



**Joint FAO/WHO Workshop on the Provision
of Scientific Advice
to Codex and Member Countries**

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REPORT

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ACRONYMS AND ABBREVIATIONS

CAC	Codex Alimentarius Commission
CCFAC	Codex Committee on Food Additives and Contaminants
CCFH	Codex Committee on Food Hygiene
CCPR	Codex Committee on Pesticide Residues
CCRVDF	Codex Committee on Residues of Veterinary Drugs in Food
CICAD	Concise International Chemical Assessment Document
EFSA	European Food Safety Authority
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FDA	Food and Drug Administration (of the United States of America)
GEMS/Food	Global Environment Monitoring System – Food Contamination and Assessment Programme
GLP	Good Laboratory Practice
GMO	Genetically Modified Organism
INFOODS	International Network of Food Data Systems
IPCS	International Programme on Chemical Safety
IPPC	International Plant Protection Convention
JECFA	Joint FAO/WHO Expert Committee on Food Additives
JEMRA	Joint FAO/WHO Expert Meeting on Microbiological Risk Assessment
JMPR	Joint FAO/WHO Meeting on Pesticide Residues
NGO	Nongovernmental organization
OECD	Organization for Economic Cooperation and Development
OIE	World Animal Health Organization
QA	quality assurance
QC	quality control
Salm-Surv	WHO global network for <i>Salmonella</i> surveillance
SEFDEC	Southeast Asia Fisheries Development Export Cooperation
SPS Agreement	Agreement on the Application of Sanitary and Phytosanitary Measures
UNU	United Nations University
WHO	World Health Organization
WIPO	World Intellectual Property Organization
WTO	World Trade Organization

EXECUTIVE SUMMARY

FAO and WHO have a long history of providing scientific advice to the Codex Alimentarius Commission and its subsidiary bodies and to Member Countries. A Joint FAO/WHO Workshop was held to review and provide guidance to the two organizations on additional ways to improve the quality, quantity and timeliness of the scientific advice provided. The Workshop was part of a broader consultative process of which the first stage had been an e-forum¹ conducted end-2003.

The Workshop focused on the principles, management and procedures associated with the provision of scientific advice within the FAO/WHO system. The main components of this work currently include JECFA, JMPR, JEMRA, and ad hoc expert consultations (whether scheduled or held in situations of emergency). Recognizing that the Codex Alimentarius Commission and its subsidiary bodies are important clients of FAO/WHO scientific advice, and taking account of the recommendations of the Codex Evaluation,² the Workshop also considered the linkages and interaction between FAO, WHO and Codex where they have an impact on the provision of scientific advice.

The Workshop agreed that the provision of scientific advice was an important issue for which a comprehensive review was timely, developed a number of essential principles and definitions governing the provision of scientific advice, and outlined several options to enhance the management of the provision of scientific advice. The Workshop, having considered the procedures and mechanisms for the provision of scientific advice, agreed that the system needed to be responsive to emerging issues, and that FAO and WHO should be proactive in identifying future issues. Due consideration was given to mechanisms to enhance the participation of developing countries throughout the process of provision of scientific advice.

The Workshop considered the issue of transparency and openness in depth as it related to all aspects associated with the provision of scientific advice. Transparency was the core principle that received the most widespread attention throughout discussions, reflecting the complexity of the issue. Other core principles identified and agreed by the Workshop included soundness, responsibility, objectivity, fairness and inclusiveness.

The subject of the greater participation of developing countries was also considered in depth. Emphasis was placed on the principle of balance, both in terms of data provision and of expert participation. It was considered essential to overcome the problems of inadequate infrastructure and a sense of scientific isolation. The seriousness of the concerns expressed is reflected in the number of recommendations that are specifically directed to an improvement of the current situation.

The Workshop emphasized the need for improvement in the management of the provision of scientific advice. Options included improvements in the existing management systems, the development of integrated management systems, the establishment of a coordination function, and an independent advisory group.

¹ http://www.fao.org/es/ESN/proscad/index_en.stm

² Food and Agriculture Organization of the United Nations/World Health Organization. *Report of the Evaluation of the Codex Alimentarius and other FAO and WHO food standards work*. Geneva/Rome, FAO/WHO, 2002. (Unpublished document, which can be found at <http://www.fao.org/docrep/meeting/005/y7871e/y7871e00.htm>).

A set of recommendations relative to essential principles and definitions, management issues, procedures and mechanisms, and participation of developing countries, were agreed by the Workshop. These recommendations were based on in-depth discussions undertaken in three working groups. The recommendations will be further considered during the FAO/WHO consultative process with a view to implementation. This will include an assessment of the legal and financial implications of the recommendations, where appropriate.

The Workshop recognized that several of these recommendations were technical in nature while others might potentially have a significant impact on the management, organization and funding of the provision of scientific advice. It was felt that in view of the expected growth in demand for scientific advice from FAO and WHO in the foreseeable future, both organizations should give priority to the implementation of the recommendations. The Workshop highlighted several issues that would require further consideration in the next steps of the consultative process. However, this should not delay the implementation of the recommendations, where this would be possible and appropriate.

RECOMMENDATIONS

Essential principles, definition and scope governing the provision of scientific advice

1. FAO and WHO should adopt the following definitions of *scientific advice* and *scope of scientific advice*:

Scientific advice is the conclusion of a skilled evaluation taking account of the scientific evidence, including uncertainties. It may comprise an appraisal of the consequences of one or more options based on an analysis of the available scientific knowledge and on scientific judgement. Such advice should include explicit recognition of any uncertainty either in the current state of knowledge or in the adequacy of the available data. If necessary, it should include any alternative interpretations of the data.

The purpose of scientific advice is to help risk managers, policy makers and others in decision making.

Scope of scientific advice. Advice may take many different forms, from a response to a specific question, or provision of scientific information related to specific needs, to a full quantitative risk assessment. Depending on the degree of uncertainty, advice may range from a clear conclusion on risk to a recommendation to obtain additional data. Advice may be sought at any time throughout the risk analysis process or even subsequently.

Optimal advice requires effective dialogue between risk assessors and risk managers. In some instances advice may include conclusions regarding the need for information and activities necessary to enable capacity building or technical assistance.

2. FAO and WHO should adopt and adhere to the following core principles in the provision of scientific advice: soundness, responsibility, objectivity, fairness, transparency and inclusiveness.

Soundness is the need for scientific excellence, and applies to both the participants and the process. It includes consideration of adequacy of competence, recognized standing in the discipline represented, the ability of opinions and advice to withstand scrutiny by peers, the application of current scientific knowledge in reaching a conclusion, and ensuring that those producing advice represent a suitable balance of expertise.

Responsibility encompasses the various aspects of accountability, and applies both to the need to safeguard the integrity of the process and to consider scientists answerable for their views. This includes the responsibility of participants to justify their views by adequate citation of reputable sources, the application of a suitable level of caution in data interpretation, timeliness, compliance with agreed task description, efficiency in conducting the assessment, cost-effectiveness of the process and maintenance of confidentiality as mandated. An additional aspect of responsibility is that sponsors should be asked to submit all appropriate data, and not just those necessary to comply with the data requirements. Ideally, responsibility should include updating scientific advice on the basis of new knowledge (i.e. review of conclusions).

Objectivity is considered to include neutrality and applies both to the participants and to the advice provided. While participants may be drawn from different sectors, including those where there may be potential conflicts of interest, whenever an opinion is provided it should

be independent and unbiased. Both the opinions of individuals and the advice provided should be based only on scientific evidence. In reaching a conclusion it is necessary to balance the opinions from participants with different perspectives and to seek a scientifically-based consensus. The views expressed should be weighted according to the degree of certainty underpinning them. Where scientific advice is the outcome of a risk assessment, there should be adequate separation from risk management.

Fairness applies to the conduct of the assessment process, and requires respect of all participants for each other and for their scientific views. Participants should be given adequate and equal opportunities to express their views. Minority views should be properly considered. Participants themselves should contribute appropriately to the process. The selection of participants should be objective and inclusive to the extent possible. The process should be conducted in an ethical manner.

Transparency involves the design and implementation of mechanisms that ensure that the process whereby advice is formulated and that the advice itself is clearly understandable to others. Transparency could involve the provision of access to pivotal scientific information that is comprehensive, understandable and timely, while respecting legitimate concerns to preserve confidentiality. It could also involve the provision of explicit documentation of all procedures, policies and practices. Transparency may also involve review of both the advice and the procedures involved in providing advice.

Inclusiveness is considered to include group balance. Two aspects of inclusiveness were identified: minority scientific opinion and the balance of skills and expertise necessary for the assessment. Inclusiveness requires that due respect and consideration be given to minority scientific opinion. In the selection of participants, in addition to their expertise, due consideration should be given to geographical and socioeconomic balance, but not to the extent that it compromises scientific integrity. Particular emphasis should be placed on improving the participation of developing countries. Where participation is limited by a skill or knowledge gap, appropriate capacity building activities should be undertaken.

3. FAO and WHO should make every effort to achieve full participation of developing countries in the provision of scientific advice. This will require infrastructure development, capacity building and utilization of data from these countries.

4. In order to facilitate harmonization of terminology, methods, inputs and outputs for the provision of scientific advice, FAO and WHO should initiate a harmonization project to better integrate FAO and WHO activities in areas such as those relating to chemical and microbiological hazards, and biotechnology and nutrition issues. This should commence with the identification and prioritization of topics for harmonization.

5. FAO and WHO should evaluate and prioritize proposed new areas of work. This should include consideration of the need for further resources to support this work. In the first phase of this activity, consideration should be given to current requests for new types of scientific advice from Codex or Member countries, e.g. nutrition.

