

Convention on Biological Diversity

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REPORT OF THE WORKSHOP ON DETECTION AND IDENTIFICATION OF LIVING MODIFIED ORGANISMS FOR FRANCOPHONE AFRICA

TUNIS, 5-9 MARCH 2018

INTRODUCTION

1. At its eighth meeting, in [decision CP-VIII/16](#), the Conference of the Parties serving as the meeting of the Parties to the Cartagena Protocol on Biosafety requested the Executive Secretary to continue convening, in cooperation with relevant organizations, subject to the availability of resources, regional and subregional capacity-building activities, such as online training and face-to-face workshops in the fields of sampling, detection and identification of living modified organisms (LMOs), with a view to assisting Parties in fulfilling the requirements under [Article 17](#) and towards achieving the relevant outcomes of the Strategic Plan for the Cartagena Protocol on Biosafety for the period 2011-2020.¹
2. In their [decision CP-VIII/3](#) on capacity-building, the Parties to the Protocol requested the Executive Secretary to facilitate the priority capacity-building activities for supporting the implementation of the Cartagena Protocol, among which the organization of workshops on sampling, detection and identification of LMOs was identified as a priority area.
3. With support from the Government of the Republic of Korea, through the Korea Biosafety Capacity-Building Initiative, and in collaboration with the [National Gene Bank of Tunisia](#) and the Tunisian [Ministry of Local Affairs and Environment](#), the Secretariat of the Convention on Biological Diversity organized the Workshop on Detection and Identification of Living Modified Organisms for Francophone Africa, which was held in Tunis from 5 to 9 March 2018.
4. The objectives of the workshop were to provide theoretical and practical training on (a) sampling, detection and identification of LMOs in the context of the Cartagena Protocol, and (b) laboratory methodologies used for the analysis of test samples, and to share experiences and assess national needs and gaps for the effective implementation of the relevant outcomes under the Strategic Plan for the Cartagena Protocol.
5. The workshop was attended by a total of 19 participants from 17 French-speaking countries in the African region: Benin; Burkina Faso; Burundi; Cameroon; Central African Republic; Comoros; Democratic Republic of the Congo; Côte d'Ivoire; Djibouti; Gabon; Guinea; Madagascar; Mali; Morocco; Niger; Senegal; and Togo. The list of participants is contained in annex I.

ITEM 1. OPENING OF THE WORKSHOP

6. The workshop was opened by Mr. M'barek Ben Naceur, Director-General of the National Gene Bank of Tunisia, at 9:00 a.m. on Monday, 5 March 2018. In his remarks, Mr. Ben Naceur welcomed the participants to Tunisia and emphasized the importance of effective training in the field of detection and identification of LMOs as well as the importance of stimulating cooperation and information sharing among laboratories while highlighting the opportunities presented to participants to network with colleagues in the region.

¹ See decision [BS-V/16](#).

7. Mr. Mohamed Sghaier Ben Jeddou, Director-General of Environment and Quality of Life at the Ministry of Local Affairs and Environment, also welcomed the participants and the Secretariat to Tunisia on behalf of Mr. Riadh Mouakher, Minister of Local Affairs and Environment. In his remarks, he stressed the importance of the Cartagena Protocol and its Supplementary Protocol, which had come into force on 5 March 2018. He also emphasized that the success of the Tunisian biosafety framework stemmed from the establishment of a multidisciplinary team that focused on sustaining national goals and efforts on biosafety. He expressed the hope that the participants would take advantage of the knowledge being shared during the workshop to reinforce existing capacities in their countries.

8. Ms. Marianela Araya of the Secretariat welcomed the participants to the workshop on behalf of the Executive Secretary of the Convention on Biological Diversity and gave them an overview of the Secretariat's work on detection and identification of LMOs. She also highlighted the role of detection and identification as a cross-cutting issue for the effective implementation of the Cartagena Protocol. She expressed gratitude to the Government of the Republic of Korea for its generous financial support and the Government of Tunisia for hosting the meeting.

9. Following the opening remarks, Ms. Dina Abdelhakim of the Secretariat introduced the workshop objectives and the provisional programme of work ([CBD/CP/DI/WS/2018/1/1/Add.1](#), annex). She invited participants to consider and adopt the provisional agenda circulated by the Secretariat ([CBD/CP/DI/WS/2017/1/1](#)). The agenda was adopted without amendments. The participants were then invited to introduce themselves to the group.

ITEM 2. OVERVIEW OF BIOSAFETY AND THE CARTAGENA PROTOCOL ON BIOSAFETY

10. Under this agenda item, the Secretariat gave an overview of the provisions of the Cartagena Protocol and recent developments related to the detection and identification of LMOs, including:

- (a) Relevant provisions under the Cartagena Protocol on Biosafety;
- (b) Relevant decisions of the Conference of the Parties serving as the meeting of the Parties to the Cartagena Protocol on Biosafety and the Strategic Plan for the Cartagena Protocol;
- (c) Overview of the activities of the Network of Laboratories for the Detection and Identification of Living Modified Organisms.

