



مجلس الإمارات للأمن الغذائي
EMIRATES FOOD SECURITY COUNCIL



REPORT OF IOFS WORKSHOP ON DEVELOPMENT OF NATIONAL GENE BANKS IN OIC MEMBER STATES, DUBAI, UNITED ARAB EMIRATES, 5-6 JULY 2020

Introduction

The Workshop on Development of National Gene Banks in OIC Member States was convened in a video conference format from Dubai, United Arab Emirates on 5-6 July 2020. The Workshop was organized by Islamic Organisation for Food Security (IOFS), Nur Sultan, Republic of Kazakhstan, in collaboration with the Government of United Arab Emirates, the General Secretariat of Organisation of Islamic Cooperation (OIC), Food and Agricultural Organisation (FAO), OIC Standing Committee on Scientific and Technological Cooperation (COMSTECH), the Islamic Development Bank (IsDB), and the International Center for Biosaline Agriculture (ICBA).

2. The Workshop was attended by 157 participants representing experts/delegates from 30 OIC/IOFS member states and representatives of 10 OIC institutions and international organisations. The theme of the Workshop was: “Enhancing Food Security in OIC Member States through Agricultural Biodiversity”

Opening Session

3. Welcoming participants to the Workshop, His Excellency, Mr. Yerlan Baidaulet underscored the fact that the objectives of the event were aimed at sensitizing member states to the essence of utilisation of science, technology and innovation in reversing the situation of food and nutrition insecurity, hunger, malnutrition and underdevelopment in OIC member states.

4. Delivering the message of His Excellency, Dr. Yousef Ahmed Othaimen, OIC Secretary General, Ambassador Askar Mussinov, OIC Assistant Secretary General for Science and Technology commended the convening of the Workshop and elaborated on the current demarches of OIC in scaling up science, technology and innovation in all aspects of socio-economic development, including food security.

5. In his own address, His Excellency, Mr. Madiyar Menilbekov, Ambassador of Kazakhstan to the United Arab Emirates commended the holding of the Workshop and drew attention to the priority, which the Government of Kazakhstan attaches to international cooperation in the domain of food security through exploring innovative ways for increased productivity and self-reliance within the member states of OIC.

6. Declaring the Workshop open in her capacity as the Chairperson of the event, Her Excellency, Mariam Al-MHEIRI, Minister of State for Food Security of the United Arab Emirates welcomed participants and underscored the importance of the Workshop, amid global fears for increasing hunger and malnutrition, especially in the developing world. She stated that biotechnology conferred significant improvements on conventional plant-breeding technologies,

while offering, along with other advanced agricultural systems, an environmentally responsible way to generate a sustainable agricultural ecosystem that can help meet the needs of a global population expected to reach 9.7 billion by 2050”, including addressing the challenges of food insecurity in the midst of COVID-19 pandemic.

Panel 1: Role and Importance of Gene Banks for Conserving Genetic Resources for Food and Agriculture.

7. The panelists for this session comprised:

- I. Dr. Kakoli Ghosh, Coordinator (Partnerships), Strategic Program on Sustainable Agriculture, FAO
- II. Dr. Ismahane Elouafi, Director General, International Center for Biosaline Agriculture (ICBA)
- III. Ms. Lerzan Gul Aykas, Head of Biodiversity and Genetic Resources Department, Turkey
- IV. Dr. Sadar Uddin Siddiqui, Chief Scientific Officer/Curator National Genebank of Pakistan and Director, Bio-resources Conservation Institute, National Agricultural Research Centre, Pakistan.

8. The Rapporteur/Moderator of the Session was Ambassador Hameed Opeloyeru, Deputy Director-General, Islamic Organisation for Food Security (IOFS), Nur Sultan, Kazakhstan.

9. In her own presentation, Dr. Kakoli Ghosh traced the constraints of food security in OIC member states to low productivity, decline agricultural yield, narrowing genetic base, climate change, over-exploitation of natural resources, loss of bio-diversity and eco-system services and loss of incomes, opportunities and livelihood, among others. She observed that this situation was compounded by the loss of bio-diversity as about one million plant and animal species are threatened with extinction, while only nine plant species account for 66% of total crop production. On the importance of bio-diversity, Dr. Ghosh underscored the value of conserving, protecting and enhancing the use of natural resources, improving and protecting livelihood and human wellbeing, and promoting food system resilience, among others. The presentation also enumerated the importance of bio-diversity and conservation of genetic resources in promoting United Nations SDGs along several indicators.

