs: • Protective equipment • Decontamination equipment and decontaminants • Detection equipment • Medical antidotes and treatments • Technical / Expert advice on protective measures. [OPCW]	–	X	–	X	
OPCW has a leading role among international actors for investigations of alleged use [of	–	X	–	X	
chemical weapons] and delivery of assistance. [OPCW]	–	X	–	X	
Challenges: • Timely delivery of assistance • Geographical distribution of protective assets • Strategic airlifting capacities • Compatibility of protective equipment. [OPCW]	–	X	–	X	
In responding to use or alleged use of biological weapons, States Parties to the BWC and international organisations need to consider: • The reality of the contexts in which there may be use or alleged use of biological weapons and the technical, poltical and security complexities that would accompany any international response; • The profound differences between responding to a natural outbreak of disease and an outbreak resulting from hostile use of a biological agent; • The important timelag between recognising an outbreak of disease and establishing whether or not this outbreak was intentional and the security implications of the information gathering process during this period; • The legal, technical and humanitarian implications of assistance to a state party to the BWC as compared to assistance to the victims of deliberate disease; • The complex interface of an international public health response and international security issues; • An employer's duty of care when deploying staff to a potentially contaminated environment. [ICRC]	–	X	–	X	
The use of a biological or toxin weapon could have a broad range of consequences for an affected state and its citizens: from minor consequences – where the effects would be localised and could be of relatively short duration; to catastrophic consequences – where the effects would be widespread and could be severely disruptive to economic well-being, social functioning and critical infrastructure and not constrained by national boundaries. [Australia]	–	X	–	X	
Responding to an alleged use of a biological or toxin weapon can be complicated by the nature of the attack scenario. Biological agents could be deployed by an adversary covertly or overtly. An overt attack would have a scene for first response teams to respond to. However, with a covert attack, there would not necessarily be a scene to respond to. Public health officials would likely be the first to recognise the covert release of a biological agent. [Australia]	–	X	–	X	
Viewing an alleged use of a biological or toxin weapon as a health or biohazard emergency is essential for states to develop and maintain focused response and recovery capabilities – whether such capabilities are deployed following a domestic attack or deployed internationally at the request of another affected state. [Australia]	–	X	–	X	
Depending on the nature of the alleged use of a biological or toxin weapon and depending on the security environment in which the incident might occur, the assistance a state might provide to a requesting state could take on various forms and be relevant to various tasks, including assisting immediately with: • identification, containment and neutralisation of hazards; • disease detection and diagnosis; • provision of medical support; • provision of public information; • provision of basic humanitarian needs, such food and water; • management of affected populations; • support to incident investigation; and • the attendant logistical support required for any of the above. [Australia]	–	X	–	X	

2010 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
There is often a high level of commonality between responding to natural disasters and responding to an alleged biological or toxin weapon attack. This commonality is encapsulated in the policies of an all-hazards approach, which engenders stronger capacity to deal with crises of varying natures without necessarily investing in unique capabilities which may already exist within other agencies. Focusing the attention of first responders on clear, whole-of-government emergency management procedures thus assists states in responding effectively across the range of possible health and biohazard crisis scenarios. This includes situations where a state is responding to a request for assistance from another state. [Australia]	–	X	–	X	
Clear chains of command among responding agencies in a whole-of-government emergency response need to be established and exercised. [Australia]	–	X	–	X	
Because responding agencies are required to work in close cooperation, there need to be opportunities – through joint planning and realistic training exercises – to gain knowledge and understanding of the roles and operating cultures of national agencies, sub-national agencies and non-government service providers. Without such planning and training exercises, the levels of cooperation achieved in responding to a real emergency may be less than optimal. [Australia]	–	X	–	X	
Projections and Challenges: • To develop a multidisciplinary rapid response team • To develop models of sectoral and intersectoral work in Sanitary Offices and designated ports. • To develop training projects to enhance travellers' health and sanitary inspection of at ports and vessels. • Simulations to maintain team capacities • Epidemiology is the first step to detect, identify and stop outbreaks. • Intersectoral partnerships are crucial. [Chile]	–	X	–	X	
Include in one single legal instrument the regulations of the different international conventions and agreements on the prohibition of weapons of mass destruction. [Chile]	–	X	–	X	