6. FAO and WHO should develop criteria and a mechanism for identifying new areas in which scientific advice is required, including considerations of prioritization and resourcing. The mechanism selected should ensure coordination with related activities in Member countries and international organizations such as IPPC and OIE to the extent possible.

7. FAO and WHO should establish mechanisms to enable foresight, particularly taking into account the needs of developing countries.

Management of the provision of scientific advice

8. FAO and WHO should, in order to: (1) improve the management of the provision of scientific advice, including enhancing harmonization of scientific approaches and operating procedures; (2) improve the coordination and prioritization of work; and (3) facilitate communication, interaction and transparency:

- improve existing management systems, where needed;
- introduce new integrated management systems and resources where needed;
- consider the formation of an independent external advisory group.

9. FAO and WHO should develop means to increase the quantity and quality of iterative interactions between those providing scientific advice, e.g. risk assessors (scientific expert bodies) and those requesting advice, e.g. Member countries and Codex.

10. FAO and WHO should enhance the participation of developing countries from all regions in all aspects of the scientific advice process, including identifying priority needs, outreach to scientific experts, training for the purpose of knowledge transfer, as well as access to and use of the outputs of expert bodies. This includes the recognition of regional efforts to generate, collect and coordinate data for risk assessments.

11. FAO and WHO headquarters should communicate more effectively with their regional and national/country offices and Codex Contact Points regarding the activities and needs of programmes relating to the provision of scientific advice, and to ensure better gathering and dissemination of information in developing countries.

12. FAO and WHO should further explore and develop the concept of twinning, i.e. establishing partnerships between developed and developing countries/organizations, to improve the capabilities of developing countries for the provision of scientific advice.

Procedures and mechanisms for the provision of scientific advice

Selection and effectiveness of experts

13. FAO and WHO should harmonize procedures for the selection of experts across the expert bodies by the establishment of a set of clear, publicly available criteria, as appropriate. The selection process should be transparent, including dealing adequately with conflicts of interest and ensuring balance on expert panels.

14. FAO and WHO should make available training opportunities for experts in policies and procedures used by FAO/WHO, communication and language skills, and the ability to recognize conflicts of interest.

15. Although practical barriers will generally limit the conduct of expert panels to English for the foreseeable future, FAO and WHO, and the panels themselves, should make every effort to ensure that language does not limit the range of data and publications considered in their deliberations.

16. FAO and WHO should develop means for actively recognizing the contributions of scientists providing expert advice and their employing institutions.

17. FAO and WHO should recognize expert resource contributions from Member Countries as equivalent to financial contributions.

Data

18. FAO and WHO should encourage and support the submission of data from developing countries.

19. FAO and WHO should develop general guidelines for the inclusion/exclusion of data used by expert panels.

20. FAO and WHO should develop general guidelines related to confidentiality, intellectual property rights, and ethical considerations related to data.

Processes and procedures

21. FAO and WHO should develop guidance for the appropriate use of national and regional expert scientific reports in the deliberations of international expert panels.

22. FAO and WHO should develop improved procedures for the interaction of expert panels with data providers and other stakeholders.

23. FAO and WHO should further analyse different options to enhance the openness and transparency of scientific meetings.

24. FAO and WHO should make their guidelines, policies and procedures related to the provision of scientific advice publicly available for review and comment.

25. FAO and WHO should develop means for assessing and building capacity and infrastructure in developing countries for conducting risk analysis.

Communication of scientific advice

26. FAO and WHO should make reports publicly available as soon as possible, e.g. via the Internet.

27. FAO and WHO should give consideration to the publication of some reports in draft form in order to allow for public comment or peer review before finalization.

28. FAO and WHO should ensure that the existing rules for the inclusion of minority opinions are applied whenever consensus cannot be achieved by an expert body.

29. FAO and WHO should enhance the transparency of their reports through the inclusion of a plain language summary of the findings of expert panels. This may be facilitated by including risk communication experts in expert panels.

1. INTRODUCTION

For many years, FAO/WHO have been convening expert committees (e.g. JECFA, JMPR) and ad hoc consultations relating to the provision of scientific advice to Codex and Member countries. During this time, many changes have taken place to improve the working procedures of FAO/WHO. Meanwhile, food safety has emerged as a priority issue in many countries, and the need for scientific advice has increased. The Codex Alimentarius Commission has noted that the current working arrangements for expert bodies, developed over the years, did not fully meet the needs and expectations of Member countries and the Commission. As a result, the 24th session of the Codex Alimentarius Commission, meeting in July 2001, requested FAO and WHO “to convene a consultation to review the status and procedures of the expert bodies and to develop recommendations for consideration by the Directors-General on additional ways to improve the quality, quantity and timeliness of scientific advice to the Commission”.¹

Recognizing the need to improve the provision of scientific advice, FAO and WHO convened a *Preparatory meeting on the elaboration of a common framework for the functioning of Joint FAO/WHO expert bodies and consultations* in Rome on 3-4 September 2001. As a result, some improvements in the system were made, but comprehensive action awaited the results of the FAO/WHO Evaluation of the Codex Alimentarius and other FAO and WHO food standards work. The report² of the Evaluation, submitted to the Directors-General of both organizations in November 2002, included a number of recommendations relating to the provision of scientific advice. One such recommendation was that a consultancy study of expert advice and risk assessment should be immediately undertaken and be followed by an expert consultation, and discussion in Codex.

FAO and WHO also initiated two recent projects which are relevant in this context. Firstly, a *Joint FAO/WHO project to update principles and methods for the risk assessment of chemicals in food* was initiated in 2002, and this is continuing. Secondly, FAO and WHO engaged a consultant to undertake a critical review of JMPR, as a result of which a report entitled *Review of the working procedures of the Joint FAO/WHO Meeting on Pesticide Residues*, which contained 29 recommendations, was published in February 2002. A number of recommendations from this report have already been implemented by FAO and WHO, while others were relevant to be considered further during the current exercise.

The present *Joint FAO/WHO workshop on the provision of scientific advice to Codex and Member countries* was convened by FAO and WHO as part of a broader consultative process on the means to improve the provision of scientific advice to Codex and to FAO/WHO Member countries, as outlined by an informal FAO/WHO Planning Meeting held in May 2003. The first stage of the consultative process was an e-forum for which 10 background discussion papers covering the main issues were prepared (7 by external authors and 3 by the FAO/WHO secretariat). The overall objective of this e-forum, conducted from 1 October to 14 November 2003, was to obtain the views of stakeholders and interested parties in an open discussion addressing the key issues concerning the provision of scientific advice, the steps currently involved in the process, and possible options for improving the process. In addition to the background discussion papers, summaries of comments on these papers were provided to the

¹ Joint FAO/WHO Food Standards Programme. *Codex Alimentarius Commission. – Report of the twenty-fourth session, Geneva, 2-7 July 2001*. Rome, FAO/WHO, 2001. (ALINORM 01/41). (paragraph 61).

² Food and Agriculture Organization of the United Nations/World Health Organization. *Report of the Evaluation of the Codex Alimentarius and other FAO and WHO food standards work*. Geneva/Rome, FAO/WHO, 2002. (Unpublished document, which can be found at <http://www.fao.org/docrep/meeting/005/y7871e/y7871e00.htm>).

Workshop as a basis for discussions. Experts were invited in their personal capacity, and not as representatives of their countries or organizations.

The Workshop was opened by Dr Kerstin Leitner, Assistant Director-General, Sustainable Development and Healthy Environments, World Health Organization. Dr Leitner welcomed the participants on behalf of both FAO and WHO.

Dr Leitner stated that the Workshop was a unique opportunity to strengthen, both scientifically and operationally, FAO/WHO global food safety programmes without which the standard-setting work of Codex would not have been possible. Over many years these programmes have made significant contributions to the health and wellbeing of consumers, and have been excellent examples of collaboration between FAO and WHO.

Dr Leitner informed the Workshop that FAO and WHO strongly supported this review process. Both organizations were committed to enhancing their ability to serve their constituents, and she emphasized the need to make the scientific advice provided by FAO/WHO more understandable to policy makers and the general public. In addition, with the enhanced status of Codex under the WTO SPS Agreement, the importance of FAO and WHO providing scientific advice in a sound and timely manner to Codex and Member countries had also increased.

Emphasis was placed on the need for better data with regard to dietary intake, disease surveillance, and residues and contaminants, and the importance of generating and using data from developing countries was highlighted. In conclusion, Dr Leitner challenged the participants not to miss this opportunity to strengthen FAO/WHO programmes and not to be afraid to do some "out of the box thinking", while being mindful of the resource implications.

1.1 Adoption of the agenda and appointment of chairpersons and rapporteurs

The Workshop appointed Dr Stuart Slorach as chairperson and Mr Stephen Crossley as rapporteur, and agreed to form three working groups, with the following chairpersons and rapporteurs:

Working group I	Dr Claude Mosha (chairperson); Dr Alan Boobis (rapporteur)
Working group II	Dr Ada Knaap (chairperson); Dr Michael Wehr (rapporteur)
Working group III	Dr Robert Buchanan (chairperson); Dr Ian Munro (rapporteur)

FAO and WHO identified no conflicts of interest for the participants of the Workshop. A list of the Workshop participants is given in *Annex 1*.

The Workshop adopted the agenda (*Annex 2*).

1.2 Workshop objectives

The following objectives were agreed by the Workshop:

1. To confirm and prioritize key issues to be addressed in the improvement of the provision of scientific advice by FAO/WHO, taking into account the background papers and e-forum comments, and personal expertise.
2. To discuss options to address the issues identified and consider the benefits and constraints of each.