10. On her part, Dr. Ismahane Elouafi stated that the loss of crop diversity had affected the global agri-food system, tracing the beginning of preservation of plant genetic resources to mid-20th Century, resulting from the fast disappearance of agricultural biodiversity, whereby only 6,000 plant species were used out of a total of 30,000 edible plant species. Describing the collection and conservation of germplasm as priceless, since they cannot be re-created, Dr. Elouafi underscored the importance of genebanks. She exemplified this point with the case of Cambodia, which lost all its local rice germplasm during the civil war, but got it restored because it was fortunate to have deposited a complete set of this germplasm in the Genebank of the International Rice Research Institute (IRRI).

11. Dr. Elouafi explained that Genebanks offered regulated conditions, where plant seeds are kept at low temperatures and humidity without losing their viability, even as she expressed that it was a safe and inexpensive method of conserving crop diversity. In addition, he opined that Genebanks were normally utilised to improve food crops in the face of uncertain future, including duplication of accessions, which could be kept in cold regions (e.g. Svalbard Global Seed Vault, a remote and secure facility in Arctic Norway). Finally, she gave an expose on the role of ICBA in conservation and exchange of germplasm and promotion of biodiversity, focusing on neglected and forgotten species.

12. In her own presentation, Ms. Lerzan Gul Aykas affirmed that climate change, pests and diseases as well as changes in diets affected crop performances, productivity, harvests and production practices. He stated that biodiversity was important for sustainable production, safeguarding food and nutrition security for the present and the future through improved crop varieties that are adapted to the environment and other natural challenges. Accordingly, he declared that genebanks remained the bridge between the past and the future as they ensure availability of genetic resources for research, breeding and improved seed delivery, emphasizing that the loss of biodiversity resulted from farmers abandoning their locally adapted landraces and traditional crop varieties for high-yielding varieties.

13. On his part, Dr. Sadar Uddin Siddiqui traced the need for conservation of plant genetic resources to the inevitability of securing new disease and pest resistant and environment adaptable seeds and plants, aimed at increasing agricultural yield and improved quality of seeds, plants and food. He detailed out the strategies, objectives and operations of a Genebank, including acquisition and data management, while expatiating on the expected roles and actions by national Governments with regard to deeper appreciation of the role of genebanks, funding, legal and regulatory instruments and the import of multilateral treaties. This includes survey of the biodiversity of the countries, study of flora/herbaria records, assessing bankable seeds quality and risks as well as outlining Standard Operations Procedures (SOPs).

14. Dr. Siddiqui also canvassed for identification and upgrading of existing National Genebanks in OIC member states, including designating some of them as training centers of excellence for the region. He recommended that OIC funding institutions, such as IsDB, should provide support for projects on upgrading of genebanks and related operations. In order to address emergencies, such as the on-going COVID-19 pandemics or warfare, Dr. Siddiqui suggested the establishment of safety duplication genebanks for OIC member states by identifying and designating one of the national centers to play the role similar to that of the Svalbard Global Seed Valet in Norway. Finally, he called for the establishment of community seed banks at farming community levels for seed storing and sharing during planting seasons with the aim of enhancing agricultural productivity and food security.

Panel II: Country Experiences on Gene Bank Development and International Collaboration

15. The panelists at the sessions featured:

- I. Professor M.F Isiyaku, Executive Director Institute for Agricultural Research. Zaria, Nigeria
- II. Dr Khurshid Hasanain, Adviser, COMSTECH Secretariat
- III. Dr. Moussa Ouedraogo, Director General of the National Tree Seed Centre, Burkina-Faso.

16. The Rapporteur/Moderator of the Session was Mr. Bashir Jama Adan, Lead, Global Practice, Food Security Specialist, Islamic Development Bank (IsDB).