Foster the interaction among the different stakeholders on matters concerning security and a first response, governmental as well as private, in order to be ready to face any eventual use of weapons of mass destruction or their precursors. [Chile]	–	X	–	X	
Elaborate a control procedure of precursors and raw materials, used for the manufacturing weapons of mass destruction, which could be based on the model used by the CWC. [Chile]	–	X	–	X	
Procedures for obtaining assistance, investigations and involvement of international organisations differ. [South Africa]	–	X	–	X	
Use may result in: disease outbreak with no knowledge of a specific incident; or overt use resulting in an incident (e.g. anthrax letters). [South Africa]	–	X	–	X	
Disease outbreaks due to BW use are managed in the same manner as naturally occurring outbreaks by public health or veterinary systems, while investigation and epidemiological processes will differ. [South Africa]	–	X	–	X	
Investigation is aimed at determining the cause, source of infection and collecting evidence – Epidemiology and laboratory support play a major role. [South Africa]	–	X	–	X	
Overt use resulting in an incident is managed according to standard Hazmat incident management principles.	–	X	–	X	
The Convention spells out processes to obtain assistance from other States Parties, but the affected state may also obtain assistance via coordination by international organisations (WHO, OIE). [South Africa]	–	X	–	X	
The Convention provides for investigation sanctioned by the Security Council. The only existing mechanism to conduct investigations is the UNSG investigation mechanism that is insufficient, was recently updated, but its status is unclear. [South Africa]	–	X	–	X	
Disease management will be the same as for naturally occurring outbreaks. [South Africa]	–	X	–	X	
Investigative epidemiology will play a major role. [South Africa]	–	X	–	X	
Lab support will be directed toward diagnostic work as well as forensic work. Difficulty is laboratories that may be used for forensic work that will satisfy all parties. [South Africa]	–	X	–	X	

2010 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
Alleged use by non-state actors: • Primarily a domestic issue that is managed according to domestic procedures • States may seek assistance from other states directly and / or through international organisations (WHO,,OIE) • Investigation similar as for use by states – aim is domestic according to own legal requirements • Most developing states the forensic capabilities for this type of investigation are lacking. [South Africa]	–	X	–	X	
• Improving plan systems for public health emergencies. • Formulated emergency contingency plans at all levels. • Set up emergency response command centres at national or local levels. • Establish advisory committee and expert advisory system for national public health emergency. [China]	–	X	–	X	
Set up inter-agency and cross-region mechanism for prevention and control of infectious disease. [China]	–	X	–	X	
Designate agency for biological test and identification for anti-terrorism. [China]	–	X	–	X	
Measures for mass gatherings: prevention and control: • Reinforced infectious diseases surveillance and preparedness for medical care and rescue; • Strengthened monitoring and supervision of food, cosmetics and water supplies for special events; • Intensified prevention efforts and security inspections at key facilities in the specific time period; • Improved biosafety and biosecurity of laboratories handling pathogenic microorganisms; • Enhanced inspection and quarantine of inbound personnel, materials and mails; • Information release and publicity of health security. [China]	–	X	–	X	
Measures for mass gatherings: emergency response: • Improved emergency response system and established a comprehensive supporting system led by governments, involved by relevant departments, supported by expert advisory and implemented by technical agencies. • Established medical rescue advisory information system for prevention of and response to nuclear, biological and chemical terrorist attacks so as to provide technical advices for decision-making departments. [China]	–	X	–	X	
Establish an international platform for collaboration in science and technology - States Parties with advanced and mature technologies are encouraged to share their knowledge and experience with other States Parties through training courses and the provision of equipment, and help improve the capacity of countries in need. [China]	–	X	–	X	
Establish a global platform for sharing biological resources. Biological warfare agents and toxins should be shared according to the established practice of relevant international organizations, which will help States Parties better understand BW agents and provide technical information on pathogens for the investigation of the allegations. [China]	–	X	–	X	
Establish and improve relevant legal frameworks and strengthen the supervision and management of risky research activities to regulate scientific and research behaviour. [China]	–	X	–	X	
Systematic and large investigations done on sentinel populations (travellers) is an important issue. [France]	–	X	–	X	
Interest must be attached to every agent with potential to affect humans everywhere. [France]	–	X	–	X	
Basic epidemiological, biological and clinical knowledge must be acquired and updated. Diagnostic tools must be developed and made available. [France]	–	X	–	X	