3. To provide, on the basis of (2) above, guidance on the specific papers to be prepared for consideration of the expert consultation.
4. To provide guidance to FAO/WHO on completion of the consultative process.

1.3 Organization and operation of the Workshop, including working group discussions

The FAO/WHO secretariat made a presentation outlining current working arrangements, the stages of the consultative process, and an overview of the anticipated achievements of the Workshop. In addition, a summary of the e-forum was presented. There had been 229 subscriptions to the e-forum from 57 countries. A total of 194 comments were received from 54 contributors. Most of the contributors provided comments on more than one of the discussion papers.

The Workshop was advised that while the recommendations may have legal and resource implications for FAO and WHO, the discussions should not be limited by these considerations. Accordingly, while the legal and resource implications may affect the implementation of some of the recommendations, the Workshop was asked to consider making recommendations which might require changes in the current legal and financial framework.

In the next steps of the consultative process, recommendations that arose from the Workshop would be reviewed by FAO and WHO, including consideration of legal and budgetary implications. This additional analysis would be provided to a joint FAO/WHO expert consultation to be convened to consider the recommendations from the Workshop.

The Workshop focused on the practical issues associated with the provision of scientific advice within the FAO/WHO system. Currently, scientific expert bodies are JECFA, JMPR, JEMRA and ad hoc consultations. Ad hoc consultations may be convened to consider specific scientific issues, or be a planned series of consultations which may include the consideration of an emergency issue. Recognizing that the Codex Alimentarius Commission and its subsidiary bodies are important clients of FAO/WHO scientific advice, and taking account of the recommendations of the Codex Evaluation, the Workshop considered the linkages and interaction between FAO, WHO and Codex where they have an impact on the provision of scientific advice.

The background papers were presented to the Workshop by their authors, together with a summary of the comments received during the e-forum. The discussion papers were entitled:

- Scientific advice provided by FAO and WHO
- Basic principles underlying the provision of scientific advice
- Enhancing risk communication in providing scientific advice
- Legal arrangements for the provision of scientific advice
- Ensuring the transparency of the process of providing scientific advice to Codex and Member countries
- Selection of experts to avail of best available expertise
- Providing a flexible management system for provision of scientific advice
- Working procedures based on best practice to provide scientific advice
- Accessing and managing the best data available
- Enhancing the role of developing countries in developing scientific advice

Workshop participants were asked to identify priority issues arising from both the discussion papers and from their expertise and knowledge of the requirements for the provision of

scientific advice. Three working groups were established to consider these priority issues. The working groups focused on the following three key areas:

- Essential principles, definition and scope governing the provision of scientific advice
- Management of the provision of scientific advice
- Procedures and mechanisms for the provision of scientific advice

The issues assigned to each working group are listed in *Annex 3*, and the members of the working groups in *Annex 4*.

1.4 Findings of the Workshop

In-depth discussion of these issues was undertaken in the respective working groups, which made recommendations accordingly. Owing to time constraints, the plenary session considered only the recommendations of the working groups. The recommendations as listed on pages 7-10 were agreed by all Workshop participants.

2. WORKING GROUP I – ESSENTIAL PRINCIPLES, DEFINITION AND SCOPE GOVERNING THE PROVISION OF SCIENTIFIC ADVICE

2.1 Scope and definition of scientific advice

The Group discussed at some length the meaning of *advice*. Dictionary definitions of judgement, opinion, analysis and advice were obtained to assist in furthering the discussion. There was agreement that advice was more than information or just opinion. Advice could include one or more options reflecting the potential outcome of different risk management options. It was agreed that the purpose of providing scientific advice was to help in decision making, often by risk managers or policy makers, but also possibly by others. It was recognized that advice is usually sought by a client, e.g. Codex, or a Member country of FAO or WHO. The advice provided should reflect the needs of the client. However, effective dialogue with the client is essential to ensure that the question asked provides advice of a nature and form that would help address the issue of concern most effectively.

The Group discussed whether the output should be named differently, depending on the level of confidence in the conclusion. It was agreed that all output should be considered to be scientific advice, but that the nature of the output would vary, reflecting the degree of uncertainty. The Group discussed various definitions of scientific advice that incorporated these concepts, and finally agreed on a formulation, together with the purpose of scientific advice.

The *scope of scientific advice* was then discussed. The Group recognized that advice could be sought on a wide range of issues with different levels of urgency, and that the adequacy of the information available could vary with the request and with the urgency of the need for advice. The assessment could be limited to data available in a very short time, when the need for advice was urgent. Clearly, such advice would have a greater degree of uncertainty than when a full assessment was carried out. The possibility of identifying advice provided under such circumstances as “preliminary” or “provisional” should be considered. Scientific advice was often requested on issues that had a direct or indirect impact on human health. However, the Group agreed that the scope should include the possibility of addressing issues relating to environmental health or fair practices in the food trade.

The scope of scientific advice should be broad enough to range from simple responses to specific questions to a complete risk assessment. While advice was often sought prior to risk management, the Group considered that it was appropriate to include the option for provision of advice anywhere throughout the risk analysis procedure. The Group recognized that risk analysis is an ongoing process and that this advice may also include effective impact assessment of risk management strategies.

The issue of scientific opinion was raised. It was noted that this was not a term used within the FAO/WHO process, but that it was relatively widely used elsewhere. However, it was also noted that such use varied considerably, and that in some instances it was used synonymously with scientific advice.

Recommendation

1. FAO and WHO should adopt the following definitions of *scientific advice* and *scope of scientific advice*.

Scientific advice is the conclusion of a skilled evaluation taking account of the scientific evidence, including uncertainties. It may comprise an appraisal of the consequences of one or more options based on an analysis of the available scientific knowledge and on scientific judgement. Such advice should include explicit recognition of any uncertainty either in the current state of knowledge or in the adequacy of the available data. If necessary, it should include any alternative interpretations of the data.

The purpose of scientific advice is to help risk managers, policy makers and others in decision making.

Scope of scientific advice. Advice may take many different forms, from a response to a specific question, or provision of scientific information related to specific needs, to a full quantitative risk assessment. Depending on the degree of uncertainty, advice may range from a clear conclusion on risk to a recommendation to obtain additional data. Advice may be sought at any time throughout the risk analysis process or even subsequently.

Optimal advice requires effective dialogue between risk assessors and risk managers. In some instances advice may include conclusions regarding the need for information and activities necessary to enable capacity building or technical assistance.

2.2 Essential core principles for the provision of scientific advice

The Group discussed all of the core principles raised in the e-forum, and identified one or two additional potential principles. Each of the principles was evaluated to ascertain whether it was essential to the effectiveness of the process, and whether it was a primary or an enabling principle (i.e. a means to achieve a primary principle). The question of duplication was addressed, and on this basis a number of the principles were combined. Principles were also assessed to establish whether they applied to the participants, the process or the advice itself. The Group discussed the possible distinction between those principles that would advance the quality of the advice scientifically, and those that would contribute to improving the credibility of the process. Transparency was the principal subject of discussion. One view was that transparency was a means to an end, to ensure soundness and responsibility, and hence should not be a core principle. An alternative view was that transparency should require complete access and comment at all stages of the process. However, the views of the Group converged, and it was agreed that transparency should be a core principle, but that its

description should not be too prescriptive. It was agreed that it was more the process than the information that needed to be transparent.

The Group concluded that it was possible to identify six core principles which incorporated all relevant considerations, and that it was not necessary to subdivide these in any way: soundness, responsibility, objectivity, fairness, transparency, inclusiveness. The Group then discussed which concepts should be covered by each principle.

It was recognized that in some instances it might not be possible to apply all of the principles proposed, and agreed that the principles should be applied to the extent possible with respect to the nature of the advice sought, and that the reasons for any deviation from these principles should be documented as part of the process.

The Group did not reach agreement on whether excellence in communication should be a core principle. However, there was general agreement that excellence in communication was necessary in all steps of the risk analysis process and between all parties.

Recommendation

2. FAO and WHO should adopt and adhere to the following core principles in the provision of scientific advice: soundness, responsibility, objectivity, fairness, transparency and inclusiveness.

Soundness is the need for scientific excellence, and applies to both the participants and the process. It includes consideration of adequacy of competence, recognized standing in the discipline represented, the ability of opinions and advice to withstand scrutiny by peers, the application of current scientific knowledge in reaching a conclusion, and ensuring that those producing advice represent a suitable balance of expertise.

Responsibility encompasses the various aspects of accountability, and applies both to the need to safeguard the integrity of the process and to consider scientists answerable for their views. This includes the responsibility of participants to justify their views by adequate citation of reputable sources, the application of a suitable level of caution in data interpretation, timeliness, compliance with agreed task description, efficiency in conducting the assessment, cost-effectiveness of the process and maintenance of confidentiality as mandated. An additional aspect of responsibility is that sponsors should be asked to submit all appropriate data, and not just those necessary to comply with the data requirements. Ideally, responsibility should include updating scientific advice on the basis of new knowledge (i.e. review of conclusions).

Objectivity is considered to include neutrality and applies both to the participants and to the advice provided. While participants may be drawn from different sectors, including those where there may be potential conflicts of interest, wherever an opinion is provided it should be independent and unbiased. Both the opinions of individuals and the advice provided should be based only on scientific evidence. In reaching a conclusion it is necessary to balance the opinions from participants with different perspectives and to seek a scientifically-based consensus. The views expressed should be weighted according to the degree of certainty underpinning them. Where scientific advice is the outcome of a risk assessment there should be adequate separation from risk management.

Fairness applies to the conduct of the assessment process, and requires respect of all participants for each other and for their scientific views. Participants should be given

adequate and equal opportunities to express their views. Minority views should be properly considered. Participants themselves should contribute appropriately to the process. The selection of participants should be objective and inclusive to the extent possible. The process should be conducted in an ethical manner.