11. Following the presentations by the Secretariat, Mr. Hatem Ben Belgacem of the Directorate General of Environment and Quality of Life and National Focal Point for the Biosafety Clearing-House (BCH), gave participants a detailed account of the process followed by the Directorate towards establishing a rigorous national biosafety framework in Tunisia. That included establishing a national strategy for the implementation of the Cartagena Protocol that mapped out the various elements put in place to ensure the establishment of adequate legal, strategic and institutional capacity, including the provision of adequate capacity for the detection and identification LMOs. He emphasized the importance of the financial and technical support offered by the Global Environment Facility in building national capacities for the development and implementation of national biosafety frameworks. He also highlighted the role of the United Nations Environment Programme–Global Environment Facility's projects BCH-I and BCH-II in enhancing users' familiarity with scientific information and providing a platform for government institutions, civil society and other stakeholders to access relevant information.

12. Ms. Hazar Belli of the Directorate General of Environment and Quality of Life and National Focal Point for the Cartagena Protocol, shared Tunisia's experiences in establishing a national network of LMO detection laboratories. She explained that the mission of the network was to determine the technical capacity of laboratories involved in LMO detection and to propose the establishment of a reference laboratory in order to facilitate harmonization, training, cooperation and knowledge-sharing among the laboratories in the network. She also discussed the advantages of the establishment of a similar network within the French-speaking countries in the African region.

13. Mr. Mohammed Elyes Kchok, regional coordinator for the United Nations Environment Programme–Global Environment Facility’s BCH-III project, and Ms. Abdelhakim gave presentations on the BCH covering its mandate and objectives, as per Article 20 of the Cartagena Protocol, and provisions regarding information that Parties to the Protocol must submit to the BCH. The presentations included an overview of how to use and navigate through the BCH, the type of information that it contains and how to find it. Moreover, an overview of how to register information and how that information could be useful for Parties in implementing their own biosafety frameworks was presented.

14. Finally, Ms. Araya provided participants with an overview of avenues for resource mobilization through the Global Environment Facility in order to access funds for the establishment of biosafety-related projects in countries and regions.

ITEM 3. INTRODUCTION TO THE DETECTION AND IDENTIFICATION OF LIVING MODIFIED ORGANISMS IN THE CONTEXT OF THE CARTAGENA PROTOCOL ON BIOSAFETY

3.1 Overview of sampling at points of entry and for environmental monitoring

15. Under this agenda item, Mr. Maher Medini from National Gene Bank provided a theoretical overview of the processes involved in the collection of samples at points of entry, such as customs and border control points. That included a discussion on the theory of sampling, including information on the principles of representativeness, accuracy, precision and variance as well as information on the critical role of documenting a sampling procedure.

3.2 Laboratory sampling and preparation of test samples

16. Participants were introduced to the theory and general principles of receiving bulk samples and preparing and handling test samples for the detection and identification of LMOs in a regulatory context.

17. Key concepts and considerations were introduced regarding the criteria for receiving bulk samples with regard to their packaging and size. This was followed by an overview of the methodology for the homogenization of samples from commonly encountered matrices and strategies for preparing suitable test samples. Procedures for avoiding and minimizing contamination during sample handling and homogenization were also discussed. The session concluded with a practical demonstration of the steps for sample homogenization.

3.3 Procedures for the extraction and purification of DNA from test samples

18. The theoretical methodologies for extraction and purification of DNA from test samples were explained. An overview of the various DNA extraction methods was provided, while also focusing on the common key steps involved in the DNA extraction process from commonly encountered matrices and the significance of each step to the outcomes of the analysis. That was followed by a comparative analysis of the advantages and disadvantages of each method, including such considerations as DNA yield and the presence of inhibitors, as well as a brief discussion on DNA quantification methods. Possible options for troubleshooting problems encountered when extracting DNA from difficult samples, such as highly processed products or samples with high fat or starch content, were also discussed.

19. Following the theoretical introduction, the participants took part in a practical exercise to extract DNA from samples using the Cetyltrimethylammonium bromide (CTAB) extraction method.

3.4 Testing methods and analysis of results

20. Mr. Medani presented an overview of the theoretical aspects behind a number of methodologies and techniques that could be used to detect, identify and quantify LMOs, specifically the use of DNA-based methods, in particular the polymerase chain reaction (PCR).

21. As part of the elaboration on the use of DNA-based methods for detection, identification and quantification of LMOs, the participants were provided with an in-depth explanation of the theory behind PCR and an overview of the specific principles regarding real-time PCR and a detailed explanation of how to analyse the resulting data to obtain qualitative and quantitative information about the presence of

DNA from LMOs in a given sample. The presentation also provided an overview of the principles behind the “matrix approach” as a tool for facilitating the process of screening for and identifying the presence of LMOs in samples using PCR.