17. Professor Isiyaku's presentation dwelt of the various genetic improvements of crops in Nigeria in such areas as cereals, legumes, oil seeds, tubers, fruits, cash crops and fiber. He called for increased investments on acquisition of genetic resources and the operationalisation of Genebanks, including provision of cryoperational facilities and institutional advocacy for germplasm conservation at highest level of government, training of experts in genetic resources management and involvement of broad-based stakeholders for sustained conservation of genetic resources.

18. On his part, Dr. Khurshid Hasanain called for forging multilateral collaboration for the development of genebanks and associated resources, while elaborating on the COMSTECH initiatives on new breeding technologies and cooperation on development of genebanks. He called for a Working Group at OIC level on new breeding technologies and invited OIC member states to develop own genebanks in order to develop new crop varieties for a more robust food system.

19. In his own presentation, Dr. Moussa Ouedraogo traced Burkina Faso's country experiences in Genebank development through the National Forest Seed Centre of Burkina Faso (NFSC), aimed at addressing agricultural and food security challenges in its Sahelian environment, where more than two thirds of the population live in rural areas and rely on agriculture and natural resources for income. Worried about the impact of shrinking indigenous trees used for food on the livelihood and welfare of rural population, as well as the increasing demographic pressure, Dr. Ouedraogo called for the arrest of desertification trends by planting trees in the Sub-Saharan Belt from Senegal in the West to Somalia in the East. He disclosed that regional and international organisations such as CILSS, FAO and World Bank Group as well as bilateral donors had all supported regional efforts to improve supply of tree seeds.

20. On the gradual development of its plant genetic resources conservation programmes in Burkina Faso, Dr. Ouedraogo revealed that his country established an administrative center in 1997 and a research and development institute in 2015, which handles the in-situ and ex-situ conservation activities of NFSC within its policy code-named: "Seed for Tree; Tree for Life". He, therefore, recommended the need for a regional programme to support forest seed centers, including building a network of forest seed centers for training and seed management.

Panel III: Overview of Global and Regional Agreements on PGRFA, including forests and animal genetic resources for food and agriculture.

21. The team of panelists for this session featured:

- I. Dr. Daniele Manzella, Technical Officer, International Treaty on Plant Genetic Resources for Food and Agriculture Secretariat, FAO;
- II. Dr. Asif Javaid, Principal Scientific Officer/ Program Leader, Plant Genetic Resources Program, Bio-resources Conservation Institute, National Agricultural Research Center, Pakistan; and
- III. Dr. Rakesh Singh, Program Leader on Crop Diversification and Genetics, Principal Scientist - Plant Breeding, ICBA.

22. The Rapporteur/Moderator of the Session was Mr. Mazhar Hussain, Director of Economic and Social Research Department, Statistical, Economic and Social Research and Training Center for Islamic Countries (SESRIC), Ankara, Turkey.

23. Dr. Daniele Manzella provided copious statistical data on the progressive erosion of agricultural biodiversity historically, leading to a situation where only rice, wheat and maize constituted 50% of derived calories worldwide. She also chronicled the evolution of global compacts on biodiversity from the Commission on Genetic Resources for Food and Agriculture in 1983 to the entry into force, in 2004, of the International Treaty for Plant Genetic Resources for Food and Agriculture (ITPGRFA) and the forthcoming 3rd Report of the state of global plan of action on PGRFA scheduled for 2023.

24. Extensively dwelling on the components of the International Treaty, including its funding strategy and the Benefit Sharing Fund, Dr. Manzella urged action on promoting knowledge of international policy and legal frameworks among stakeholders, participation in the Third State of the World Report and encouraging membership of the International Treaty, among others.

25. Similarly, Dr. Asif Javaid espoused that international undertakings on plant genetic resources had always concentrated on exploration, preservation, evaluation and sharing of genetic resources for plant breeding and scientific purposes, based on the universally accepted principle that plant genetic resources are “heritage of mankind” (global public good) and should be made available without restriction. He stated that the Convention on Bio-diversity (CBD) was adopted by UNEP in May 1992 and entered into force in 1993, providing, inter alia, for conservation of biodiversity, sustainable use of its components, fair and equitable sharing of benefits (ABS).

