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The International Treaty
**ON PLANT GENETIC RESOURCES
FOR FOOD AND AGRICULTURE**

**INTERNATIONAL TREATY ON PLANT GENETIC RESOURCES
FOR FOOD AND AGRICULTURE**

**FIRST ELECTRONIC CONSULTATION OF THE *AD HOC* TECHNICAL
COMMITTEE ON SUSTAINABLE USE OF PLANT GENETIC RESOURCES FOR
FOOD AND AGRICULTURE**

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“Exploring possible elements of a Joint Programme on biodiversity in agriculture for
sustainable use of PGRFA 2020-2030”

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1 Background

In May 2018, an informal meeting of experts was organized in Bari, Italy, to explore possible elements of a Joint Programme on Biodiversity in Agriculture for Sustainable Use of Plant Genetic Resources for Food and Agriculture (PGRFA). The meeting was organized by the Secretariat of the International Treaty on Plant Genetic Resources for Food and Agriculture in collaboration with the International Centre for Advanced Mediterranean Agronomic Studies (CIHEAM) of Bari, as a response to Resolution 6/2017, in which the Governing Body of the International Treaty had requested ‘...the Secretary, in collaboration with other stakeholders, and subject to the availability of financial resources, to:...iii) explore the possibility of establishing a Joint Programme on biodiversity in agriculture for sustainable use of PGRFA involving relevant international organizations and other stakeholders, with a view to enhancing the mission and goals of the Programme of Work on Sustainable Use of Plant Genetic Resources for Food and Agriculture and its Supporting Initiatives beyond 2019 through the establishment of a long-term programme 2020–2030, for consideration by the Governing Body at its next session’.

This request represents a shift from earlier resolutions, which had focused on providing support preliminarily through the system of the International Treaty to Contracting Parties and other stakeholders to implement the provisions on sustainable use of PGRFA, as reflected in the current programme of work. This request of exploring the possibility of establishing a Joint Programme on biodiversity in agriculture for the sustainable use of PGRFA involving other relevant international organizations and stakeholders, is an important step to promote the objectives of the International Treaty with a long-term perspectives and through mainstreaming, integration, and more in-depth coordination between and among stakeholders.

In the long term, a Joint Programme on biodiversity in agriculture for sustainable use of PGRFA could provide the framework and impetus for greater cross-organizational efforts with a view to:

- increasing impact through coordination, combined knowledge, and capacities
- streamlining actions and resource use
- offering countries more opportunities and prospects of greater success in meeting their obligations under the relevant global, regional and national instruments dealing with biodiversity conservation and sustainable use, as well as with sustainable agricultural development and food and nutrition security.

1.1 The International Treaty and sustainable use of PGRFA

The background for this joint programme can be found in the objectives of the International Treaty: “the conservation and sustainable use of plant genetic resources for food and agriculture and the fair and equitable sharing of the benefits arising out of their use, in harmony with the Convention on Biological Diversity, for sustainable agriculture and food security”. Specifically, under Article 6.1 of the Treaty, Contracting Parties are required to “develop and maintain appropriate policy and legal measures that promote the sustainable use of plant genetic resources for food and agriculture”.

The Treaty defines PGRFA as “any genetic material of plant origin of actual or potential value for food and agriculture”, genetic material being “any material of plant origin, including reproductive and vegetative propagating material, containing functional units of heredity” (Art. 2). PGRFA include cultivated varieties of plant species (landraces and modern cultivars), wild plant species with potential

as trait donors to crops (crop wild relatives – CWR), wild-harvested species used for human and animal food, and plant breeders’ material – advanced lines, elite varieties and DNA.¹

The Governing Body of the Treaty has recognized the pivotal role of sustainable use of PGRFA in addressing such global challenges as biodiversity loss, climate change adaptation, poverty alleviation, and food security, especially for smallholder and subsistence farmers. Implementation of Article 6 of the Treaty, ‘Sustainable Use of Plant Genetic Resources’ is a standing priority item on the agenda of the Governing Body, the aim being to promote an integrated approach to the sustainable use of PGRFA among Contracting Parties.

*Examples of measures for the sustainable use of PGRFA
from Article 6 of the International Treaty*

- a) Pursuing fair agricultural policies that promote, as appropriate, the development and maintenance of diverse farming systems that enhance the sustainable use of agricultural biological diversity and other natural resources;
- b) Strengthening research on enhancing and conserving biological diversity by maximizing intra- and inter-specific variation for the benefit of farmers, especially those who generate and use their own varieties and apply ecological principles in maintaining soil fertility and in combating diseases, weeds and pests;
- c) Promoting, as appropriate, plant breeding efforts which, with the participation of farmers, particularly in developing countries, strengthen the capacity to develop varieties particularly adapted to the specific social, economic and ecological conditions, including in marginal areas;
- d) Broadening the genetic base of crops and increasing the range of genetic diversity available to farmers;
- e) Promoting, as appropriate, the expanded use of local and locally adapted crops, varieties and underutilized species;
- f) Supporting, as appropriate, the wider use of diversity of varieties and species in on-farm management, conservation and sustainable use of crops, and creating strong links to plant breeding and agricultural development in order to reduce crop vulnerability and genetic erosion, and promote increased world food production compatible with sustainable development;
- g) Reviewing, and, as appropriate, adjusting breeding strategies and regulations concerning variety release and seed distribution.

The conservation and sustainable use of PGRFA are threatened by:² a) under-use or abandonment (many landraces/farmers’ varieties, as well as neglected and underutilized species – or ‘orphan crops’); b) primarily human-induced threats, including the wide-ranging and unpredictable impacts of climate change, agricultural intensification, land-use transformation, habitat destruction, and pollution – all factors affecting *in-situ* populations of wild and cultivated PGRFA; and c) over-use of many wild-harvested species and some CWR.

1.1 Programme of Work on Sustainable Use of Plant Genetic Resources for Food and Agriculture (2016–2019)

Through Resolution 4/2015, the Governing Body endorsed the revised Programme of Work on Sustainable Use of Plant Genetic Resources for Food and Agriculture (PGRFA) 2016–2019. The vision of the Programme of Work is that “plant genetic resources for food and agriculture are used

¹ Kell, S.P., Marino, M. and Maxted, N. (2017) Bottlenecks in the PGRFA use system: stakeholders’ perspectives. *Euphytica* 213:170. DOI: 10.1007/s10681-017-1935-z.