• Building capacity in the field of epidemiological investigation • Building international networking and electronic surveillance • Technical supporting to raise the biosafety up to level 3. [Iraq]	–	X	–	X	
Recognize the need to develop, strengthen and maintain the capacity to detect, report and respond to public health events. [Indonesia]	–	X	–	X	

2010 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
Actions to be taken: • Maintain a safe, secure and sustainable capacity • Best practices on biological safety and security • Build and improve capacity to detect, diagnose and track outbreaks of highly infectious diseases • Build effective and sustainable partnerships between developed and developingcountries. [Indonesia]	–	X	–	X	
Laboratory services are essential to identify and confirm the causes of outbreaks. Accurate diagnosis and pathogen characterization is a cornerstone in the control of disease. Improvements to detection and diagnostic capabilities are important. [Indonesia]	–	X	–	X	
Indonesia Infectious disease outbreaks can be contained and suppressed through early detection, immediate response and cooperation and support. [Indonesia]	–	X	–	X	
Basic cell and molecular biology play an important role in building manpower and capacity in detection of diseases. [Indonesia]	–	X	–	X	
Raise awareness and inform on the importance of life science research – the early detection of outbreaks is closely related to the ability of laboratories to conduct early diagnosis of diseases. [Indonesia]	–	X	–	X	
Assistance and coordination in the case of alleged use of biological or toxin weapons – the need for international collaboration in building the national capacity: • Education and awareness raising • Capabilities in disease surveillance, detection and diagnosis and preparedness • Infrastructure support of BSL3 • Operational assistance grant • Training and advocacy on biosafety and biosecurity. [Indonesia]	–	X	–	X	
Improving National Capacity: • Ensure the sustainability of maintenance and management – Continuous funding support, maximize existing resources and facilities to enhance effectiveness and efficiencies • Strengthening and improving laboratory biosafety practices and biosecurity– long term commitment • Ensuring quality performance of laboratories • Expand the use of safe and modern diagnostics – need to build national capacity in fundamental and translational research through joint activity • Raise awareness of biologically threats globally - introduce Dual Use and Code of Conduct through academic curricula. [Indonesia]	–	X	–	X	
Needs: • Diagnostic capacity for rare and / or dangerous pathogens which cannot be provided by public or private laboratories • Rapid tests for these pathogens through laboratory analysis • Rapid access to diagnostic facilities, close coordination with first-response organizations • High-quality diagnostics • Security in case of crises through networking and redundancies • Interoperability: prevention, identification, control. [Switzerland]	–	X	–	X	
Switzerland • Increase the crisis-resilience of primary diagnostic capacities for biological incidents • Establish environmental analysis for biological incidents • Subsidiary tasks in human and veterinary medicine during an incident • Decentralised primary diagnostic capabilities: short transport distances for samples, rapid analysis; geographically comprehensive diagnostic capacities, take the burden off the national reference centres • Use existing infrastructure. [Switzerland]	–	X	–	X	
• Planning is essential for a correct response • Surveillance needs epidemiological intelligence • Early warning is essential for known and unknown defined diseases • Detailed standard operating procedures are essential for proper planning • Flexible protocols to adapt to unexpected events • International collaboration is a key component • Working as a network (federal-state) is a basic key element to succeed and to facilitate global communication • External quality assessment (international standards) for laboratories is basic • Implementation of routine, global systematic communication and of the IHR • Honest and transparent communication is essential. [Mexico]	–	X	–	X	

2010 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
To encourage and facilitate the collaboration and exchange of information, in the national and international arenas for analysis, follow up and evaluation of incidents and operations, in order to prevent and fight crime, in any of its forms, including terrorism and bioterrorism. [Mexico]	–	X	–	X	
Gather and process accurate and real time information: • When and where crimes occur • Suspects have been identified • Follow up actions to stop criminals. [Mexico]	–	X	–	X	
Outcomes: • Real time information on the occurrence of criminal events • How, when and who is committing the crime. [Mexico]	–	X	–	X	
Decision making based on information analysis (Graphics, maps, police deployment and fatigue), investigations for rapid reaction and prevent ion of crime. [Mexico]	–	X	–	X	
Sources of information: statistic and historical archives, voice records, reports, video, data. [Mexico]	–	X	–	X	
Important factors: • Testing the first reaction and consequence management capabilities in a crisis involving terrorist use of biological material. • Exercising coordination of specialized units dealing with medical emergencies (first aid, triage, evacuation). • Intervention of CBRN expert units for containment of dangerous agent • Public communication management in a crisis situation. [Romania]	–	X	–	X	