26. In his own presentation, Dr. Rakesh Singh reviewed the membership and accession of OIC member states to international treaties on biodiversity, including the Nagoya Protocol, disclosing that ICBA signed Art.15 of International Treaty for Plant Genetic Resources for Food and Agriculture (ITPGRFA) on 10 March 2019, bringing its Genebank resources under the purview of the International Treaty. He traced the role of developing countries in ensuring recognition of sovereign rights of countries of origin of genetic resources within the framework of benefit sharing agreements. He further encouraged participation in the Nagoya Protocol, which should address traditional knowledge associated with PGR, while extending international provisions under Access and Benefit Sharing (ABS) to digital data, as against its current provisions’ emphasis on physical sharing only.

Panel IV: Agricultural Biodiversity and Resilient Food Systems

27. The panelists for this session comprised:

- I. Dr. Reda Rizk, PGR& Biodiversity Expert, Arab Organisation for Agricultural Development.
- II. Ms. Rosliza Jajuli, Deputy Director, Agrobiodiversity and Environment Research Centre, Malaysia,
- III. Dr. Khalid Amri, Director, Khalifa Center for Genetic Engineering and Biotechnology/Head of Department of Biology, UAE University.
- IV. Mr. Md. Hajiquel Islam, Research Director, FPMU, Ministry of Food, Bangladesh.

28. The rapporteur and moderator for this session was Dr. Khurshid Hasanain, Adviser, COMSTECH.

29. Dr. Reda Risk enumerated the challenges of agricultural biodiversity as unclear objectives, goals and priorities during the establishment of a national mechanism for genetic resources conservation and utilisation. This included establishing an organic link between conservation and utilisation, as well as an effective information and data analysis system. He also saw the need for national and international coordination, while creating a suitable legal framework that would be compatible with international agreements and global compacts in this domain.

30. Pursuant to the foregoing, he recommended the importance of tracking the process of exchange of genetic resources and the establishment of an intra-OIC strategy and action plan on plant genetic resources, including a mechanism for regional exchange, access and benefit sharing of germplasm. He also stressed on the significance of building trust and transparency among stakeholders and the standardization of information systems via a network of OIC genebanks.

31. On her part, Ms. Rozliza Jajuli traced the key developments towards the international recognition of the importance of agricultural biodiversity for food and agriculture from 1983 to 2016. Giving an analytical framework of how biodiversity contributed to sustainable livelihood and food security, she enumerated the various drivers of threats and opportunities within the agrifood systems, ranging from climate change, malnourishment, energy and environmental constraints, global trade, demographic pressures, urbanization and migration, among others.

32. While proffering strategies for conservation, she recommended the mainstreaming and integration of agro-biodiversity, food and nutrition security into the key national development agenda, the strengthening of research and development, aimed at diversification of sources of food and nutrition. She also recognised the need for strengthening national genebanks, linkages and networking, including forging innovative partnerships with all sectors, both public, private, local, farmers, pastoralists, herders and the intelligentsia in support of sustainable and resilient food systems along the entire value chain.

33. In his own presentation tagged: “From Lab to Field”, Dr. Khalid Amri elaborated on how to utilise a discovery-based research in building food resilience, aimed at increasing productivity capable of catering for the increasing growth of world population, estimated at 10 billion in 2050. He demonstrated how the genetic systems of plants and its surroundings were channeled towards sustainable agriculture in UAE, including the exploration of hydro-efficient, heat tolerant and agronomical traits. He explained the numerous scientific methods used in this regard, such as genome editing, developing plants tolerant to abiotic stress and the mapping of about 162 varieties of date palm, and production of microorganism for local soil and the development of “smatter plants”.

34. In his own presentation on biodiversity in Bangladesh, Mr. Hijiquil Islam traced the extensive programmes, activities and actions carried out by his country from mid-1970s. He gave detailed statistics on the flora and fauna of Bangladesh, including the diverse institutions dealing with development of biodiversity of plants, forestry, fisheries and animals. He emphasized the ongoing projects on improvement of lentil through introduction of cultivars with high concentration of iron and zinc, in collaboration with ICARDA scientists and the Bangladesh research center (BARI).