² Ibid.

sustainably in farming systems in accordance with Article 6, to enable more inclusive, sustainable and efficient agricultural and food systems at local, national and international levels”; its mission is “to enhance the sustainable use of plant genetic resources for food and agriculture through effective measures that translate Article 6 of the Treaty into country-level impact”.

Components and expected results (2017/2019) of the Programme of Work include:

1. Implementation of the sustainable use of PGRFA, as per Article 6 of the Treaty;
2. A toolbox for sustainable use of PGRFA
3. A platform for co-development and transfer of technologies within the context of non-monetary benefit-sharing
4. Training and capacity building on Farmers’ Rights and sustainable use
5. Public–private partnerships for pre-breeding
6. Raising awareness of the actual and potential value of crop wild relatives, landraces and underutilized species of local and regional importance for food security and sustainable development

More information on the Programme of Work and its Vision, Mission and Goals is provided in the summary made by the Secretariat of the Treaty, in Chapter 3.1 of this report.

1.2 The sustainable use of PGRFA and its importance in the Benefit-sharing Fund projects of the International Treaty

Sustainable use is one of the three agreed priorities of the Benefit-sharing Fund (BSF) of the Treaty. Recognizing the importance of agrobiodiversity to food security and climate-change adaptation, the BSF has invested more than USD 20 million in projects for developing appropriate strategies and actions to ensure that PGRFA is conserved and sustainably managed at national and regional levels. These include:

- i) During its second project cycle, the BSF funded 12 Strategic Action Plans (SAPs) in Mesoamerica, Asia, the Near East and Africa, dealing with the role of PGRFA in food security and adaptation strategies. Through advance planning, these identify practical and effective actions and policy responses for the conservation and sustainable management of PGRFA, the progressive build-up of skills, knowledge and information bases and technologies.
- ii) As part of the ongoing Third Project Cycle, which consists of 22 projects in 44 developing countries, projects on the co-development and transfer of technologies are being implemented. These initiatives seek to promote international cooperation among research institutions for the co-development and transfer of key technologies. The projects will enable the generation, exchange, and utilization of molecular, phenotypic and genotypic information for the development of new varieties adapted to changing climates. At least 30 PGRFA technologies are planned to be co-developed and transferred to more than 80 research institutions of Contracting Parties in the developing world, so as to enable integrated data analysis and interpretation of germplasm, genomic and phenotypic data.

The BSF projects address the development of appropriate strategies and actions to ensure that PGRFA are conserved and sustainably managed by implementing the following measures, among others:

- National Biodiversity Strategies and Action Plans for the conservation and sustainable use of PGRFA and promotion of Diverse Farming Systems (Article 6.2a of the Treaty);

- research that enhances biological diversity for the benefit of farmers (Art 6.2b);
- evaluation, characterization and plant breeding (Art. 6.2c);
- broadening the genetic base and diversity of material available to farmers (Art. 6.2.d);
- the co-development and transfer of technology through the 3rd project cycle (Art. 5.1e. Window 3 of the Third Project Cycle).

For more information on the BSF, see the presentation in Chapter 3.7 below.

2 Objectives and structure of the meeting

The meeting was organized with the generous support of the Government of Italy and the Mediterranean Agronomic Institute of Bari (CIHEAM Bari), as a contribution to the process of exploring the possibilities of establishing of a Joint Programme, as requested by the Governing Body.

2.1 Objectives of the meeting

The central objectives for the two-day meeting (with excursion the third day) were to create an interactive space for dialogue among diverse stakeholders, to:

- exchange experiences, best practices and lessons learned on the sustainable use of PGRFA;
- jointly identify common strengths, needs, gaps and actionable recommendations for improving the current management of the sustainable use of PGRFA;
- explore possibilities for a Joint Programme on Biodiversity in Agriculture for sustainable use of PGRFA;
- provide advice on possible objectives, scope, elements and activities of a Joint Programme on Biodiversity in Agriculture for Sustainable Use of PGRFA;
- identify opportunities for linkages, coordination and collaboration with other relevant programmes, projects and initiatives;
- explore the development of a concept note that could be submitted to donors and funding mechanisms, including the GEF.

Whereas the first five points were discussed in some detail in the meeting, there was not enough time to consider the last point in depth. There was a general understanding that the inputs from the meeting would provide guidance and elements for the development of a concept note at a later stage.

2.2 Structure of the meeting

The meeting was structured to promote informality and a frank exchange of views among the participants, as well as to explore ideas and creative options. Consequently, the meeting was conducted under Chatham House Rules: the inputs, views, comments and suggestions provided by the Experts during the Meeting would not be attributed to individual participants and would not be considered as representing the position of their respective governments or organizations.

Selection of the experts invited took into account their professional experience in initiatives, programmes and projects on sustainable use of PGRFA at national, regional and international levels. Also considered were geographical distribution, gender balance and the implementation of the Treaty topics in their own area of work.

The meeting was facilitated by Regine Andersen, Senior Research Fellow at the Fridtjof Nansen Institute, Norway, and Susan Bragdon, Director of Seeds for All, USA.

The outcomes of the Expert Meeting are presented to the Secretary of the International Treaty through this report, to be taken into account for the consultations of the Ad Hoc Technical Committee on Sustainable Use of PGRFA (ACSU) prior to and at its fourth meeting.

3 Summary of presentations and discussions

After welcome addresses and an introduction to the meeting from the Treaty Secretariat and the host, the International Center for Advanced Mediterranean Agronomic Studies of Bari (CIHEAM Bari), the first part of the meeting was devoted to presentations from participants at the expert meeting and discussions, to establish a common ground of knowledge.

3.1 Introductory presentations

The Secretary of the International Treaty, Kent Nnadozie, welcomed the participants on behalf of the Secretariat, and Generosa Jenny Calabrese, International Officer and Research Coordinator in CIHEAM Bari welcomed participants on behalf of the Director of CIHEAM Bari, the host institution. Mario Marino, Technical Officer from the Secretariat of the International Treaty, presented the International Treaty and the background for the meeting, and then gave the floor to the facilitators of the meeting, Regine Andersen, Senior Research Fellow of the Fridtjof Nansen Institute, Norway, and Susan Bragdon, Director of the Seeds for All Initiative, USA.