Exercises contribute to increasing the cooperation and coordination between ministries, agencies and civil society in dealing with bioterrorism crisis. [Romania]	–	X	–	X	
Further dialogues with the public sector, academia, technical experts could support governmental efforts in a terrorist crisis and provide for a better involvement and cooperation of the civil society. [Romania]	–	X	–	X	
Better communication with mass media and carrying out security education campaigns are useful tools for raising public awareness on these issues and improve people's reactions in crisis situations. [Romania]	–	X	–	X	
The demand for the provision of assistance has to be upon the request of the State. As with all international support, it should always be upon the request of the affected country, and be provided within the parameters that the State required in accordance to the assessments of its national authorities. To mitigate the effects of a biological attack, for instance, it is important that assistance is provided as defined by the State. Resources for such assistance could also be made through know-how sharing and cooperation, mainly in diagnostic training, medicine, vaccines and equipment. [Brazil]	–	X	–	X	
Regional consultations could be a valid context as a first step for international cooperation. In a broader context, in a confirmed violation or breach of the Convention, as stated in Article VI, that the Conference is the appropriate and capable body to suggest to the Security Council the best way to act. [Brazil]	–	X	–	X	
On the "link between national and international capabilities and mechanisms for building capacity to identify or punish the perpetrators of an attack" it is important to point out that, in what regards capacity building, international mechanisms could be a positive action, but punishment of perpetrators should be compatible with international law for that matter. [Brazil]	–	X	–	X	
The procedures could vary depending on the interpretations of what is a "suspicious outbreak". The term is ambiguous when translated to other non-official languages of the United Nations, such as Portuguese, allowing different interpretations. Since that ambiguity does not provide legal certainty, the term "alleged use" is preferable. [Brazil]	–	X	–	X	
On the matter of "strengthening existing international organizations and networks working on infectious diseases, in particular those of the WHO, FAO, OIE and IPPC", the provision of information by a State Party should be in conformity with its obligation to each of the above international organizations. Information should be delivered by explicit national authorities to the specific international organizations to which they are related. In this matter, information flow should also be well-organized and efficient in order to avoid duplication. [Brazil]	–	X	–	X	

2010 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
Regarding the "promotion of the fullest possible exchange of equipment, materials and scientific and technological information for the use of bacteriological (biological) agents and toxins for peaceful purposes and of international cooperation in this field", there should also be transfers in know how and voluntary intellectual property rights (or patent licensing) in cases of a biological attack or in cases of severe pandemics outbreak. On cooperation "in the use of biosciences and genetic engineering for peaceful purposes through active association with United Nations institutions", national and international laws should be followed especially in cases of joint scientific research. [Brazil]	–	X	–	X	
In matters related to capacity building, there are significant demands in the sectors of health, safety and others areas. There are also needs in developing countries for technology transfer to build more efficient response and defences. [Brazil]	–	X	–	X	
On cooperation to build national capacities, it is important to stress that the specialized international entities and organizations act within their respective mandates and attributions. [Brazil]	–	X	–	X	
States Parties should keep in mind that cooperation and assistance under the Convention must have a clear distinction between attributions of health authorities from those of national security institutions, which should be free to cooperate, coordinate actions and exchange information, but must restrict themselves to their mandated competency in that same way that international organizations respect each other's jurisdiction. [Brazil]	–	X	–	X	
In order to protect public health and safety by apprehending those responsible and mitigating health consequences, deliberate biological threat events require a coordinated response between law enforcement and public health. [USA]	–	X	–	X	
While a response requires coordination between law enforcement and public health, each group may be hesitant to share specific-types of information because of actual or perceived information sharing limitations. [USA]	–	X	–	X	
Strong professional relationships between law enforcement and public health allow for greater exchanges of information since individuals generally develop trust in their counterparts once they have met and worked with them prior to an incident. [USA]	–	X	–	X	
An agreement or memorandum of understanding allows law enforcement and public health to move beyond personal contacts and formalizes the concepts and principles for conducting joint investigations of intentional biological threats. [USA]	–	X	–	X	