22. Following the presentation, the participants took part in a practical exercise to prepare a real-time PCR reaction and analyse the results.

3.5 Considerations on quality assurance and quality control

23. Ms. Leila Chalbi Guellouz, an expert in quality management at Pyramide Management, made a presentation on the various aspects that need to be considered for the establishment of a quality management system as per ISO 17025 standards in an LMO detection laboratory. She also emphasized the importance of accreditation in providing a basic assurance that organizations are adhering to internationally recognized standards and its role in providing a mechanism for the maintenance of the laboratory’s level of efficiency and continuous improvement.

24. Following the presentation, participants took part in a round-table question-and-answer session that reflected on the application of the information shared by Ms. Guellouz to their current methods of implementing their laboratory’s quality management system.

3.6 Reporting of testing results

25. Mr. Medini made a presentation on how a report can be structured to communicate the laboratory’s findings to a regulatory authority in a clear and concise manner. His presentation included the typical contents of a laboratory report, a description of relevant reporting guidelines and the use of appropriate reporting language.

ITEM 4. CONCLUSIONS AND RECOMMENDATIONS

26. Under this agenda item, participants were invited to share their views from the workshop and propose recommendations, including possible future actions to facilitate the implementation of activities relating to the detection and identification of LMOs, for consideration by the Conference of the Parties serving as the meeting of the Parties to the Protocol at its ninth meeting.

27. The participants recommended that the Conference of the Parties serving as the meeting of the Parties to the Cartagena Protocol:

(a) Acknowledge that the lack of fully operational biosafety frameworks, impacts the capacity of countries to implement provisions relating to the detection and identification of LMOs, particularly in the absence of a legal framework that mandates such activities;

(b) Urge Parties that have not yet completely put in place legal, administrative or other measures to implement their obligations under the Protocol to do so, including establishing provisions and mandates for the detection and identification of LMOs;

(c) Invite the Global Environment Facility to continue to make biosafety-specific funding available to eligible Parties so that they can put in place and implement their national biosafety frameworks;

(d) Also invite the Global Environment Facility to continue to fund projects and capacity-building activities on issues related to the detection and identification of LMOs in order to facilitate further implementation of the Protocol, including regional cooperation projects, with a view to facilitating the sharing of experiences, method harmonization and the dissemination of lessons learned, as well as harnessing associated synergies;

(e) Request the Executive Secretary:

(i) To continue making improvements to the central portal of the BCH, ensuring, in particular, that translation of the portal’s contents is carried out in a uniform and comprehensive manner with a view to facilitating its use by non-native English speakers;

- (ii) To facilitate discussions among national focal points with a view to improving their knowledge of their role as focal points, to improve operations in relation to coordination and synergies with organizations and stakeholders at the national level, to promote better sharing of information on biosafety-related issues and communication to a wider range of stakeholders, and to support initiatives relevant to the implementation of the Protocol at the national, regional and subregional levels.

ITEM 5. EVALUATION OF THE WORKSHOP

28. Participants were invited to complete an evaluation of the workshop and propose suggestions for improvements. A summary of the results of the evaluation is attached as annex II.

29. Additionally, participants expressed appreciation to the Government of the Republic of Korea for its support through the Korea Biosafety Capacity-Building Initiative. They extended their gratitude to the National Gene Bank of Tunisia and the Tunisian Ministry of Local Affairs and Environment for hosting the workshop and to the Secretariat for organizing it.

ITEM 6. ADOPTION OF THE REPORT

30. A draft report was circulated online among the workshop participants for their comments over a period of one week. The Secretariat made the necessary amendments in order to finalize the present report.

ITEM 7. CLOSURE OF THE WORKSHOP

31. The workshop closed at 1:00 p.m. on 9 March 2018.

Annex I

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*Annex II***EVALUATION QUESTIONNAIRE**






Participants were invited to evaluate the workshop by completing the questionnaire below. Participants were instructed to select the answer that best reflected their assessment of the workshop.

Twenty four participants completed the questionnaire. The number of respondents for each option is shown below.

A. OBJECTIVES OF THE WORKSHOP

Level of satisfaction					
<i>How useful was the workshop in improving your knowledge or understanding of:</i>					
The provisions of the Cartagena Protocol?			3	12	9
The role that detection and identification of LMOs plays under the Protocol?			2	8	14
Parties' obligations under the Protocol that rely on the detection and identification of LMOs?			4	14	7
Laboratory sampling and preparation of test samples?		1		10	13
Methods for the extraction and purification of DNA from test samples?				2	22
Testing methods and analysis of results?				10	14
Considerations on quality assurance and quality control?		1	3	10	10
Existing capacities and experience in other countries?		1	4	15	4

B. OVERALL WORKSHOP ASSESSMENT

Level of satisfaction					
Did the workshop meet your expectations?			1	8	15
How well organized was the workshop?				11	13
How did you find the balance between presentations and discussions?			1	12	11
Was the workshop useful?				1	23
Overall, how would you rate the workshop?				8	16