Welcome from the Treaty Secretariat, by Kent Nnadozie, Secretary of the International Treaty
On behalf of the Secretariat of the International Treaty on Plant Genetic Resources for Food and Agriculture, Treaty Secretary, Kent Nnadozie, welcomed the participants to the meeting. He expressed the Secretariat's deep appreciation to the Italian Agency for Development Cooperation of the Ministry of Foreign Affairs for its financial support to the meeting, and the CIHEAM Mediterranean Agronomic Institute of Bari for hosting and co-organizing the informal expert meeting. He also thanked all the participants for being available and for supporting the undertaking.

A major challenge of our times is to feed the world's growing population in the face of climate change and diminishing natural resources, both of which pose direct threats to our global food security, the Secretary underlined. Crop genetic diversity, its conservation and sustainable use, is essential in order to ensure continued food production and to adapt agriculture to changing environmental conditions, like water scarcity, drought, pests and diseases brought by changing climates, he continued. For improving and sustaining global food security, the conservation and sustainable use of plant genetic resources is crucially important, especially in this historic time of climate change, he stressed, highlighting their importance to the development and improvement of crop cultivars adapted to the needs and requirements of smallholder farmers and for the development of sustainable agricultural practices that do not harm the environment.

The Secretary emphasized that the objectives and main components of the International Treaty provide the guidance required to address the need to conserve and sustainably use crop genetic resources, and that effective implementation of the International Treaty would be highly beneficial for seed, food and nutrition security in times of climate change.

Treaty Article 5 on conservation, Article 6 on sustainable use and Article 9 on Farmers' Rights are all interconnected, as addressed in the Programme of Work on Sustainable Use of PGRFA and Supporting Initiatives for the period 2016–2019, the Secretary continued. We need to continue enhancing the research, breeding and development of crop diversity at all levels, and make seeds and propagating material available and accessible for smallholders, he stressed. It is important to enhance and promote

the role of smallholder farmers, as well as the on-farm and *in-situ* conservation and development of crop diversity, while also acknowledging the needs of modern plant breeders and *ex-situ* conservation.

That is why the Programme of Work on Sustainable Use of PGRFA and Supporting Initiatives for the period 2016–2019 is so important for the Governing Body, the Secretary explained. The Programme of Work aims at “*providing support to Contracting Parties and stakeholders to implement the provisions of Articles 5, 6 and 9 that are relevant to the sustainable use of PGRFA, based on national priorities and needs*”.

Last year, at the Seventh Session of the International Treaty’s Governing Body in Kigali, the Secretariat reported the activities and progress of the implementation of the Programme of Work. He noted that considerable progress had been made in the implementation of the Programme of Work. Highlights and progress at the national level included positive results on:

- the role of local and organic plant breeding
- the increase of public–private partnerships for pre-breeding for genetic diversity
- the release of farmers’ varieties and increased seed production
- the growing accessions in *ex-situ* gene banks and facilitated access to PGRFA.

In addition, the first version of the online Toolbox on Sustainable Use of PGRFA was published in 2017 on the FAO server, thanks to the inputs and guidance of the Ad Hoc Technical Committee on Sustainable Use of Plant Genetic Resources for Food and Agriculture.

The Secretary also emphasized the Platform for the Co-Development and Transfer of Technologies within the context of non-monetary benefit-sharing as an achievement. Partner institutions of the Platform have continuously shared experiences, exchanged ideas and raised awareness on conservation, sustainable use of PGRFA and Farmers’ Rights. This has contributed to cooperation and improving partnerships relevant to the sustainable use of PGRFA.

With support from the Contracting Parties and stakeholders through various consultations, the Governing Body of the International Treaty decided to establish an Ad Hoc Technical Expert Group on Farmers’ Rights at its Seventh Session in 2017 (Resolution 7/2017). The Group is to produce an inventory of national measures, best practices, and lessons learnt from the realization of Farmers’ Rights, as well as to develop options for encouraging, guiding and promoting the realization of Farmers’ Rights, as set out in the Treaty. The first meeting of the Group will take place in September 2018.

Another important decision adopted by the Governing Body at its Seventh Session was Resolution 6/2017, the Secretary underscored. The Secretariat, in collaboration with other stakeholders, and subject to the availability of resources, is called on to explore the possibility of establishing a Joint Programme on Biodiversity in Agriculture for Sustainable Use of PGRFA involving relevant international organizations and other stakeholders, with a view to enhancing the mission and goals of the Programme of Work on Sustainable Use of PGRFA and Supporting Initiatives beyond 2019 through the establishment of a long-term programme 2020–2030, for consideration of the Governing Body at its next session. Again, he thanked the Government of Italy, for providing the financial support to organize the meeting.

The Secretary added that he was pleased that participants had accepted the invitation from the Secretariat. He counted on their expertise, commitment and support to the idea to provide a framework and impetus for greater synergies and institutional coordination of efforts, streamlining actions and use of resources, and offering countries more opportunities and prospects of greater success in meeting their obligations under the relevant global, regional and national instruments dealing with biodiversity conservation, sustainable agricultural development, food and nutrition security.

Underscoring that the Secretariat would be there to facilitate and assist participants in the discussions, he urged participants to join efforts to address the current and future challenges of conservation and sustainable use of crop genetic resources, with a view to developing possible goals and central elements of a Joint Programme to be presented to the Ad Hoc Technical Committee on Sustainable Use of PGRFA. The Secretary offered his wishes for fruitful discussions.

Presentation of CIHEAM Bari, by Maurizio Raeli, Director, and Generosa Jenny Calabrese, International Officer and Research Coordinator, CIHEAM Bari

The International Center for Advanced Mediterranean Agronomic Studies (CIHEAM) was established in 1962 under the auspices of the Organisation for Economic Co-operation and Development (OECD) and of the Council of Europe.