The joint interviews allow both law enforcement and public health the opportunity to evaluate the initial information collected utilizing the expertise of each investigator, which could aid in identifying the source of the infection and / or the perpetrators and / or identify needs for additional information or avenues of investigation. If interviews are conducted separately, one investigator may not recognize the importance or significance of a piece of information, which could be critical to their counterpart's investigation. [USA]	–	X	–	X	
A joint public health and law enforcement investigation improves responses to intentional biological events because it increases information exchange and mutually supports the investigative goals of both disciplines. Joint investigations training is an effective way to promote the use of joint investigations. [USA]	–	X	–	X	
Coordination and information sharing mechanisms, improvement of capacities and technologies, joint exercises, lessons learnt and sharing of best practices are examples of EU actions which support and complement the actions taken by Member States. [Belgium / EU]	–	X	–	X	
Assistance could include expert teams and equipment for the diagnosis (release of field epidemiologists), support to health care (personnel and specialized modules), specialized equipments as well vaccines and medicinal products, protective gears, etc. Vaccines, serums and other related medical assistance can be part of the overall emergency assistance. [Belgium / EU]	–	X	–	X	
The successful response to a CBRN incident may depend on the availability and effective use countermeasures. [Belgium / EU]	–	X	–	X	
• Risk assessment of public health impact and risk management…; • Early alerting and communication systems linking up EU countries; and • Expert advice on prevention, treatment and mitigation. [Belgium / EU]	–	X	–	X	

2010 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
• Prevention: ensuring that unauthorized access to CBRN materials of concern is as difficult as possible; • Detection: having the capability to detect CBRN materials if control over them is lost; • Preparedness and response: being able to efficiently respond to incidents involving CBRN materials and recover from them as quickly as possible. [Belgium / EU]	–	X	–	X	
As regards the response to CBRN attacks or incidents, it is often impossible to quickly ascertain whether it was caused by a malicious act or an accident. Consequently, regardless of the nature of an event, the response to an incident is essentially the same. [Belgium / EU]	–	X	–	X	
Emergency planning: well-developed pre-emergency plans and emergency response plans designed for CBRN incidents are the foundation of efficient crisis- and post-crisis management… All response plans need to be exercised regularly. Such exercises should include criminal investigation and forensics teams. [Belgium / EU]	–	X	–	X	
Such response plans should not only exist for public authorities; they should also be developed by all operators handling high-risk CBRN materials and for other high-risk facilities. [Belgium / EU]	–	X	–	X	
Domestic and international information flows: smooth and clear communication and information flows between all stakeholders in a crisis situation are preconditions for an effective response… Consideration should also be given to making better use of existing information exchange systems. [Belgium / EU]	–	X	–	X	
Strengthening decontamination capacity. [Belgium / EU]	–	X	–	X	
Modelling tools play a key role in planning processes and during an actual response to a CBRN emergency. Regardless of the nature of an event (act of war, terrorist attack, traffic accident, industrial accident), the analysis of the movement of a cloud of dangerous substances (i.e. its atmospheric dispersion) and the estimation of the concentration of dangerous substances in the atmosphere constitute some of the most important response variables during a major accident involving dangerous substances. [Belgium / EU]	–	X	–	X	
Criminal investigations: the response to CBRN incidents, in particular terrorist acts, also includes the necessity to conduct criminal investigations with a view to bringing the perpetrators to justice. The importance of judicial cooperation with regard to terrorist activities involving CBRN materials should be underlined. [Belgium / EU]	–	X	–	X	
While the probability of a release of a biological weapon is low ... intentions of particularly non-state groups to use one are real. [Belgium / EU]	–	X	–	X	
Preparedness and capacity building are keys to any biological crisis management and all the relevant actors on international, regional, state, and local levels are required to put in place preventive measures. These include, inter alia, public awareness, national regulations and punitive measures to mitigate such threats. [Belgium / EU]	–	X	–	X	
The contemporary world is more than ever interconnected and diseases travel fast. A biological weapon scenario could most likely have a cross-border dimension. Preparedness and response mechanisms must be embedded with this assumption and cooperation, building of networks and good communication are imperative. [Belgium / EU]	–	X	–	X	
The role of international organizations is essential not only due to the fact that public health threats have no borders, but because the regime governing non-proliferation of biological weapons is not supported by any standing international bureaucratic structure – unlike nuclear and chemical weapons. [Belgium / EU]	–	X	–	X	