35. Confirming Bangladesh status as a signatory to the Convention on Biodiversity (CBD) and the Nagoya Protocol, Mr. Hajiquil Islam expressed his country’s support for pooling resources in order to scale-up national genetic biodiversity, collection, conservation, sustainable utilisation and equitable sharing of benefits within the scope of mutually rewarding regional and international collaboration, including that of the OIC and IOFS. He also advanced the need to embark on joint advocacy and awareness campaigns for mainstreaming the development of national genebanks in the national plans of OIC member states, including promotion of the use of traditional and foods for the enhancement of food and nutrition security among OIC member states and the vulnerable segments of their populations.

Panel V: The Challenges of Conserving and Sharing Genetic Resources

36. This panel comprised:

- I. Professor G.H Sharubutu, Executive Secretary, Agricultural Research Council of Nigeria.
- II. 2. Dr. Shakeel Ahmed Jatoy, Principal Scientific Officer, National Agricultural Research Centre, Pakistan.
- III. 3. Dr. Bonnie Furman, Agricultural Officer – Plant Genetic Resources (Agrobiodiversity), FAO.
- IV. 4. Professor Mbarek Ben Naceur, Director General National Gene Bank of Tunisia.

37. The rapporteur and moderator of the session was Mr. Irfan Shaukat, Director General of the Department on Science and Technology, OIC General Secretariat.

38. Prof. G H. Sharubutu cited lack of national strategies poor implementation of international treaties , climate change, population growth and urbanization, inadequate funding, and lack of awareness creation as major challenges confronting genetic resources conservation in Nigeria. He also made reference to over exploitation of genetic resources, pollution, especially for marine and fresh water gene resources as well as to soil and atmospheric biodiversity by genetically modified materials, as well emerging intra-communal conflicts, such as armed banditry, kidnapping and cattle rustling.

39. In his recommendations, Prof. Sharubutu advanced the creation of awareness on the value of genetic resources through training, seminars, and use of media. He also proposed diversification of crop production, use of complementary conservation techniques, development of comprehensive information retrieval system and early warning system for genetic resources. He emphasized the need for development of modern seed stores and laboratories across the OIC member states for germplasm conservation and support for rehabilitation of the non-functional long and short terms storage facilities. He also called for supporting planned and target collaboration through massive exploration at sub regional and regional levels of both crop and their wild relatives and Germplasm movement (sharing) through a unified protocol for germplasm sharing in OIC member states. He recommended the strengthening of institutional capacity at national, regional and international levels, including the creation of a comprehensive database of genetic resources in OIC member states. Prof Sharubutu also called for funding for building infrastructures and human capacities as well as improved accessible documentation for farmers, breeders and the local communities.

40. Dr. Shakeel Ahmed highlighted the technical challenges with regard to establishing and maintaining genebanks during the identification, collection, post-collection and maintenance phases. He enumerated some of these challenges as seed processing, viability testing, banking, data collection, accessioning, distribution, regeneration, evaluation, logistics, population assessment, identification, allocation of financial resources, trained manpower and addressing policy issues.

41. Dr. Ahmed underscored the need for conduct of rationalized assessment on type and quantity of items intended for conservation, availability of both financial and technical resources, and catering for short, mid- and long-term conservation. He underscored the need for risk assessment of the gene bank location so that it should be safe from natural disasters (flood, earthquake) and other human influences, emphasising that the premises shall also meet safety and fire management standards. He contended that ownership of the Government, establishment of national networks for regeneration and multiplication of crops and appropriate data management system were essential for successfully establishing and operating any gene bank.

42. On his part, Dr. Bonnie Furman explained the flow chart and the underlying principles of a typical Gene Bank, comprising inter-alia: identity of accessions ; maintenance of viability and genetic integrity ; maintenance of seed/ plant health; physical security of collections ; availability and use of germplasm ; availability of information ; and proactive management of gene banks using best practices. She emphasized the various guidelines and standards developed by FAO in particular Genebank Standards for Plant Genetic Resources for food and Agriculture that were endorsed in 2013 by the Commission on Genetic Resources for Food and Agriculture.