CIHEAM is an inter-governmental institution with a membership of 13 Mediterranean countries: Albania, Algeria, Egypt, France, Greece, Italy, Lebanon, Malta, Morocco, Portugal, Spain, Tunisia and Turkey. CIHEAM works with various national, international and regional institutions in the Mediterranean area; its actions are connected to the specific needs of the countries in question.

The General Secretariat is located in Paris; there are Mediterranean Agronomic Institutes in Bari, Chania, Montpellier and Zaragoza.

Together with its member states, public and private partners and academics, CIHEAM works on these four challenges:

- struggling against 'triple waste' (knowledge–natural resources–food),
- boosting sustainable agriculture and food production,
- Investing in new generations and fragile territories,
- Preventing risks and managing tensions.

The tools are research and innovation, education and training, networks and open knowledge platforms, project and technical assistance, policy dialogue and partnerships. CIHEAM approaches comprise a holistic vision of development, a multilateral approach, bottom–up collaboration and problem-solving-oriented projects.

The Mediterranean Agronomic Institute of Bari (IAMB, <http://www.iamb.it/>) is one of four institutes of CIHEAM. It was founded in 1962 together with the Institute of Montpellier (IAMM).

Since 1962 CIHEAM–IAMB has been working in the Mediterranean to improve sustainable agriculture and fisheries, ensure food and nutrition security, and develop rural and coastal territories through education, applied research and international cooperation.

With some 25 permanent staff researchers, more than 100 MSc and PhD students, and other collaborators, the Institute has a strong national and regional reputation. Its research activities are oriented to organic and sustainable agriculture, land and water management, irrigated agriculture, integrated pest management, mainly in the Mediterranean region.

CIHEAM–IAMB has participated in numerous regional, national and international research projects. Its activities are focused on applied research concerning the Mediterranean rural development and productive systems, covering aspects that are not in the focus of other research institutions.

The Institute conducts post-graduate education, training, applied scientific research and international cooperation activities aimed at strengthening the institutional dialogue across the Mediterranean area. Four thematic areas are covered: (1) management of natural resources (soil and water), (2)

protection of Mediterranean fruit crops, (3) Mediterranean organic farming and agriculture and (4) sustainable agriculture and rural development.

Advanced specialized education is organized in these four areas.

The contributions of CIHEAM Bari to the sustainable use of PGRFA in the Mediterranean include:

- analysis and conservation of biodiversity at various scales (field, farm, landscape, fresh & marine water)
- ecosystem management and ecological modelling
- environmental impact assessments (EIA in terrestrial & aquatic ecosystems)
- agro-ecosystem restoration (increasing resilience)
- clonal selection and production of certified plant propagation material
- Mediterranean fruit species (germplasm characterization)
- participatory approaches to conservation, management and rational use of biodiversity.

Since 1996 the Institute has worked on developing holistic, knowledge-intensive farming systems within the frame of its organic agriculture competences, applying an ecosystem approach to develop agricultural systems based on ecosystem services. Biodiversity is seen as resource to be conserved and developed, and as an indicator of the state of health of the agricultural ecosystems.

A specific survey method for assessing and monitoring the assets of biodiversity, from field to landscape level, has been developed and applied to:

- identify changes in flora communities (species composition)
- evaluate the impact of agriculture practices
- evaluate the influence of landscape context
- provide useful indications to farmers and policy-makers.

From 2015 to 2016, within the framework of a specific grant from the Italian Ministry of Environment,³ the CIHEAM–Bari developed a methodology for identifying and assessing the presence and consistence of crop wild relatives (CWR) in agricultural areas. This led to a state-of-the-art report on the presence of CWR within a nature reserve in relation to the agricultural areas (list of taxa)⁴ and an evaluation aimed at identifying practices and actions for *in-situ* conservation. Activities followed two parallel and complementary lines of development, resulting in a high-quality assessment of the presence of CWR within a nature reserve in relation to the agricultural areas, with useful information for an evaluation aimed at identifying actions for *in-situ* conservation, thereby allowing the perpetuation of the mechanisms of species coevolution to the environmental context and their adaptation to climatic conditions.

Since 1995, CIHEAM Bari has been largely involved in the conservation of agrobiodiversity. This began with a regional project dealing with selection and production of certified propagation material. Currently, germplasm of citrus, stone fruits and grapevine are collected from all over the Mediterranean area and preserved at the institute facilities, covering eight permanent crop species and 225 different varieties. Mother plants are conserved in insect-proof screened houses, safe from diseases and pests. Propagation material is available for present and future generations.

³ Ministero dell'Ambiente e della Tutela del Territorio e del Mare (MATTM), Direzione Generale per la Protezione della Natura e del Mare

⁴ Working_database_Italian_flora_protected (<http://vnr.unipg.it/PGRSecure>), Italian_CWR_WHP_List_protected (<http://vnr.unipg.it/PGRSecure>), Italian_PList_protected (<http://vnr.unipg.it/PGRSecure>), CWR_FAO_database_PERUGIA (by MATTM)

CIHEAM–Bari is currently coordinating the project *Tunisian phyto-genetic resources better conserved and valorized* in the frame of the Italy–Tunisia Technical Cooperation Programme funded by the Italian Ministry of Foreign Affairs (MAECI). The project, which is to run from October 2016 to October 2019, aims to provide institutional support to Tunisia National Gene Bank for the conservation of PGRFA within the framework of implementation of the International Treaty.

Presentation of the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA) and background for the meeting, by Mario Marino, Technical Officer, Secretariat of the International Treaty

The International Treaty is the key policy instrument for coping with the triple challenge of countering the *loss of crop diversity* and *achieving food security* under the *increasing climate change*. Its objectives are the conservation and sustainable use of plant genetic resources for food and agriculture and the fair and equitable sharing of benefits arising out of their use, in harmony with the Convention on Biological Diversity, for sustainable agriculture and food security. The International Treaty is a comprehensive instrument, as the scope for the achievement of its objectives covers the totality of agricultural crops and their wild relatives. It entered into force in 2004, after having been ratified by 40 countries, and became operational in 2007. Today, there are 144 Contracting Parties.