States have to prevent misuse of biological agents. To this end, it is necessary to put in place an appropriate regulatory framework, including biosafety and biosecurity, criminal law, administrative measures. Capacities on biosafety and biosecurity have to be developed. Biosafety, biosecurity and bio-risk management must be the highest priority for anyone handling pathogens of humans, as well as of animals and plants. [Belgium / EU]	–	X	–	X	
In addition to governmental and academic agencies and institutes, this also includes actors in the private sector such as the pharmaceutical industry, food industry, transportation industry, etc. It is important to create a culture of biosafety and biosecurity. [Belgium / EU]	–	X	–	X	

2010 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
For achieving preparedness, there are both national and international roles and responsibilities. Mechanisms need to be clearly defined before a potential incident or attack occurs, as a prerequisite for responding with speed and effectiveness. The goals are to prevent and to reduce the impact of human, animal, and plant diseases and pests. [Belgium / EU]	–	X	–	X	
Useful tools include: disease surveillance systems, alerts and early warning, regular updates of preparedness and response plans and contingency planning. [Belgium / EU]	–	X	–	X	
International organizations can provide to States the following elements of cooperation and support: global disease surveillance, strengthening of national public health and laboratory systems, expertise, technical tools and support, disease and threat specific technical guidance, national regulations and standards, training, building capacity for crisis management, facilitating rapid response to crises, help with early detection and collecting epidemiological evidence etc. Overall, international organizations facilitate sharing of expertise, supplies and resources. [Belgium / EU]	–	X	–	X	
In order to ensure an adequate response on national level to the use of a biological weapon, connectedness among a wide range of stakeholders – from sectors of health, justice, environment, commerce, agriculture, law enforcement, intelligence, media, and foreign affairs – is essential. Often for adoption of appropriate legislature and other measures, an actual biological incident is a watershed event. [Belgium / EU]	–	X	–	X	
Sensitizing public health providers to biological weapons use scenarios is a key element of any emergency response management and efforts are ongoing to overcome insufficient knowledge of and experience with handling potential effects of biological weapons. Public health providers must be educated about the diseases that might result from biological weapons use. Particular challenges can be posed by novel and exotic biological agents. [Belgium / EU]	–	X	–	X	
In responding to alleged use of biological weapons, time and communication are of essence. Early detection of the event is key, although still remains as one of the major challenges. First symptoms manifest themselves several days after victims have become infected and generally as non-specific. This is why cross-sector communication and vigilance cannot be overemphasized to recognize the emergence of unusual patterns. [Belgium / EU]	–	X	–	X	
Cooperation and communication between the public health sector and law enforcement agencies is indispensable in order to detect, identify and respond to an unusual outbreak that might have an intentional origin, without unnecessary delay. [Belgium / EU]	–	X	–	X	
In the case of use of a biological weapon, immediate priority would be given to assisting victims and to containment of the disease outbreak. Investigation would be secondary, but nevertheless crucial in order to understand the pattern of disease spread, to contain the outbreak, and to pursue perpetrators. There is a need to preserve and protect evidence during investigation of an alleged use. [Belgium / EU]	–	X	–	X	
In the case of an unusual and suspicious disease outbreak, international organizations can help with an investigation of the allegation. [Belgium / EU]	–	X	–	X	
Cooperation and coordination of activities performed by different agencies are crucial for recognizing an event in order to be able to mount a successful response, including investigations. [Belgium / EU]	–	X	–	X	
Biological detection and analysis technology relevant to investigation and response to alleged BW use is a rapidly developing area. Portable, commercial detectors are becoming available and sophisticated technology for differentiation of microbial strains, having a key role in determining if attack has occurred and in attribution and response, is becoming increasingly automated and available. [Belgium / EU]	–	X	–	X	
[There is a need for] high sensitivity and specificity of developed technologies, their versatility for analysis of different types of samples, being able to differentiate between biological agents endemic in a region or imported from other regions, as well as avoiding false positive results. [Belgium / EU]	–	X	–	X	
There has been great progress in development of new technologies for protection of personnel, detection in the field, rapid and sensitive diagnosis, personal protective equipment, containment laboratories, new vaccines, more effective drugs and modern and effective decontamination tools and chemicals. However, it is absolutely critical to develop a biosafety and biosecurity practice and culture, and to offer training to agencies and individuals on how to apply these technologies. [Belgium / EU]	–	X	–	X	

2010 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