43. She also identified poor staffing; inadequate budget; inadequate and outdated infrastructure/equipment; lack of institutional support and man-made or natural calamities as major constraints to conservation efforts. As regards the constraints on exchange and utilization

of Genetic resources, Dr. Furman pointed out a number of factors, such as large number of accessions for efficient evaluation, lack of information to the users, insufficient seed/planting material for distribution, and low viability and/or poor health of seeds and plants. He also cited questionable genetic integrity, low utility of landrace material and wild relatives for breeding, and policy constraints to germ plasm exchange (e.g. phytosanitary, etc.)

44. In order to overcome these challenges, she recommended a clearly defined Genebank mandate and operational modality; allocation of adequate resources; observance of Genebank standards by meeting international reporting obligations. Dr. Furman also briefed about the various support mechanisms offered by FAO to assist OIC for the development of national genebanks that include technical oversight and backstopping; development of Standard Operating Procedures; capacity development; partnership for development of proposals for funding and activities, including assistance to National Focal Points for international reporting obligations.

45. Dr. Yassine, in his presentation on behalf of Professor Mbarek Ben Naceur, identified climate change and other issues as affecting biodiversity conservation in Tunisia. He gave an overview of various tasks and operations performed by the National Genebank of Tunisia, which was established in 2007, upon recalling all its accessions from external genebanks after testing the repatriated accessions numbering over 45,000 and increasing its workforce from 10 in 2010 to 130 presently. He also elaborated on the steps taken by Tunisia to expand its database, increase digitilisation of its accessions, exchange germplasm via the international system and step-up international collaboration through signing and ratifying international agreements. He also explained processes undertaken to establish short, medium and long-term conservation laboratories for detection of genetic modified objects (GMO).

Panel VI: Developing National Capacities on Bio-Diversity and the Role of Regional Centers of Excellence.

46. The panelists for this session comprised:

- I. Dr. Ayup Iskakov, Assistant to the Rector, Kazakh National University of Agriculture, Kazakhstan.
- II. Mr. Nur Abdi, Manager, Agriculture Global Practice, Economic & Social Infrastructure, Islamic Development Bank (IsDB).
- III. Mrs. Seta Tutundjian, Director of Programs, International Center for Biosaline Agriculture (ICBA), Dubai, United Arab Emirates.
- IV. Dr. Naser B Almarri, General Director of Seed Center/Secretary-General of the National Committee for the Management of Plant Genetic Resources of the Kingdom of Saudi Arabia.
- V. Dr. Mariana Yazbek, Country Manager for Lebanon & Jordan (Beirut), International Centre for Agricultural Research in Dry Areas.

47. The rapporteur and moderator of the session was Dr. Ismail Abdulhamid, Advisor on Research and Technology, Islamic Organisation for Food Security (IOFS).

48. Dr. Iskakov traced the evolution of the global biodiversity activities against the background of persistent threat of genetic erosion, which might lead to permanent loss of some genetic resources needed for breeding new varieties of seeds, crops and livestock needed to enhance food and nutrition security. He traced the various activities of Kazakhstan in the area of genetic

resources conservation, stating that Kazakhstan remained the 9th largest country in the world and derived 38% of its income from agriculture with 16% of its labour force engaged in agriculture.

49. Dwelling on the significance of Kazakhstan in the domain of conservation of genetic resources, Dr. Iskakov disclosed that the regions of Zailiysky and Dzhungarsky Alatau remained the centers for intraspecific diversity and domestication of apple and apricot, which have the largest resources in the world of wild apple trees. With a gene pool of agricultural crops, which comprises of 75,000 samples, NANOT was established in 2015 to provide scientific support for agro-industrial units, including three agricultural universities, 16 research institutions, 18 agricultural organisations and experimental stations and three science companies. He also hinted that President Tokayev had approved, in September 2019, the development of a programme for crop breeding with the participation of leading foreign breeders, even as he confirmed that 515 agricultural samples were evaluated, including 55 varieties and hybrids of lentils, 172 varieties of sunflower, 50 of rapeseed, 104 corn, 82 sunflower, among others.

50. Underscoring the problems inherent in the operations of genebanks ranging from loss of collections, evaluation and improvement of seed qualities, information and data collection, passport, standardization and long-term storage of samples, Dr. Iskakov proffered such recommendations as an OIC unified strategy on conservation of genetic resources. He also underscored the need to determine needs and priorities of countries and cooperation at intra-OIC level as well as establishing a regional ex-situ Genebank among IOFS member states. Finally, he made a case for an OIC Regional Center of Excellence in Kazakhstan.