To ensure that PGRFA is effectively conserved for present and future generations and used sustainably, the International Treaty provides effective policy response to the global challenges through its central provisions, such as:

- 1) Conservation and Sustainable Use of PGRFA, two of the three objectives of the International Treaty. Conservation of PGRFA includes collection, characterization, evaluation and documentation of PGRFA. Articles 5 and 6 propose non-exhaustive list of stipulations providing guidance to Contracting Parties regarding measures and activities to be undertaken at the national level for the conservation and sustainable use of crop diversity. Contracting Parties commit themselves to integrating such measures into their agricultural policies, strategies and development programmes. The provisions also stipulate activities leading to conservation and sustainable use of PGRFA, as well as highlighting the importance of approaching *in-situ* and *ex-situ* conservation in a complementary way. While emphasizing the role of farmers, indigenous peoples and local communities for on-farm and *in-situ* conservation, they equally underscore the importance of international collaboration for establishing an efficient network of *ex-situ* collections. More specifically on sustainable use of PGRFA, Article 6 defines several measures for the Contracting Parties, including:
 - promoting the use and conservation of ALL crops
 - encouraging the conservation, use and preservation of local/traditional crops
 - agricultural policies that promote management and conservation of biologically diverse production systems
 - broadening the genetic base of crops and increasing the range of genetic diversity available to farmers
 - strengthening research to enhance, conserve and use biological diversity
 - reviewing regulations concerning variety release and seed distribution.
- 2) The Multilateral System of Access and Benefit-sharing (MLS), which promotes access to a global gene pool that covers 64 of the world’s most important food crops and forages, together accounting for 80 per cent of all human food consumption from plants. It also regulates the equitable sharing of benefits arising out of the use of PGRFA, the third objective of the Treaty. On ratifying the International Treaty, countries agree to make their genetic diversity and related information about the listed crops stored in their public gene banks available to all through the MLS. To date, it covers over 2.3 million samples of plant genetic resources, and

more than 4.2 million accessions have been exchanged using the Treaty's Standard Material Agreement. The Benefit-sharing Fund was established to promote the conservation and use of plant genetic resources on a global scale through technology transfer, capacity building, high-impact projects, and innovative partnerships involving farmers, plant breeders, civil society and other stakeholders. The Fund invests directly in high-impact projects supporting farmers in developing countries to maintain and develop crop diversity in their fields, and assisting farmers and breeders globally to adapt crops to changing needs and demands. There have been three project cycles to date, supporting over 45 countries. The Fourth Cycle of the Fund is due to start in 2018.⁵

- 3) The Global Information System, which is an important area of work of the International Treaty, by connecting and integrating global information and knowledge to strengthen the capacity for PGRFA conservation, management and utilization, as well as providing access to vital information to help farmers, plant breeders, scientists and researchers.

In this two-day informal meeting of experts, the agenda focused on the Programme of Work on Sustainable Use of PGRFA (2016–2019), and as a follow up to the stipulated activity under Resolution 6/2017,⁶ which requested “*the Secretary, in collaboration with other stakeholders, and subject to the availability of financial resources, to: ... iii) explore the possibility of establishing a Joint Programme on biodiversity in agriculture for sustainable use of PGRFA involving relevant international organizations and other stakeholders*”.

As background, a brief introduction to the Programme of Work on Sustainable Use of PGRFA 2016–2019 and Supporting Initiatives (Programme of Work),⁷ and their implementation was presented.

Vision:

PGRFA are used sustainably in farming systems in accordance with Article 6, to enable more inclusive, sustainable and efficient agricultural and food systems at local, national, and international levels.

Mission:

To enhance the sustainable use of plant genetic resources for food and agriculture through effective measures that translate Article 6 of the Treaty into country-level impact.

Goals:

Monitoring, implementing and ensuring technical support

Goal 1. To provide support to Contracting Parties and stakeholders to implement the provisions of Articles 5, 6 and 9 of the Treaty.

Goal 2. To provide policy direction and guidance by monitoring the implementation of the Treaty in relation to sustainable use of PGRFA.

⁵ <http://www.fao.org/plant-treaty/areas-of-work/benefit-sharing-fund/fourthcall/en/>

⁶ Adopted at the Seventh Session of the Governing Body of the International Treaty, 30 October – 3 November 2018, Kigali, Rwanda

⁷ For details see IT/GB-6/15/Res 4 <http://www.fao.org/3/a-bl143e.pdf>

Goal 3. To continue monitoring the technical support and expertise provided by FAO in the area of sustainable use, as foreseen in Article 6 of the Treaty.

Cooperating and improving partnerships

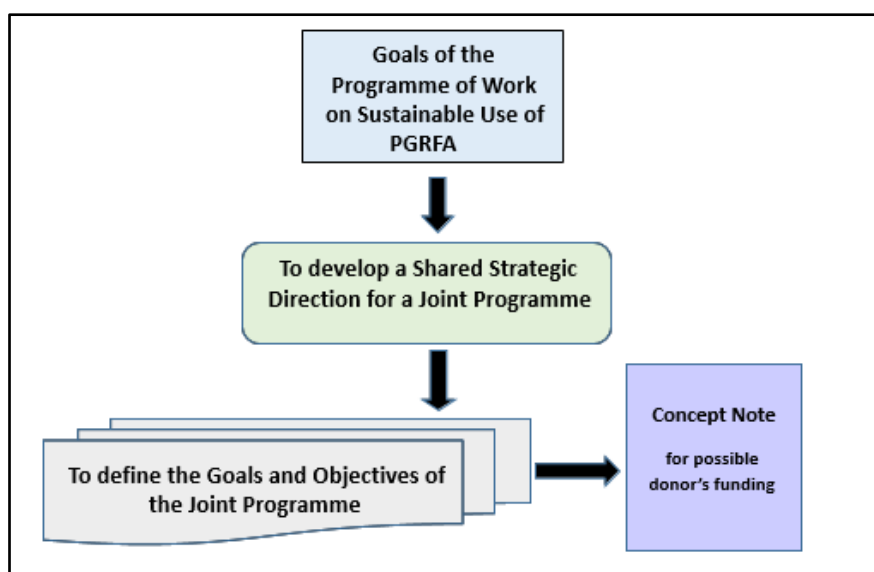
Goal 4. To strengthen collaboration and partnership among stakeholders participating in projects and programmes relevant to the sustainable use of PGRFA, taking into account the CBD's Aichi Biodiversity Targets.