Biological detection equipment can provide capability to identify certain agents. Fast availability of the decontamination equipment is an essential asset. [Belgium / EU]	–	X	–	X	
A key objective is to strengthen international capabilities for responding to, and investigating allegations of, BW use. Much remains to be done and continued national and international efforts are required to sustain and improve capabilities. [UK]	–	X	–	X	
Not least because infectious diseases, whether naturally occurring or deliberate, can readily cross borders, a response to the threat or actual use of biological weapons cannot be undertaken at a purely national level: it needs to be global and cooperative amongst States Parties and a broad range of international organisations. [UK]	–	X	–	X	
Efforts to improve capacity building to combat infectious disease, especially surveillance and diagnosis, also helps strengthen the BWC as the capabilities to identify naturally occurring outbreaks of disease are largely the same as those required to identify deliberate use of pathogens and toxins to cause disease in humans, animals and plants. [UK]	–	X	–	X	
[Targeted assistance projects] that help to improve disease surveillance, detection and diagnostics, biosafety and biosecurity, and to ensure a sustainable and legitimate future for institutes working on public, animal or plant health, potentially [result in] benefits for the institutes and their host governments, … through better understanding of new biological threats and in preparing for and responding to alleged use of biological or toxin weapons. [UK]	–	X	–	X	
The UNSG mechanism provides the only international system for investigating cases of alleged BW use and thereby offers an independent and authoritative mechanism for gathering facts that could be used as a basis for further action. [UK]	–	X	–	X	
[The UNSG mechanism] offers the prospect of prompt and effective investigations that gather evidence that may help identify the origins of any attack, and may allow the UNSG to facilitate, as appropriate, provision of aid by the international community, which might help mitigate the effects. [UK]	–	X	–	X	
It is important to ensure that this mechanism is effective, [States Parties are encouraged to] support the UNODA in its initiatives to ensure that the mechanism is effective. [UK]	–	X	–	X	
Preparation is essential for an effective response. Improvising a response during an incident is unlikely to be effective. One can never be totally prepared for all eventualities, but if the basics are right, especially the command and control of any response to a BW incident and recovery, then mitigation of the adverse consequences of any use of BW is achievable. [UK]	–	X	–	X	
Our collective objective is to prevent a biological attack (the BTWC has a part to play in this strategy) and where that is not possible, to put in place measures to ensure that we can recover from it quickly and with minimal loss of life. This requires continuing preparation and planning across a range of government departments and agencies; police, fire and rescue services; health professionals and the armed forces. [UK]	–	X	–	X	
Preparation to respond to a [biological] attack and mitigate its effects is of vital importance. … activities to achieve a multi-agency national response, including organizational and planning resources, training, equipping, establishing facilities, team-building and coordination. [UK]	–	X	–	X	
Early detection and diagnosis assists in timely and effective medical intervention; … review options for enhancing medical response through stockpiling drugs and vaccines to mitigate the effects of exposure to an attack; …review of detection, identification and monitoring equipment and collaboration with industry and international partners to assess biological detection equipment. [UK]	–	X	–	X	
Effective command, control and communications are essential elements in an ability to respond effectively to any biological weapons attack. [UK]	–	X	–	X	
Important activities include training of personnel who would be expected to deal directly with the consequences of an attack. It is essential to ensure that the levels of trained and equipped police officers, fire and rescue service decontamination units and hazardous area response teams are maintained. [UK]	–	X	–	X	
Provision of timely and reliable scientific advice in a crisis, both to first responders and decision-makers, is another essential element in an effective national capability to respond. [UK]	–	X	–	X	

2010 Suggestions	Dimensions				Other aspects
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Planning for recovery and decontamination is required at the earliest opportunity so that a return to normality can be achieved as soon as possible. [UK]	–	X	–	X	
Regular exercises – table-top and field – are essential tools in building and sustaining an effective capability to contain the consequences of any BW attack, to restore confidence and to recover rapidly with minimal loss of life and disruption to daily life and the economic well-being of the country. [UK]	–	X	–	X	
Regular exercises involving all key players – from first responders to law enforcement agencies – are essential as part of national preparedness planning for responding to any biological weapons attack. [UK]	–	X	–	X	
Exercises enable us to validate plans and systems thoroughly, train frontline responders, and highlight vulnerabilities. Planning for emergencies cannot be considered reliable until it is exercised and has proved to be workable, especially since false confidence may be placed in the integrity of a written plan. [UK]	–	X	–	X	