Transparency involves the design and implementation of mechanisms that ensure that the process whereby advice is formulated and that the advice itself is clearly understandable to others. Transparency could involve the provision of access to pivotal scientific information that is comprehensive, understandable and timely, while respecting legitimate concerns to preserve confidentiality. It could also involve the provision of explicit documentation of all procedures, policies and practices. Transparency may also involve review of both the advice and the procedures involved in providing advice.

Inclusiveness is considered to include group balance. Two aspects of inclusiveness were identified: minority scientific opinion and the balance of skills and expertise necessary for the assessment. Inclusiveness requires that due respect and consideration be given to minority scientific opinion. In the selection of participants, in addition to their expertise, due consideration should be given to geographical and socioeconomic balance, but not to the extent that it compromises scientific integrity. Particular emphasis should be placed on improving the participation of developing countries. Where participation is limited by a skill or knowledge gap, appropriate capacity building activities should be undertaken.

2.3 Advantages of developing a set of core principles

Development of a set of core principles and their adoption will better guide the work of FAO/WHO in producing scientific advice by ensuring the integrity, consistency, quality, transparency and accountability of the process. This will help improve the credibility and utility of the advice.

2.4 Mechanisms to enhance participation of developing countries

The Group recognized that effective participation of developing countries in the provision of scientific advice is a prerequisite for the full application of the core principles, and emphasized the principle of balanced participation of developing countries (e.g. data provision, expert group participation). Appropriate specialists in specific areas exist in developing countries, and they should be identified and given the opportunity to participate in relevant assessment activities. In the least developed countries, however, there is often a smaller research community and limited scientific infrastructure, leading to scientific isolation. Effective capacity building is essential to ensure full participation in the future. Specific principles relating to this issue have been considered further under the relevant headings below.

Recommendation

3. FAO and WHO should make every effort to achieve full participation of developing countries in the provision of scientific advice. This will require infrastructure development, capacity building and utilization of data from these countries.

2.5 Harmonization of terminology, methodologies and outputs

It was agreed that harmonization of terminology, methods, inputs and outputs for the provision of scientific advice should, to the extent possible, be a priority for FAO/WHO.

Harmonization should not be perceived as standardization but rather as an understanding of the methods and practices used for a variety of scientific advice activities by various countries and organizations, so as to develop confidence in an acceptance of assessments that use different approaches. Achieving harmonization of approaches will afford a number of opportunities, including an improved framework for elaborating credible science, comparing information on risk assessments, understanding the basis for exposure standards, and promoting transparency, effective communication and capacity building. Harmonization is particularly important for developing countries in order to enable them to understand those issues that affect food safety and help promote fair practices in the food trade. Harmonization would be especially important insofar as the issues on which scientific advice is sought become more complex, e.g. in risk comparisons, risk-benefit analyses or integrated risk assessments.

The Group agreed that harmonization was highly desirable and should be given a high priority. However, it should be recognized that complete harmonization would not be possible across all areas. While the Group recognized that there were several ongoing initiatives tending towards harmonization through vertical integration (e.g. FAO/INFOODS on food composition databases; UNU/FAO harmonization of methodologies on nutrient requirements), it considered the need for horizontal integration as an important priority (e.g. the International Programme on Chemical Safety (IPCS) programme on the harmonization of approaches to the assessment of risk from exposure to chemicals from all sources).

Recommendation

4. In order to facilitate harmonization of terminology, methods, inputs and outputs for the provision of scientific advice, FAO and WHO should initiate a harmonization project to better integrate FAO and WHO activities in areas such as those relating to chemical and microbiological hazards, and biotechnology and nutrition issues. This should commence with the identification and prioritization of topics for harmonization.

2.6 Potential establishment of new programmes

The Group considered this under three different headings. Firstly, the areas needing additional activity within FAO/WHO were discussed, including topics already being addressed in an ad hoc manner and those where other organizations had perceived a concern. Secondly, the issue of criteria for establishing a new area in which scientific advice might be needed was reviewed, including mechanisms both for identifying such areas and for pursuing them within FAO/WHO. A third topic discussed was foresight and self-tasking. The Group agreed that there was a need to be much more proactive and that sufficient resources should be available to enable established expert groups within FAO/WHO to identify and place critical items on their agendas, including general items.

Vertical and horizontal issues identified as requiring further action, refinement or improvement within FAO/WHO, perhaps requiring a new programme, were for example.:

Vertical issues

- Nutrition (general principles)
- Biotechnology products, including GMOs (or as a separate activity)
- Novel foods

Horizontal issues

- Risk-benefit and risk-risk assessment. This activity might include consideration of nutrition or other benefits versus adverse effects, the criteria for health benefit claims, and the extent to which such assessments should take into account wider implications (e.g. socioeconomic).
- More holistic assessments. These might include consideration of multiple routes of exposure, exposure to mixtures, multifactorial (including polygenic) susceptibility to potential adverse effects, proposals for and the evaluation of the review/updating of scientific advice (which could include surveillance, periodic review and analysis of the impact of risk management decisions).

Mechanisms for identifying the scope of new programmes should be established. These might include electronic fora. Criteria for establishing new areas in which to provide scientific advice might include timeliness of the issue, the absence of adequate information on the consequences of exposure (i.e. perceived risks), the weight of evidence for concern (based on health surveillance, epidemiology, experimental studies), and the potential impact that advice provided in this area might have. These criteria should be subject to consideration at a consultation, at which time the need for a formal evaluation process and the nature of this process should be agreed. Foresight and self-tasking should involve regular horizon scanning by established expert groups, and possibly by other groups convened for this purpose. Some formal mechanism should be established to evaluate the output of this exercise, and to consider prioritization and resourcing of new areas. This process should involve established expert groups, enabling a degree of self-tasking.

Recommendations

5. FAO and WHO should evaluate and prioritize proposed new areas of work. This should include consideration of the need for further resources to support this work. In the first phase of this activity, consideration should be given to current requests for new types of scientific advice from Codex or Member countries, e.g. nutrition.
6. FAO and WHO should develop criteria and a mechanism for identifying new areas in which scientific advice is required, including considerations of prioritization and resourcing. The mechanism selected should ensure coordination with related activities in Member countries and international organizations such as IPPC and OIE to the extent possible.
7. FAO and WHO should establish mechanisms to enable foresight, particularly taking into account the needs of developing countries.

3. WORKING GROUP II – MANAGEMENT OF THE PROVISION OF SCIENTIFIC ADVICE

In view of time constraints, and because of the importance of the issues, the Group concentrated its discussions on administrative and management systems for the provision of scientific advice. During these discussions, consideration was also given to the related issues of the working relationship and interaction with Codex subsidiary bodies, including communication of scientific advice, and some recommendations were prepared in this regard. Issues such as interaction between assessors and managers, identification and prioritization of risk assessment topics, FAO/WHO clearing house for risk assessments, and procedures for the submission of requests for scientific advice were discussed, but would require further

analysis. Issues related to language, use of risk communication experts and researchers, and collaboration with other international organizations were raised, but no specific recommendations were made.

3.1 Administrative and management systems for the provision of scientific advice to Codex and Member countries

Noting the extensive work that FAO and WHO have done and are doing in the provision of scientific advice, the Group discussed this issue at length, including the ability to address future needs. The Group first identified the issues/problems associated with the current administrative and management systems for the provision of scientific advice. Several potential improvements were suggested and discussed. The consequences with respect to resources were also recognized. A matrix was developed showing the issues/problems to be resolved and proposing various options.

The e-forum and the experts participating in the Workshop had identified a wide range of issues that need to be addressed if FAO/WHO are to enhance their administrative and management systems for the provision of scientific advice to Codex and Member countries. The issues/problems identified were the following, it being understood that the list is not exhaustive.

- Prioritization of requests for scientific advice
- Interface between risk assessment and risk management
- Harmonization
 - The various expert bodies operate differently
 - Risk assessment procedure differs between the various bodies
- Lack of capacity to react to emerging issues
- System to respond to ad hoc questions
- Transparency
- Capacity
- Timeliness
- Workload not sustainable with the current system
- Holistic approach – consideration of the entire food chain
- Changing nature of scientific advice
- Need for a focal point to deal with requests for scientific advice and communicate results
- Management accountability
- Review risk management framework
- Need to enhance communication with stakeholders
- Lack of Codex committee-wide coordination of requests for scientific advice
- Developing country participation
- Language difficulties both with regard to the provision of data and to participation in the process
- Collaboration with other international bodies, e.g. OIE, IPPC, OECD
- Managing multidisciplinary issues

The following approaches were identified by the Group as potential means to resolve the issues/problems:

- improvement in existing management systems without the need for additional resources or restructuring;
- development of new integrated management systems that will require additional resources (in funding and in staff) and/or restructuring in appropriate areas;

- establishment of an independent advisory group (the likely need for additional staff and non-staff resources was recognized).

There was general agreement in the Group that a coordinating function would be useful, and should be considered as a matter of priority, thereby improving:

- harmonization across expert bodies providing scientific advice, e.g. of scientific approaches and operating procedures;
- coordination of incoming requests for scientific advice;
- prioritization of requests;
- facilitation of communication and interaction between risk assessors and risk managers (interface);
- communication of results.

In discussing the enhanced managements systems, including the concept of an “umbrella” approach, the Group considered that some restructuring in appropriate areas might be indicated. However, the Group had mixed views concerning the need for an overarching structure or major organizational changes in the various entities which are involved in providing scientific advice.