Goal 5. To implement the objectives on non-monetary benefit-sharing and the Priority Activities of the Second Global Plan of Action regarding the sustainable use of PGRFA.

Experts were invited to discuss the progress in the implementation of the Programme of Work and how a Joint Programme could enhance the mission and goals of the Programme of Work beyond 2019. The Secretariat invited the experts to consider the following points:

- experiences, best practices and lessons learned on sustainable use of PGRFA in agriculture;
- common needs and gaps; and
- opportunities for linkages, coordination and collaboration with other relevant programmes, projects and initiatives.

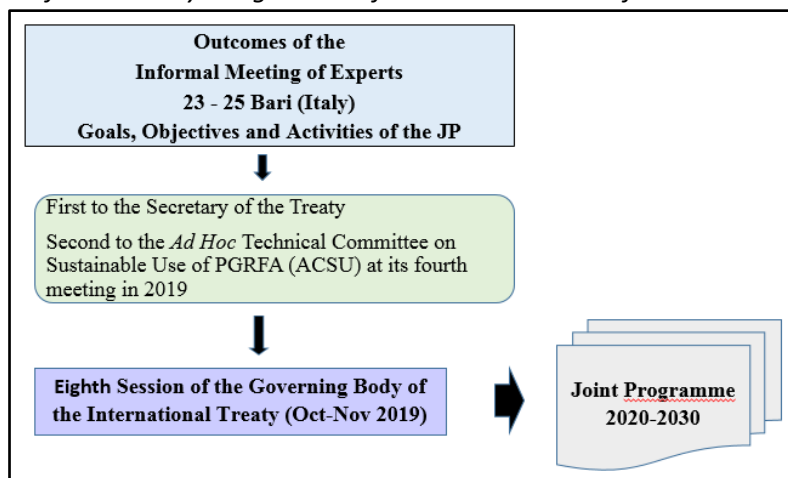
Figure 1: Steps in the conceptualization of a Joint Programme on Biodiversity in Agriculture for the Sustainable Use of PGRFA



In addition to gathering experiences, best practices and lessons learned on the implementation of the Programme of Work, the experts were also invited to:

- provide advice on the elements of the possible scope, objectives and activities of the Joint Programme; and
- explore the development of a concept note of the Joint Programme that could be submitted to donors and funding mechanisms, including the Global Environment Facility, for support.

Figure 2: How the outcomes of the Informal Expert Meeting will feed into the process of conceptualizing a Joint Programme of Biodiversity in Agriculture for Sustainable Use of PGRFA



3.2 Use enhancement of neglected and underutilized species (NUS): experiences, lessons and ways forward, by Stefano Padulosi, Senior Scientist, Bioversity International, Italy

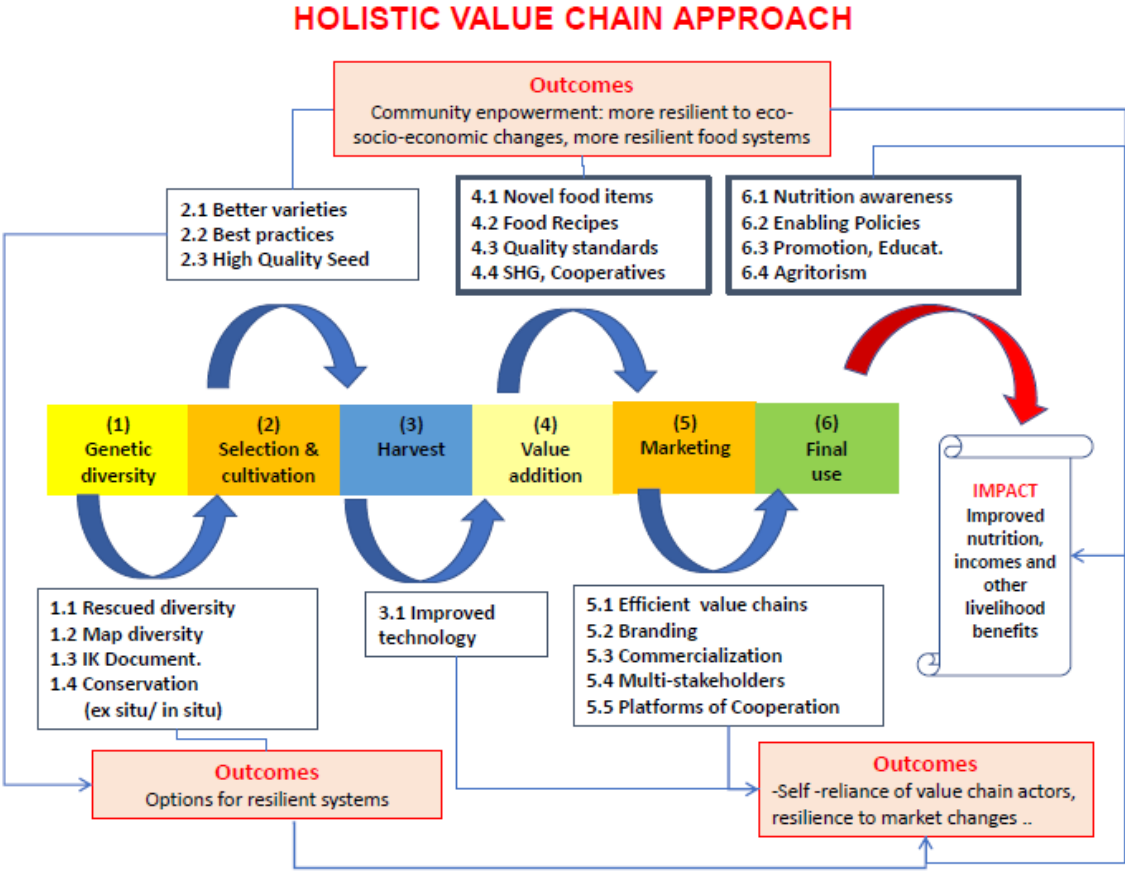
Neglected and underutilized species (NUS) are a global untapped wealth. Whereas the estimated number of cultivated NUS (cereals, pulses, roots/tubers, vegetables, and fruits) in regions of origin and/or diversity of these crops is still relatively high, the number of wild fruits, vegetables and spices is far greater. The richness in wild NUS around the world can be estimated in the order of several thousand species. Their nutritional values are often significant, e.g. in terms of Vitamin C, iron, calcium and beta carotene. Also, many traditional fruits and vegetables play strategic roles in filling the food gap during the lean season.