51. In his own presentation, Mr. Nur Abdi recalled the IsDB's policy on innovation, science and technology, featuring project financing as well as graduate and doctorate scholarship programmes for agricultural sciences. He also underscored the partnership between the Bank and ICBA, which remained one of the major flagship programmes of the Bank in the domain genetic resources conservation and agricultural biodiversity for food and agriculture.

52. On the question of innovative financing for the development national genebanks in OIC member states, Mr. Nur Abdi suggested the utilisation of the Bank's innovative funding mechanism under the Awqaf Properties Investment Fund (APIF), among other Islamic financial products to address the perennial problems of inadequate financing of development projects from Government sources. He gave an expose of the Bank's South-South cooperation, and reverse linkage programmes, aimed at supporting intra-OIC capacity-development in the development of food and agriculture value chain.

53. In her own presentation, Mrs. Tutundjian underscored the importance of conserving genetic resources in the wake of 20% decline of native species of land-based habitats, owing to the consequences of global warming, the expansion of urban areas and agricultural activities as well as pollution, among others factors. She enumerated the various environmental, economic, developmental, social, security implications of the challenges to biodiversity, which threaten food and nutrition security. She, therefore, stressed on the importance of developing national genebanks to conserve the available germplasm, which should be collected, recovered and conserved for the sake of posterity and coming generations. In providing here recommendations, Mrs. Tutundjian placed emphasis on intra-OIC actions that would protect the rights of indigenous communities and guarantee fair and equitable sharing of biodiversity components, streamline the entire processes of

access and benefits sharing, reduce negotiation time and provide an across-the-board understanding of the value and potentials of native biodiversity.

54. In his own presentation, Dr. Nasir Al-Marri spoke on the objectives of the biodiversity operations in Saudi Arabia with particular reference to the Al-Ahsa region of the Kingdom and agreed with the notion that knowledge-sharing and proper funding were necessary to ensure the effective functioning of national genetic resources conservation activities. He also postulated on the important role of centers of excellence within the OIC region in order to mobilise resources for research, technology and innovation. He provided details on the operations of the upcoming Saudi ex-situ conservation works of agricultural biodiversity, ranging from testing for seeds and herbs, collection of samples from the respective Saudi cities and supply to local farmers, expressing that Saudi Arabia maintained active collaboration with the Arab Network for Plant Genetic Resources within the Arab Organisation for Agricultural Development.

55. The presentation by Dr. Mariana Yazbek dwelt on the capacity-building activities of ICARDA, in addition to its role of collecting, conserving and sharing of plant genetic resources. She presented an expose of the administrative and operational difficulties inherent in the relocation of its building and acquisitions from Syria to Lebanon and Morocco in 2012, while underscoring the task of building a new team and improving methods and standards operating procedures. She emphasized that ICARDA had succeeded in repositioning the center as a training institutions and Genebank, with appreciable capabilities for conducting internships and graduate studies for masters and doctoral students within its short and long-duration courses. She also detailed out the number of collections and accessions held by the Center in the neighbourhood of 141,052 and 157,042, stating that the Center, which belongs to the CGIAR platform of 11 Genebank, has a set of performance targets and standards, while ensuring that 90% of its accessions are available for distribution and duplication. She emphasized that ICARDA believed in sharing of benefits of genetic resources and ensured the sharing of about 20,000 germplasm annually.

Interactive Session

56. The Workshop deliberated on the various presentations made by the panelists and commended their in-depth analyses, thereby deepening participants' appreciation of the task of building resilient food systems in OIC member states through establishment of national genebanks and the attendant collection, conservation and sharing of plant and animal genetic resources for food and agriculture.