As a last step, a matrix (*Table 1*) was developed in which the identified issues/problems were grouped under specific management objectives and then combined with the different approaches. This table, therefore, presents an evaluation of the options or combinations of options that are likely to best provide enhanced management of the provision of scientific advice in respect of specific objectives. The inclusion of an advisory group as a suggested option is conditional on the identified need for enhanced management systems. It was noted that an advisory group may be established either under the existing management system or in the framework of an enhanced management system, but that it should not be seen in isolation.

No attempt has been made to rank the relative contribution of each option to achieving the management objective. However, the total number of objectives that will be achieved by each option provides a relative weighting of future management needs. It should also be noted that the evaluation was conducted primarily with current management needs in mind. Increasing demands on FAO/WHO and the Codex system in the future would significantly add to these needs.

An “X” in the first column indicates improvements that can be made, in theory, within the current management system and without substantial additional resources. However, while each individual problem checked in this column might be solved within the current system, it would not be possible to address all or even most of these items without additional staff. The Group was of the opinion that the current system is simply not sustainable in light of the expected growth in demand for scientific advice from FAO/WHO in the foreseeable future.

An “X” in the second column indicates improvements that could be made if an integrated system for the provision of scientific advice were adopted, which would foster treatment of the indicated issues in a more holistic manner. A significant increase in staff and non-staff resources has been assumed here, and without the required resources most of the indicated gains could not be achieved.

An “X” in the third column indicates additional added value that could be gained if the integrated system assumed in column 2 were augmented with the independent external advisory group described below.

Table 1. Options that are likely to best provide improvements in the management of the provision of scientific advice

<i>Management objectives</i>	<i>Improved management systems with current resources</i>	<i>Integrated management systems with additional resources</i>	<i>Advisory group</i>
Improving prioritization of work - ad hoc - routine - emergency - overall programme strategy	x	x x x x	x x
Improving interface between risk assessors and risk managers - facilitating linkages and timeliness - providing generic guidance - harmonizing risk assessment policy - enhancing functional separation - overall programme strategy	x	x x x x x	 x x x x
Harmonization of scientific approaches - principles - generic procedures - methodologies - work sharing - risk communication	x x	 x x x x	 x x x
Providing risk profiles of emerging issues and decisions on further action - by FAO/WHO secretariats - by Codex - by expert bodies		 x x x	
Ensuring transparency of overarching management decisions	x	x	x
Facilitating application of a generic framework for managing risks to human health (preliminary risk management activities, selection of management options, implementation, monitoring and review)	x	x	x
Enhancing communication with external stakeholders		x	x
Ensuring that language is not a barrier to effective management of the provision of scientific advice		x	
Facilitating collaboration with other international bodies, e.g. OIE, IPPC, OECD	x	x	
Managing scientific issues with multidisciplinary inputs - food safety - food trade - nutrition - water - environment		 x x x x x	 x x x x x

The Group then discussed the nature of the proposed advisory group in more detail. It developed a list of positive and negative implications of the establishment of such a group (*Table 2*), and also considered the responsibilities, membership and frequency of meetings of the proposed advisory group.

Table 2. Implications of establishing the proposed advisory group

<i>Positive</i>	<i>Negative</i>
Provide independent view on strategic planning	Another layer of bureaucracy which might inhibit timeliness
Provide independent guidance on setting priorities	Costs in staff time, meeting room availability, and travel budgets for members of the advisory group
Provide an element of external scrutiny over FAO/WHO management of the process without actively directing the process	Costs in terms of time of the advisory group members
Help increase transparency of the process to the public	Not necessarily the only means of increasing transparency to public
Bring additional experience and expertise into the process without the need to hire additional staff.	Does not necessarily guarantee inclusiveness in terms of geographical or stakeholder interest coverage
Provide an opportunity to include geographical and sectorial interests in the process	

Responsibilities of the advisory group would include:

- providing advice on cross-cutting scientific and science-management issues related to the provision of scientific advice;
- facilitating and strengthening the scientific work of FAO and WHO in this area by adding independent expertise and perspectives;
- providing a transparent forum for dialogue on overarching issues;
- providing guidance and feedback on priority setting and strategic planning;
- providing guidance on emerging issues;
- providing overview and feedback on the implementation of core principles (scientific excellence, harmonization, inclusiveness, transparency, etc.);
- providing feedback on the usefulness of advice.

It was envisaged that this group would be composed primarily of experienced scientists and managers with expertise in the development of risk-related scientific advice, and the management of programmes that provide such advice. The members would be drawn from a variety of backgrounds including government, academia, industry and non-profit or NGO research organizations. Members would be selected on the basis of their individual knowledge and drawn from a cross-section of geographical regions, developed/ developing countries and stakeholder perspectives. Representatives from expert committees such as JECFA, JEMRA and JMPR that perform risk assessments, risk managers drawn from Codex committees and national regulatory agencies, and experts in risk communication, would specifically be among the constituencies to be included. Overall the members would be chosen from a broad range of backgrounds and experiences, designed to encompass all the areas in which FAO and WHO are currently engaged, or reasonably likely to be engaged in the future, in providing scientific advice on food-related risk issues.

It was suggested that the advisory group should meet periodically with FAO and WHO staff responsible for the provision of scientific advice related to food safety, offering guidance and recommendations on the many management issues that would arise in carrying out that mission.

Recommendation

8. FAO and WHO should, in order to: (1) improve the management of the provision of scientific advice, including enhancing harmonization of scientific approaches and operating procedures; (2) improve the coordination and prioritization of work; and (3) facilitate communication, interaction and transparency:

- improve existing management systems, where needed;
- introduce new integrated management systems and resources where needed;
- consider the formation of an independent external advisory group.

3.2 Working relationships and interactions with Codex subsidiary bodies, including communication of scientific advice

The Group noted that the way in which Codex committees and task forces interact with FAO/WHO expert bodies providing scientific advice needed to be reviewed. Aspects to be included in the review are:

- (1) The relatively direct interaction between CCPR/CCR/VDF/CCFAC/CCFH and JECFA/JMPR/JEMRA (routine requests for scientific advice).
- (2) The more indirect interaction between CAC and its subsidiary bodies (including CCPR/CCR/VDF/CCFAC/CCFH) and FAO/WHO (ad hoc requests for scientific advice).

Additionally, the mechanisms for prioritization within the CAC, the individual Codex subsidiary bodies and FAO/WHO need to be optimized and linked in an efficient manner. Questions to be addressed include among others:

- Should the CAC prioritize all requests for scientific advice or only those that are ad hoc?
- How should the prioritized requests from Codex be referred to FAO/WHO, for example through a focal point?
- What should be the format in which the CAC conveys its requests to FAO and WHO?

Recommendation

9. FAO and WHO should develop means to increase the quantity and quality of iterative interactions between those providing scientific advice, e.g. risk assessors (scientific expert bodies) and those requesting advice, e.g. Member countries and Codex.

3.3 Mechanisms to enhance participation of developing countries

The Group exchanged views on ways to enhance participation of developing countries in the provision of scientific advice. The importance of capacity building was generally recognized. Moreover, the need for adequate data gathering at the country or regional level and their inclusion in international assessments made by FAO/WHO was noted. The following suggestions were made relating to an enhanced capability of developing countries to contribute to and participate in the process of providing scientific advice:

1. Increase the effectiveness of communication on these issues between the headquarters of FAO and WHO and their regional offices.
2. Increase the capability of regional FAO and WHO offices to be a resource to developing countries to assist with: supplying the data needed for the provision of scientific advice

(data bases), providing reference documents, helping to identify regional experts, and providing training.

3. Increase the funding available for supporting effective participation of technical experts from developing countries in expert body meetings. The possibility of establishing a specific fund to enhance developing country participation was noted.
4. Use of mentoring countries to assist developing countries to develop risk assessment capability (partnering/twinning).

Additionally, while recognizing that it would be outside the scope of the FAO/WHO system for the provision of scientific advice, the Group was informed that regional programmes might assist developing countries in enhancing their ability to engage in risk assessment and risk management work. The Southeast Asia Fisheries Development Export Cooperation (SEFDEC), a regional cooperative programme among seven Asian countries, was mentioned as an example.

Recommendations

10. FAO and WHO should enhance the participation of developing countries from all regions in all aspects of the scientific advice process, including identifying priority needs, outreach to scientific experts, training for the purpose of knowledge transfer, as well as access to and use of the outputs of expert bodies. This includes the recognition of regional efforts to generate, collect and coordinate data for risk assessments.

11. FAO and WHO headquarters should communicate more effectively with their regional and national/country offices and Codex Contact Points regarding the activities and needs of programmes relating to the provision of scientific advice, and to ensure better gathering and dissemination of information in developing countries.

12. FAO and WHO should further explore and develop the concept of twinning, i.e. establishing partnerships between developed and developing countries/organizations, to improve the capabilities of developing countries for the provision of scientific advice.

3.4 FAO/WHO clearing house for risk assessments

The Group welcomed the idea and encouraged FAO/WHO to explore the possibilities to act as a clearing house, in order to make use of and integrate existing risk assessments performed by national organizations and other international expert bodies. In this context the CICAD programme of WHO-IPCS was mentioned.

3.5 Procedures for the submission of requests for scientific advice

The Group noted that FAO/WHO should develop guidance on how requests for scientific advice should be submitted. An important aspect in this context is an adequate problem formulation (terms of reference), i.e. a clear question should be asked and the context, concerns and reasons for the request should be fully explained. These aspects were dealt with in more detail by working group III.

Furthermore, procedures should be developed on how to receive, prioritize, distribute (and follow up) incoming requests for scientific advice. This is one of the key tasks of an integrated management system. In addition to this important coordination function, it could also serve as a filter for requests.