Enhancing the use of NUS is not only a useful strategy as regards food and nutrition security, it also supports the implementation of such key global policy frameworks as the International Treaty on Plant Genetic Resources for Food and Agriculture (Article 6 in particular); the Sustainable Development Goals (nos. 2, 7, 12, 13, 15 and 17); the Aichi Biodiversity Targets (Target 13 in particular); the FAO Global Plan of Action on PGRFA (in particular Activity 18); and the Strategic Plan 2016–2020 of the United Nations System Standing Committee on Nutrition (UNSCN) (especially with regard to local production, crop diversification and sustainability).

To enhance the use of NUS, a holistic value chain approach has been developed, as shown in the figure below. This approach is guided by inter-disciplinary, inter-sectoral, participatory and gender-sensitive interventions along each stage of the value chain, from farm to fork. Improved access to genetic diversity of NUS increases the options for selection and cultivation. Combined with best practices for selection and cultivation, improved varieties can be developed, and high-quality seed produced. Better harvesting methods expand the opportunities for good harvests. Measures for adding value to crops may result in new food items, more attractive food recipes, quality standards, and more.

Combined with other measures required for maximizing marketing potentials and conducive policies, more effective value chains can increase the distribution of NUS-based products and thereby the utilization of NUS. Greater use of NUS contributes to the conservation-through-use of their genetic resources. The ultimate outcomes are community empowerment through greater resilience to eco-socio-economic changes, and more resilient food systems. The impacts are improved nutrition, incomes and other livelihood benefits.

Figure 3: The Holistic Value Chain Approach



As of today, the management of NUS has threats and weaknesses, as well as strengths and opportunities. A central weakness is that NUS are poorly conserved in *ex-situ* gene banks; they are in fact generally maintained through on-farm conservation and management – which cannot be taken for granted, as farmers are increasingly finding NUS cultivation less profitable. However, compared to many commodity crops, NUS are more resilient and nutritious, and collection of their germplasm should be encouraged. Geographical information systems (GIS) can be very useful tools in making sampling efforts more effective and accurate. Furthermore, simple inexpensive methods available to support community-based conservation activities (e.g. zeolite for keeping moisture under control, relative humidity indicators, improved seed containers) represent additional opportunities for safeguarding these resources on-farm. There is huge scope for characterizing NUS by producing manuals / descriptor lists to enhance the sustainable use of their PGRFA, in ways that are helpful not only for gene-bank managers. All sharing of PGRFA, on-farm conservation, documentation, promotion of local food and celebration of food cultures represent robust actions for enhancing the utilization of NUS in both urban and rural contexts, while generating employment, supporting healthy diets and safeguarding food cultures.

An important opportunity for the future is the possibility of developing Community Seed Banks as hubs for diversity sharing and promotion of nutritious and resilient germplasm and knowledge. However, funding to support sustainable use and Community Seed Banks continues to be very limited.

A further opportunity is the possibility of establishing on-farm participatory documentation systems, to complement *ex-situ* conservation and ensure effective monitoring and management of PGRFA at all levels. However, local communities may not agree on sharing their information.

Other opportunities for improving the management of NUS include the empowerment of local communities, increased self-esteem, better management of species and varieties through community biodiversity registries, support of Farmers' Rights, and improved food sovereignty.

There is considerable scope for bringing back lost varieties, for strengthening resilience, income generation and local food systems – a further important opportunity. Empowerment of farmers in producing their own high-quality seed can eliminate intermediaries, resulting in greater economic benefits for farmers and reduced dependency on the private seed sector.

A weakness is however, the limited capacities of national agricultural research centres (NARS) for conducting NUS market analyses and interventions using inter-disciplinary, participatory and gender sensitive methods. Investing in strengthening these capacities would be highly beneficial. There is also a great need for better documentation of the nutritional profiles of NUS, not least for strategic reasons, in order to support their promotion.

A strategic entry point for greater utilization of NUS is their deployment in support of nutrition-sensitive agriculture, where these resources can be used as single food or to complement food products made with staple crops.

Multi-stakeholder platforms are important for developing self-sustainable systems to improve NUS utilization. Instrumental in this context are partnerships across sectors (e.g. ministries of agriculture, nutrition, health, environment and education) and with the private sector.

Mention should be made of the importance of empowering farmers and local producers, including indigenous peoples, women and youth. Youth deserve special attention, as the future of agriculture and healthy food systems rests upon them; they should be encouraged and supported to become active players in NUS value chains, acting as ambassadors of their popularization and mainstreaming in society.

A major achievement is that the International Fund for Agricultural Development (IFAD), who has been championing research for development for NUS, is now interested in including NUS in its agricultural development programmes. A document providing operational guidance to IFAD on how to mainstream NUS into its programmes to strengthen Nutrition Sensitive Agriculture is currently being finalized.

In conclusion, expertise and experiences do exist scattered across national and international agencies. What is missing is a suitable platform for harnessing and building synergies. Whereas the green revolution relied on a few specific 'silver bullets', a new paradigm needs diversity-driven solutions produced around the world. The NUS domain is an excellent entry point for developing a global on farm conservation network. More 'NUS Champions' are needed for mainstreaming NUS in agriculture and for policy-change advocacy at the national and international levels.

The markets play a key role for sustaining the promotion of NUS: A global labelling mechanism in support of these efforts could have high impact. The important role of chefs and food culture movements (like Slow Food) should not be neglected. The 1970s, 80s and 90s were characterized by intense efforts to ensure *ex-situ* conservation of PGRFA: today, similar endeavours are needed for the promotion of the sustainable use of PGRFA, for sharing best practices and promoting multi-stakeholder collaboration towards this end.

Bioversity International has its own website on NUS, at <http://www.nuscommunity.org>, where resources, initiatives, news and other information from communities around the world are highlighted and shared.