Lessons learned … include the need to address fully the command, control and coordination of multi-agency assets during the initial response, and to increase the understanding of processes and authorities among all the agencies involved as the operation progresses. A good appreciation of the threat and risk, and rapid processing of real-time information during the operation are also important. Specific points to note are: • Exercises provide a rare opportunity, in a safe environment, to develop strong working relationships with colleagues in a multiagency environment which aids closer working in the event of a real incident; • The health community is used to working in a consensus rather than a command and control environment - exercises help to identify and reinforce training needs within the health community to enable, for example, more effective strategic leadership in a crisis situation; • Scientific advice, when required, should be provided in a timely and easily understandable way to aid the decision making process and not confound it. There should also be a single agreed source of scientific advice; • Organisations need to know where and how they can access appropriate expert advice rapidly; • Barriers to information sharing between organisations, such as health and law enforcement, should be removed or minimised wherever possible through agreed protocols; • All organisations need to understand the importance of evidence and the evidence chain in a deliberate release incident, and the constraints and limitations that this imposes; • The training and placement of liaison officers in responding organisations improves the effectiveness of interagency communication and information flow; • Business continuity plans need to reflect the increased capacity required to respond to emergencies; • Recovery is often overlooked during the initial stages of an acute response; this is a serious weakness. Recovery should be planned from the start of an incident; • Outputs to the media from incidents must be agreed, coordinated and timely to prevent contradictory or unhelpful information being released. [UK]	–	X	–	X	
United Kingdom A key aspect for countering the threat is to reduce the likelihood of an attack. This involves ensuring that those intent on carrying out an attack are disrupted and brought to justice, and that CBRN materials acquired, or used in any attack, can be identified and attributed. [UK]	–	X	–	X	
A sophisticated forensic capability may be required to provide evidence in the event of prosecution of those planning a [biological] attack. [UK]	–	X	–	X	
The success of efforts to improve capabilities in this area depends on collaboration across government departments and agencies, the responder community, the private sector and with international partners. [UK]	–	X	–	X	
Streamlining policies of all constituencies involved in integrated management is a permanent challenge and requires not only joint training but also permanent assessment of incidents, both real life and exercises. [Germany]	–	X	–	X	
Sharing of error and failure insights from uncommon risk and threat situations should be an important part of interdisciplinary and international communication and exercise planning. [Germany]	–	X	–	X	
Once established and approved methods and hardware need to undergo permanent processes of development and technical improvement for optimizing response capabilities and minimizing risks for personnel involved in real life scenarios. [Germany]	–	X	–	X	

2010 Suggestions	Dimensions				Other aspects
	Threat Ambition	Coherence / Engagement	Availability / Opportunity	Resilience	
Training of personnel in personal protective equipment is a prerequisite for enabling optimal reaction in real life incidents. [Germany]	–	X	–	X	
Medical symptoms of an infectious disease may deviate from normal patterns in case an infectious agent is distributed in an unusual way by terrorists. Correct and timely medical diagnosis as well as linking the outbreak of disease to a terrorist attack may be delayed. For minimizing lead time for detection of an alleged or real biological attack close cooperation and joint training of public health and law enforcement are an indispensable prerequisite. [Germany]	–	X	–	X	
[Challenges:] • Acute perception in politics and society; • Often delayed recognition of attack; • Insufficient knowledge and experience for risk assessment; • Insufficient experience with related disease patterns; • Rapid depletion of staff and structural resources; • Training deficits in first response structures (public health services, primary care facilities, law enforcement agencies). [Germany]	–	X	–	X	
Strengthen the public health care system through the implementation of infectious disease countermeasures and vaccine stockpiling; • Strengthen cooperation between relevant organizations and enhance their response readiness; • Strengthen security and precautionary measures for the prevention of terrorist attacks and the control of biological and chemical agents; • Strengthen the response capacities of the police, the self-defense forces, the fire department, the coast guard and other relevant organizations; • Provide accurate and timely information to the public. [Japan]	–	X	–	X	
In order to minimize the consequences of a potential use of biological or toxin weapons a national system must be in place, and international cooperation and coordination among States and other relevant organizations is indispensable. [Rep Korea]	–	X	–	X	