Recommendations

57. At the end of its proceedings, the Workshop approved the following recommendations:

- I. Intensification of intra-OIC collaboration through exchange of research, sharing of know-how and best practices on acquisition, conservation and exchange of genetic resources for food and agriculture;
- II. Supporting member states in updating national reports on plant and animal genetic resources, including awareness campaigns among local, community-based and private sector establishments and upgrading of national assets on conservation and sharing of genetic resources for food and agriculture;

- III. Identification and designation of regional or integrated centers of excellence on PAGRFA within the OIC region;
- IV. Establishing a structure for supporting accession to international treaties on biodiversity and PAGRFA, and coordinated participation at all related international conferences, including on-going negotiations on Nagoya Protocol (2014), aimed at strengthening its provisions on Access and Benefit Sharing (ABS), addressing traditional knowledge associated with PGR obligations and linking ABS to digital data;
- V. Creation of a Technical Committee, comprising member states, private sector, national genebanks, and related stakeholders to oversee the implementation of the approved Framework of Action for Cooperation on PAGRFA and the outcome of the Workshop and subsequent resolutions thereon;
- VI. In view of the spiritual and cultural appeal of Genebank activities with regard to welfare of future generations, the establishment of a Seed and Gene Wakf (Endowment) to finance development of seed varieties and plant and animal genetic resources, including development of appropriate infrastructure at the national or intra-OIC levels should be explored;
- VII. Governments to understand the role & importance of National Genebanks for food security, in order to allocate human resources, funding, and adoption of laws, legislation and treaties related to genetic resources etc. In this regard, consideration should be given to the rights of plant breeders and seed companies, rights of farmers and local seed companies should be protected;
- VIII. Strengthening of plant genetic resources research and plant breeding in public sector. Accordingly, the establishment of Genetic Resources Conservation Program and National Genebanks (NGs) should be approved, after proper survey of the biodiversity of the country, study of flora/herbaria records, assessment of bankable seeds quantities, risk assessment and outlining SOPs and integration into the functional plant genetic resources (PGR) management for food security via PGR utilization for crop improvement;
- IX. Encouraging funding of project proposals for the establishment, capacity building and upgradation of National Genebanks of the OIC MC by OIC funding institutions;
- X. Establishing Community Seed Banks (CSB), including national networks for regeneration and multiplication of crops to maintain their genetic integrity;
- XI. Supporting consortia of countries and institutions (multinational plant genetic resource projects) to advance the use of new conservation and breeding technologies (including molecular techniques) that are backed by strong national or regional genebanks. This includes effective linking of countries that have strong and modern genebanks with others that are less endowed. In this regard, OIC institutions (e.g., COMSTECH), regional and international agricultural research centers (e.g., ICBA, ICARDA) can play significant roles in networking and building such strong consortia;
- XII. Smallholder farmers must be seen to benefit from the activities of genebanks through increase of improved seeds, which is critical to raising agricultural productivity and food and nutritional security. This requires improving the seed systems in the countries, and particularly enhancing the engagement of the private sector that is needed for sustainability;

- XIII. Forging partnerships between national genebanks and seed centers with international research and development centers (e.g., with the CGIAR centers) can foster rapid exchange of germplasm (remove bottlenecks), resource mobilization, advocacy and awareness creation to stimulate use, human and institutional development. For national programs to benefit effectively from such partnership, they must have the requisite human capacity. Such partnerships should, therefore, include capacity development and retention components in their activities; and
- XIV. Establishment of Safety Duplication Banks of OIC. To this effect, selected or nominated and approved National Genebanks could be entrusted with safety duplication of national Genebank materials for safekeeping during emergencies, natural or man-made crises.

Framework of Action for Cooperation on Plant and Animal Genetic Resources for Food and Agriculture

58. The Workshop reviewed and approved the Framework of Action on Plant and Animal Genetic Resources for Food and Agriculture as one of the outcome documents of the Workshop and a practical step in coordinating intra-OIC action in the area of promoting food security through agricultural biodiversity.

Dubai Declaration

59. The Workshop also issued the Dubai Declaration comprising the summary of proceedings of the two-day Workshop.

Closing Session

60. The Workshop listened to the closing remarks, delivered by His Excellency, Mr. Yerlan Baidalet, Director-General, IOFS, and His Excellency, Mr. Essa Al-Hashimy, Director of the Department, UAE Food Security Office, on behalf of the Chairperson, whereby they conveyed their respective appreciation for the role of all delegates, panelists, rapporteurs and officials in ensuring success of the virtual workshop.

Dubai, 6 July 2020