4. WORKING GROUP III – PROCEDURES AND MECHANISMS FOR THE PROVISION OF SCIENTIFIC ADVICE

The general approach taken was to group the various numbered items under the following four general headings:

1. Selection and effectiveness of experts
2. Data
3. Processes and procedures
4. Communication of scientific advice

Under each of the four general areas the Group prepared an extensive list of topics for possible further discussion. In developing its report, the Group made a concerted effort to identify the positive and negative implications of the recommendations.

4.1 Selection and effectiveness of experts

Considerations

Selection process and criteria. The Group considered that it was important to select experts not only on the basis of their scientific achievements, but also to consider experience in risk assessment (national, international) and knowledge of food safety issues. In addition, proven effectiveness in work with expert bodies and ability to contribute effectively to group work are required, and in order to achieve a balanced representation in the expert body, a broad range of expertise and perspectives. The omission of these elements might compromise quality and acceptance of the expert body's analysis and advice even if the expert body is composed of distinguished scientists.

A set of criteria for the selection of experts should be identified and harmonized across different expert bodies as appropriate. The selection process should be transparent, including dealing adequately with conflicts of interest. The determination of whether a conflict of interest exists should rest with FAO/WHO. Information on organizational affiliation, government service, research support, public statements and positions, financial interest and other interests (e.g. professional affiliations) should be provided. This information, as appropriate, should be available publicly before the meeting (e.g. via Internet), consistent with rules of privacy. It should be made a condition of participation that all interests relevant to the subject matter of the meeting would be publicly disclosed. This information should include a statement that experts are to be contacted only through the secretariat. Experts should inform the secretariat of any attempts to contact them direct. The current disclosure forms should be amended accordingly.

Efforts should be made to increase participation of experts from developing countries by targeted efforts to identify experts, provision of financial or other support (infrastructure) and specific training programmes. This could be supported by creating a network of competent scientific institutions. Other means would be fellowship or visiting scientist programmes to FAO/WHO which establish and maintain a network of such institutions.

Training. FAO/WHO should make available training opportunities for experts in the following areas: writing, communication, English as a second language, the ability to recognize conflicts of interest, framework of work by expert bodies (roles of the advice, key institutions), working procedures, leadership, working/facilitation techniques.

In addition, training is needed to enable experts to better recognize value judgements made during expert meetings, and to better distinguish between risk assessment and risk management.

Recognition and reward. FAO/WHO currently have limited ability to recruit experts worldwide. At present, expert panel activities are not regarded in the same way as scientific peer-reviewed publications, and this reduces the attraction of participation, particularly by younger scientists. FAO/WHO should work with academic institutions to encourage them to recognize expert meeting participation and outputs as equivalent to other scientific achievements. Letters and official documents should be issued by FAO/WHO to the expert and expert's institution documenting the value of the work and its equivalence to peer-reviewed work and publications. Institutions that provide experts should be publicized (e.g. on the Internet). Increased constraints on institutions which release experts may require that FAO/WHO consider compensating experts or their institutions, particularly if their involvement covers an extended period, or if they would otherwise be deprived of salary. FAO/WHO should recognize expert resource contributions from Member countries as equivalent to financial contributions. This will have implications in terms of the fiscal needs of FAO/WHO.

Language as related to selection of experts. It was recognized that meetings to develop scientific advice for a global audience are typically held in English only, which puts experts who do not speak English at a disadvantage, or even excludes them. The ideal would be for all languages to be accommodated. Practical considerations, however, are likely to limit severely the ability to conduct scientific meetings in multiple languages. The availability of expert interpreters who are sufficiently trained in the sciences to achieve accurate simultaneous interpretation is severely limited, and the need for interpretation was viewed as significantly limiting the speed at which expert panels can proceed. This has a negative impact on the working structure/informal communication needed to achieve effective deliberations. However, inclusion of experts with specific knowledge may on occasion warrant the need to support them with interpretation services. FAO/WHO should alternatively consider providing experts that do not have English as their mother tongue with access to training that would enable them participate more efficiently, not only as experts but also in other roles (e.g. rapporteur, chairperson). This would have consequences for the structure of expert panels, favouring one where at least a portion of the experts serve as standing members for a specified period of time.

While the limitations described above are likely to restrict the conduct of expert panels to English for the foreseeable future, FAO/WHO and the panels themselves should make every effort to not allow language to limit the range of data and publications considered in their deliberations.

Inclusion of observers and stakeholders in expert bodies. The inclusion in expert bodies of observers/stakeholders, or others not traditionally invited as scientific experts, raised a number of issues that require careful examination. These included (1) costs of participating might preclude some interested parties from attending, resulting in biased representation of stakeholders; (2) the need to maintain balanced representation on expert bodies; (3) potential enhancements through the addition of communication and "plain language" experts; and (4) development of a code of ethics regarding improper influencing of the decision-making process.

A variety of mechanisms are available to improve the openness of the process including meetings, and there is a need to conduct an additional analysis of the advantages and

disadvantages of various approaches. During this analysis, two principles that should be considered in assessing the appropriateness of various approaches are: (1) ensuring balanced representation of different interests and regions; (2) communicating transparently the reasons for inviting or not inviting non-experts. Associated with those principles, the analysis should consider whether NGOs could be represented by experts or non-experts, whether observers should be nominated by their organizations and/or by the secretariat, the desirability of including a communications or “plain language” expert on expert panels, and the inclusion of standing representatives of specific interest groups such as consumers and industry.

Secretariats of expert bodies. There was a need to consider whether current resources were adequate to support the activities of the expert panels. It should be recognized that strengthening procedures may modify the requirements and tasks of the officers of the secretariat which may have training, budgetary and staffing implications. The role and mandate of the secretariat in general and for a specific expert body needed to be reviewed, defined and communicated.

Key findings

The Group noted that there was a need for clear, harmonized, publicly available selection criteria for the appointment of expert bodies, and noted that the training of experts in the roles that they would play on an expert panel was of paramount importance, followed by skill base and communication abilities. The Group identified a lack of contributions by experts from developing countries as a key issue needing resolution. It was also noted that there was a lack of recognition for the contributions provided by experts, and a potential need to compensate experts or their institutions for their involvement in expert bodies was identified. This was particularly important if the involvement covered an extended period, or if experts would be deprived of salary. Potential mechanisms for the inclusion of non-experts and/or observers at expert meetings should be considered.

Recommendations

13. FAO and WHO should harmonize procedures for the selection of experts across the expert bodies by the establishment of a set of clear, publicly available criteria, as appropriate. The selection process should be transparent, including dealing adequately with conflicts of interest and ensuring balance on expert panels.

14. FAO and WHO should make available training opportunities for experts in policies and procedures used by FAO/WHO, communication and language skills, and the ability to recognize conflicts of interest.

15. Although practical barriers will generally limit the conduct of expert panels to English for the foreseeable future, FAO and WHO, and the panels themselves, should make every effort to ensure that language does not limit the range of data and publications considered in their deliberations.

16. FAO and WHO should develop means for actively recognizing the contributions of scientists providing expert advice and their employing institutions.

17. FAO and WHO should recognize expert resource contributions from Member Countries as equivalent to financial contributions.

4.2 Data

Considerations

Relevance of data. Data should be adequate for the purpose of scientific evaluation and the provision of scientific advice. Where possible, harmonization of data requirements by international and national bodies should be promoted (e.g. the minimum number of pesticide trials).

Data quality. Data used as the basis for the provision of scientific advice should be of acceptable quality and well documented (e.g. following GLP and QC/QA). Data should also be timely and representative of populations and subgroups as well as of geographical distribution, to reflect the actual situation. In those instances where data of insufficient quality were the only data available, they should be so identified and used by taking account of the uncertainty and limitations of the data.

Sources of data. FAO/WHO should encourage and support submissions from developing countries, and develop means to overcome:

- the lack of understanding in developing countries of both the need to provide data and the types of data required;
- deficiencies in the infrastructure and mechanisms in developing countries to generate the data necessary for the provision of scientific advice by FAO/WHO;
- the limited facilities, personnel, and operating funds.

In order to overcome these barriers:

1. Codex Contact Points should disseminate information to researchers and other stakeholders in their countries related to scientific advice from Codex bodies and from FAO/WHO, e.g. calls for data.
2. Training of Codex Contact Points and scientists to be involved in risk assessments is needed through regional offices of FAO and WHO, by utilizing existing networks such as GEMS/Food, Salm-Surv, etc.
3. Sustainable funding should be available to establish and support required facilities, to develop human resources, and for operational expenses.
4. Twinning between a developing country and an experienced country could be useful in data generation.
5. Interaction between food, clinical and epidemiology experts should be encouraged to promote generation of data.

Submission of data. Data providers often may not be aware of when and to whom to submit data. In addition, details of how to submit data (format and media) are not known:

1. The submission of data should be in electronic format and hard copy as required.
2. Analytical data on chemical contaminants in food should be submitted in the GEMS/Food format.
3. A format for the submission of data related to microbiological risk assessment should be developed.
4. Issues related to trade-sensitive data need to be overcome. For example, data to only be identified by region and not country.

Confidentiality. FAO/WHO should ensure that data are well secured before, during and after the evaluation. Guidelines for handling such data should be developed.

Ownership of data. The use of data by FAO/WHO and their expert panels must be consistent with the precepts of intellectual property rights. This issue should be addressed by appropriate international mechanisms, such as those of the World Intellectual Property Organization (WIPO).

Ethical considerations. Data involving human subjects should be handled so as to respect the right of the subject to informed consent and privacy. Studies involving human subjects should be reviewed by relevant authorities, such as WHO and national bodies.

Key findings

The Group noted that the key issues concerning the adequacy of data were source and relevance. Many data are derived from industry sources and the Group noted that there were substantial differences among the various expert committees in accepting such data. There needed to be better harmonization among the scientific advisory groups, which was likely to require development of transparent inclusion/exclusion criteria for judging the suitability of data. Limited communication infrastructures, training, and potentially fiscal support were recognized as significant limiting factors in the increased acquisition of scientific data from developing countries. The Group also recognized the need to establish clear yet flexible data quality assurance criteria. This included the need to harmonize these approaches with other international, national and professional guidelines for assuring data quality. Such guidelines were likely to vary among different disciplines. For example, toxicological studies used to provide scientific data are generally conducted under GLP, while microbiological studies more often rely on use of validated standard analytical methods. The Group noted that Codex, FAO and WHO could play a much more prominent role in the collection and dissemination of scientific data, especially through their Contact Points in developing countries.

Recommendations

18. FAO and WHO should encourage and support the submission of data from developing countries.
19. FAO and WHO should develop general guidelines for the inclusion/exclusion of data used by expert panels.
20. FAO and WHO should develop general guidelines related to confidentiality, intellectual property rights, and ethical considerations related to data.

4.3 Processes and procedures

Considerations

Procedures for enhancing the participation of developing countries. There needed to be enhanced processes in place to ensure effective communication with experts, data providers and users in developing countries. This could be achieved by using languages other than English in such communications. Mechanisms of communication other than e-mail and Internet need to be used, particularly in developing countries where such modes of communication may be limited.

FAO/WHO should make better use of their regional and country offices, and the Codex Contact Points should improve the dissemination of information in developing countries.

Interaction with Codex. The Group considered that there was a need for clear articulation of the questions from Codex and Member countries. In the context of Codex, the expert bodies could not rely solely on text in the official Codex reports. Improved communication with representatives from Codex committees was needed between the annual meetings of these committees.

It was important to negotiate/clarify the questions between the representatives of the expert bodies and the Codex committees. Questions should be relevant and within the scope of the respective body. This needed the active involvement of the expert body, the requesting Codex committee and the FAO/WHO secretariat.

FAO/WHO should consider means of enhancing such interactions, such as scheduling back-to-back meetings between expert body meetings and Codex committee meetings. They should also consider making members of expert bodies available at the Codex committee meetings to provide technical advice and participation of representatives of Codex committees in expert meetings. FAO/WHO should also establish means for increased interaction among expert bodies in matters/questions that impact multiple committees (e.g. considerations involving risk–risk trade-offs).

A simple and rapid mechanism was needed to address small queries from Codex to experts and to provide clarification on reports outside the meetings of expert bodies.

Meeting arrangements and logistics. Advance preparation for scientific meetings was considered to be essential, since most experts have time constraints and their availability is limited. FAO/WHO should urge governments to allow their experts to take time to work before and during international expert meetings. Mechanisms for industry and other stakeholders to provide resources without raising issues of conflict of interest needed to be developed. FAO/WHO should encourage allocation of national resources for permanent assignment of experts to international activities. A strong secretariat is needed to manage the preparation process, monitor progress and quality of preparatory work, and ensure the adequacy of all background material. FAO/WHO should provide a clear description of the role of all meeting participants, including the extent to which secretariat members should actively participate in the deliberations of expert panels. FAO/WHO should formulate realistic expectations in relation to the amount of work that can be achieved in the designated timeframe and resource constraints. The format or type of meeting should be determined according to the task and the scientific advice required. Operational procedures should be developed for expert meetings where these are not available. Convening more meetings per year, while addressing the workload, would require increased resources, secretariat capacity and expert time.

Openness. Mechanisms for bringing in a greater range of stakeholder comments should be explored and consideration should be given to incorporating a public comment round into the draft assessment advice of the expert groups. This could increase trust in the scientific advice provided, make the process more transparent and ensure that input is received from a wider group which would add value to the output. However, more time, resources and secretariat support would be needed to organize the meetings. The meetings would be more formal in nature and a higher level of control would be required to ensure that the meeting is productive. While some participants considered that open meetings might inhibit discussion and free expression by experts, others felt that outside comments could stimulate discussion. FAO/WHO should undertake a review of existing procedures for expert committees that are

available at the national level, particularly in relation to openness of meetings, and consider how these might apply to international expert meetings.

The current process for delivering documented scientific advice is slow, often as a result of the need for technical editing after the expert meetings have reached their conclusions. FAO/WHO should consider making adopted draft reports available on the Internet immediately after the meetings, and making resources available to recruit qualified technical editors to begin work during the meetings.

Differences among experts/need to reach consensus/dealing with minority opinions.

Procedures for the resolution of scientific conflicts should be documented. Members should be made aware of these procedures prior to the meeting. Voting could be used where consensus cannot be reached. Meetings should strive for consensus wherever possible, but where consensus cannot be achieved, this should be documented. These procedures would give the opportunity for the publication of minority opinions in such situations.

Work sharing and use of reports from national/regional bodies. The Group concluded that more use of national and regional reports should be encouraged. This would reduce duplication of effort in areas where there was already agreement, but the challenge to maintain the independence and impartiality of FAO/WHO scientific advice remained. However, it was important to recognize that only certain components of national and regional reports could be used for international deliberations. FAO/WHO, in consultation with Codex, should develop guidance on the use of national and regional reports. To enhance work-sharing, FAO/WHO should examine the possibility for coordination between national, regional and international bodies to achieve a coordinated evaluation or elaboration of scientific advice on specific issues.

Structured interaction with data providers and access to stakeholder expertise. Procedures for the interaction of data providers and other stakeholders with expert panels should be developed. This could be accomplished through interaction with data providers including before the meeting, the development of permanent mechanisms of exchange for technical questions controlled by the secretariat, and timely feedback to data providers. Efforts should be made to establish trust with data providers to facilitate provision of data.

Key findings

The Group noted that many Member countries had developed procedures and expertise in the acquisition and dissemination of scientific advice, and that FAO/WHO/Codex may benefit from studying these approaches in order to enhance their related activities at the international level. In particular, FAO/WHO could benefit from reviewing the way national governments had successfully enhanced the openness of their scientific advisory panels while safeguarding both the scientific integrity and efficiency of advisory panel deliberations. The Group noted that the transparency of FAO/WHO mediated acquisition and dissemination of scientific advice could be enhanced through articulation and implementation of written protocols (i.e. standard operating procedures) that formally communicate processes and criteria that would be used by expert meetings. The Group noted a critical need for timely, structured, iterative communication with the body(ies) requesting the scientific advice for the purposes of clarifying scientific questions to be addressed; negotiating specific tasks, approaches, timelines, and decision points; and providing initial conclusions and interpretation of the results. Particularly in relation to Codex, these may require a reconsideration of the current reporting structure to avoid the need to wait for extended periods to acquire needed input from the requesting Codex committee. Such improvements in the standardization and support

of the expert bodies were likely to increase the level of logistical support required. Similarly, such iterative processes were likely to increase the need for a percentage of scientific experts that served as members of a standing body for a designated time period. This is particularly pertinent if FAO/WHO were to recognize the need to increase the degree of training that members of expert panels receive.

Recommendations

21. FAO and WHO should develop guidance for the appropriate use of national and regional expert scientific reports in the deliberations of international expert panels.
22. FAO and WHO should develop improved procedures for the interaction of expert panels with data providers and other stakeholders.
23. FAO and WHO should further analyse different options to enhance the openness and transparency of scientific meetings.
24. FAO and WHO should make their guidelines, policies and procedures related to the provision of scientific advice publicly available for review and comment.
25. FAO and WHO should develop means for assessing and building capacity and infrastructure in developing countries for conducting risk analysis.

4.4 Communication of scientific advice

Considerations

Timeliness was defined as the time between the conclusion of a meeting and the publication of a final report. At present, this time period may be 6 months, one year, or longer in some cases.

The use of a peer review process could increase the delay between completion of a draft report and its publication. Factors which impacted the speed with which peer review occurred included the delay for the review itself plus the delay on the part of the authors in responding to the reviews. One issue which had an impact on both components of the delay was FAO/WHO staff workload. Overburdened staff members have less time to follow up with tardy reviewers and authors. Author response time is affected by issues of recognition and compensation. An author who has devoted time to a meeting and writing a draft, but who receives little recognition and/or compensation for the work, may not be motivated to respond to reviews in a timely manner.

Another factor which could affect an expert's willingness to volunteer time also relates to timeliness. If a report is not released in a timely manner (and assuming this was not under the expert's control), stakeholders (from industry or consumer groups) may contact the expert to ask about the findings. If the expert was bound by confidentiality, this could lead to a great deal of frustration which might dissuade continued participation. Models which avoided this problem included that used by the United States Food and Drug Administration (FDA), where petitioners could be in direct contact and get results quickly, and the European Union model (EFSA) where minutes, opinions and the draft report appeared within one week of the meeting. One simple solution would be to publish a draft report immediately after the meeting (assuming the meeting participants were all in agreement with the draft).

Transparency. A transparent report was one which included: (a) a clear explanation of the question asked; (b) the data available to answer the question; (c) the data used to arrive at the conclusions; (d) the reasons why some data were excluded; (e) an explanation of the reliability of the data used (including any uncertainty); (f) the strength of the hypothesis on which the advice is based, including perhaps a qualitative description of that hypothesis (e.g. plausible, possible or unlikely).

The inclusion of minority opinions was an important component of transparency. Minority opinion in providing scientific advice must be based on science. Minority opinions were more likely to arise with fewer or shorter meetings, as reaching consensus often requires more time for discussion.

If mathematical models or computer simulations were used to provide scientific advice, the communication of that advice should include access to the mathematical models or computer simulations as a component of transparency.

Meeting the needs of the requestor. The scientific advice delivered at the conclusion of the process should meet the needs of the requestor. This can be enhanced by procedures that foster the interaction between the risk assessors and risk managers at the start of the process so that the question is properly framed. This interaction should be iterative, and include a review of the draft of the expert panel's report by those requesting the scientific advice.

Plain language. Although it might be important for a final report providing scientific advice to be written in plain language, the level of complexity in the final report depended upon the needs of the requestor. If the communication needs of multiple audiences were to be met, the final document could be released in several forms (e.g. technical document, interpretive summary and executive summary), each with the appropriate level of detail. Release of the findings in several forms with different levels of detail might also improve the ability of the public and stakeholders to comment on the findings of the report.

The challenge of translating complex technical language may increase when the uncertainty surrounding a particular issue is greater. The inclusion of risk communication experts on the expert panel from the start of the process often facilitates the translation of the findings into plain language at the end of the process.

The technical complexity of the final report (or reports) is closely linked to the "roll out" of the findings, and this is further addressed in the process section. Briefly, roll-out concerns include: determining who to contact, flagging any sensitive areas, coaching report communicators on those areas, issuing appropriate press releases and formulating a policy for press contact with expert panel chairs.

It may not be possible to translate a complex technical document into multiple languages. If plain language interpretive and/or executive summaries are prepared, however, the translation of these documents may be possible and would help to address the needs of developing countries.

Key findings

The Group noted the need to increase the transparency and effectiveness of the communication process. In particular it was noted that significant gains in transparency could be achieved through considering the audience to which the scientific advice was being provided and the need to provide information in plain language or multiple versions. This

approach could also simplify issues around the translation of reports and findings. Achievement of transparency should also include a review of work products to ensure that all assumptions were explicitly stated, and that the impacts of these assumptions were articulated. There was a need for processes that allowed for the recording of alternate interpretations of the scientific data if consensus could not be reached by an expert body. FAO/WHO should consider advantages that may be gained through the initial release of reports in draft and the solicitation of public comments.

The Group also noted the need for FAO/WHO to pay increased attention to the manner in which scientific advice was released. Opportunities to document its significant impact in advancing both science and public health were often missed.

Recommendations

26. FAO and WHO should make reports publicly available as soon as possible, e.g. via the Internet.

27. FAO and WHO should give consideration to the publication of some reports in draft form in order to allow for public comment or peer review before finalization.

28. FAO and WHO should ensure that the existing rules for the inclusion of minority opinions are applied whenever consensus cannot be achieved by an expert body.

29. FAO and WHO should enhance the transparency of their reports through the inclusion of a plain language summary of the findings of expert panels. This may be facilitated by including risk communication experts in expert panels.

5. BUDGETARY CONSIDERATIONS

The Workshop was aware that many of its recommendations would have significant budgetary implications. It was recognized that certain parts of the process of providing scientific advice to Codex and Member countries might be performed in a more cost-effective way. However, it was felt that the necessary improvements in the quantity, quality, timeliness and transparency of the provision of scientific advice would require a considerable and structural increase in financial and human resources. Owing to time constraints, the Workshop was not able to elaborate an estimate of the costs of implementing its recommendations. It was agreed to request FAO and WHO to do these estimates as part of the next steps of the consultative process.

It was noted that sufficient and sustainable funding for core scientific advice programmes should not be seen in isolation, but in relation to the funding of Codex and Codex-related activities, such as the Codex Trust Fund for enhanced participation of developing countries in the work of Codex. These activities are to a certain extent interrelated, and funding for such different aspects may come from the same funding sources.

6. NEXT STEPS

The Workshop was briefly informed of the next steps of the consultative process, as proposed by the FAO/WHO Planning Meeting. Proposed steps included a joint FAO/WHO expert consultation, consultation with the Codex Alimentarius Commission, and submission of the outcome of the consultative process to the governing bodies of FAO and WHO. A review of

the legal and budgetary implications of the recommendations of the Workshop, to be provided by FAO and WHO, would be submitted to the expert consultation for their consideration.

The secretariat informed the meeting of their intention to use a mechanism similar to a Codex Circular Letter to request formal comments on the recommendations of the Workshop from Member countries and interested nongovernmental organizations.

7. CONCLUSIONS

The Workshop recognized the importance of enhancing the provision of scientific advice from FAO and WHO to Codex and Member countries, and appreciated the opportunity to strengthen the programmes of FAO and WHO.

The Workshop concluded that the provision of scientific advice would be strengthened by the implementation of the recommendations contained in this report in a timely manner.

The Workshop highlighted a number of issues that would require further consideration by FAO and WHO during the consultative process. However, further discussions should not prevent the implementation of the Workshop's recommendations, where possible and appropriate.

ANNEX 1

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ANNEX 2

Agenda

Tuesday 27 January 2004

- Opening of the Workshop by Dr Kerstin Leitner, Assistant Director-General,
- Sustainable Development and Healthy Environments (WHO/SDE)
- Introduction of chairpersons and rapporteurs
- Objectives of the Workshop
- Adoption of the agenda
- Organization of the Workshop (arrangements, administration aspects)
- Overview of consultative process
- Report on e-forum

Coffee break

- Key issues from the discussion papers (authors, 15 mins each)

Lunch

- Key issues from the discussion papers (contd)
- Identification of priority areas: plenary discussion

Coffee break

- Briefing for working groups (including structure of report)
- Working group meetings (initial discussion)

Reception

Wednesday 28 January 2004

- Plenary session: focus of working group sessions Day 2
- Working group meetings: options to address the key issues

Lunch

- Working group meetings: options to address the key issues (contd)

Coffee break

- Plenary: working groups report to plenary

Thursday 29 January 2004

- Working groups: finalize options to address the key issues, considering input from the plenary and draft recommendations on best options: finalize working group drafts for presentation to plenary

Lunch

- Plenary: consideration of options to address the key issues (based on working group draft proposals): consensus on best options

Coffee break

- Plenary: (1) Recommendations on best options; (2) Guidance to FAO/WHO on completion of consultative process
- Plenary: review and finalize recommendations from Workshop
- Closure of meeting

ANNEX 3
Issues assigned to the working groups

Working group I Essential principles, definition and scope governing the provision of scientific advice	Working group II Management of the provision of scientific advice	Working Group III Procedures and mechanisms for the provision of scientific advice
<ol style="list-style-type: none"> 1. Scope and definition of scientific advice 2. Essential core principles for the provision of scientific advice 3. Advantages of developing a set of core principles 4. Mechanisms to enhance participation of developing countries 5. Harmonization of terminology, methodologies and outputs 6. Potential establishment of new programmes 	<ol style="list-style-type: none"> 1 Administration and management systems for the provision of scientific advice for Codex and Member countries 2 Working relationships and interactions with Codex subsidiary bodies including communication of scientific advice 3 Interactions between assessors and managers in general and specifically in relation to risk assessment policy 4 Mechanisms to enhance participation of developing countries 5 Identification and prioritization of risk assessment topics 6 FAO/WHO clearing house for risk assessments. 7 Language considerations 8 Use of risk communication experts and researchers. 9 Collaboration with other international organizations/ bodies to effectively apply a risk-based approach across the Agri-Food continuum 10 Procedures for the submission of requests for scientific advice 	<ol style="list-style-type: none"> 1 Ways to access and enhance worldwide residue, incidence and disease surveillance data 2 Mechanisms to enhance participation of developing countries 3 Identification and selection of experts including active and/or passive means and use of scientific academies. (need for group balance and consideration of situations where insufficient response to request for experts occurs) 4 Remuneration and recognition of experts 5 Declaration and disclosure of interests and determination of expert bias – uniform criteria and application (questionnaire satisfactory?), use of best FAO/WHO judgement 6 Confidentiality, data protection and proprietary data 7 Accountability procedures, including peer review 8 Means to obtain clearer communication of judgements in choice and use of data 9 Outputs, including how to address divergent and minority opinions 10 Inclusion of non-experts and public consultation 11 Use of evaluations from national/regional authorities

ANNEX 4
Members of the working groups¹

Working group I – Essential principles, definitions and scope governing the provision of scientific advice

Claude Mosha (Chair)
Alan Boobis (Rapporteur)
Albert Bar
Alicia Lustre
Greg Paoli
Anne Mackenzie
Birgit Norrung
Christine Taylor
Lisa Lefferts*

FAO/WHO secretariat

Mary Kenny
Gerry Moy
Sam Page
Prakash Shetty

Working group II – Management of the provision of scientific advice

Ada Knaap (Chair)
Michael Wehr (Rapporteur)
Nourredine Bouchriti
Gabriela Catalani
Chris Fisher
Edward Groth
Steve Hathaway
Canice Nolan
Rima H. Zu'mot
Kaye Wachsmuth

FAO/WHO secretariat

Lahsen Ababouch
Maria de Lourdes Costarrica
Kazuaki Miyagishima
Angelika Tritscher
Jorgen Schlundt
Wim van Eck

Working group III – Procedures and mechanisms of the provision of scientific advice

Bob Buchanan (Chair)
Ian Munro (Rapporteur)
Ursula Banasiak
Vincent Cogliano
Werner Kobel
Lisa Lefferts*
Jorge Lopez Zarate
Fumiko Kasuga
Gerard Pascal
Donald Schaffner
Adriana Suarez

FAO/WHO secretariat

Sarah Cahill
Manfred Luetzow
Amelia Tejada

* Participated in working groups I and III.

¹ Stuart Slorach, Steve Crossley, Jean-Louis Jouve and Lindsay Martinez attended all Working groups