3.3 Sowing Diversity = Harvesting Security: Contributions to Articles 6 and 9, by Gigi Manicad, Programme Leader, Oxfam, the Netherlands

The Sowing Diversity = Harvesting Security (SD=HS) programme basically concerns enabling farmers to improve crop diversity for food security. It is about supporting farmers' seed systems. Organizing farmer field schools is a central approach in enabling farmers to identify and solve problems. Here farmers work together to select, adapt and develop new plant varieties that better fit the needs and preferences of their local communities. More information on the programme is found here: <https://www.sdhsprogram.org/>

The latest information from the programme is a digital version of the key diagnostic tool in Farmer Field Schools, now developed and tested for systematizing gender-disaggregated data on farmers' preferred traits of important, climate-resilient and nutritious crops across various agro-ecosystems.

The SD=HS programme has been working to achieve more outreach and coverage as regards countries, crops, agro-ecologies and peoples. Emphasis has been placed on youth through farmers' field schools, seed enterprises and seeking to break the stigma against neglected and underutilized species (NUS). There has been more focus on disaster risk management and the use of PGRFA. Partnerships and dialogues with the private sector are also underway. Systematized work has been developed for hunger periods, in order to promote NUS, due to their high nutrition content. This is an important measure for poverty alleviation. Participatory knowledge-management systems are under development. The programme also seeks to bring the issue of PGRFA onto the agenda of the United Nations Framework Convention on Climate Change (UNFCCC). The SD=HS programme is particularly relevant for the Plant Treaty.

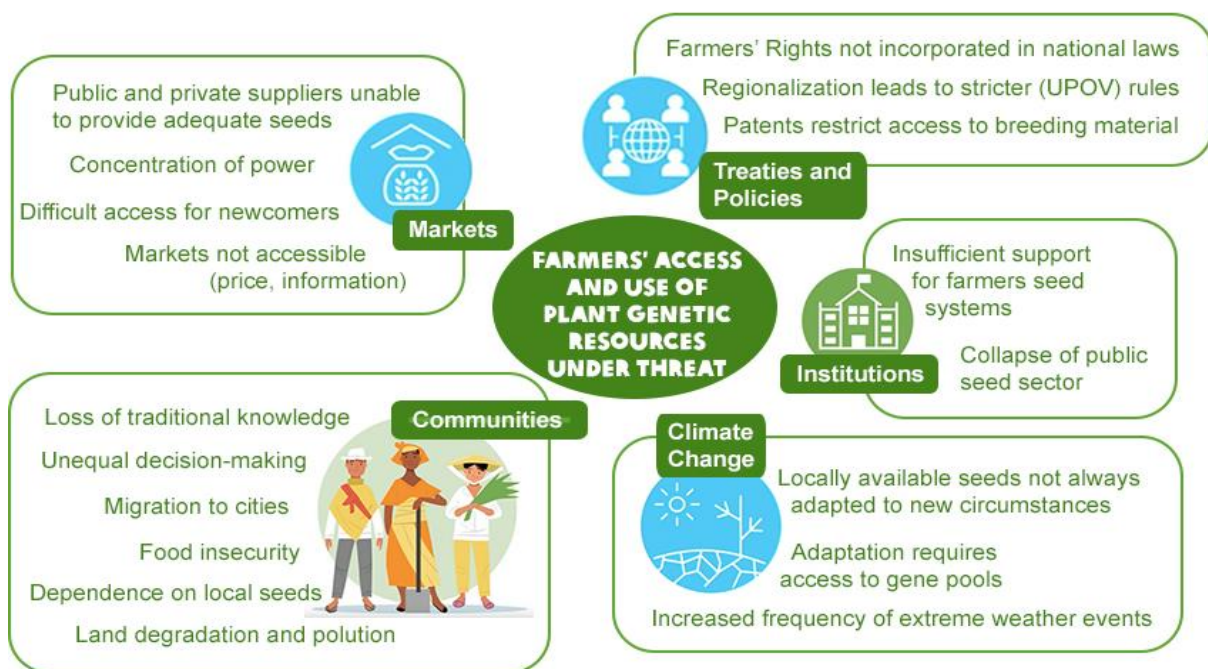
A special project under the programme is Mrs Noah's Ark Project (12 mill EUR). This project links Community Seed Banks globally with each other and with (inter)national breeding institutions and gene banks. Further, it increases access to and benefits from seeds for adaptation to current and future climate-change scenarios.

An important strength of the SD=HS programme is the convincing evidence emerging from aggregated national experiences of the importance of crop genetic diversity for food security and the usefulness of farmers' field schools towards this end. Best practices are being scaled up through collective development, testing and use in multiple locations, agro-ecologies, farming systems, economies and cultures. The strengths of the process are joint efforts, shared resources and risks, strong motivation to succeed via solid multi-stakeholder engagement.

However, the rigour of the work involved may prove too demanding for some civil society organizations and farming communities. The public sector provides limited funding support, but managing PGR programmes requires robust contract, finance and administrative management. It is not always easy to manage diverse institutional cultures of diverse stakeholders. A basic challenge is to ensure timely, appropriate and sustainable access to PGRFA

The threats to the approach and to farmers' access and use of PGRFA in general are illustrated in this figure:

Figure 4: Farmers' access and use of PGRFA under threat



That being said, there are also many opportunities. Farmers may improve market access to high-quality seeds adapted to their needs and preferences. Communities can become involved in developing enabling policies and institutional environments. Communities can harness the traditional knowledge they still possess on how to use PGRFA to enhance food and nutrition security, adapt agriculture to climate change and ensure disaster management. NUS are particularly important in this regard.

Gaps and needs include:

- Identification and matching farmers' preferred traits with priorities of breeding institutions on a large scale.
- More expertise is required to understand and support women in their work related to seeds
- In general, knowledge generation needs to be more inclusive
- More private sector investment and engagement is needed in the seeds market for smallholder farmers

3.4 Experiences and best practices on the sustainable use of PGRFA: UNDP's Work on Agrobiodiversity, by Santiago Carrizosa, Senior Technical Advisor and Global Advisor on ABS, UNDP, Panama

The global agro-biodiversity portfolio of the United Nations Development Programme (UNDP) comprises 24 national projects in 19 countries. This presentation focuses is on three projects:

- Participatory *in-situ* conservation and sustainable use of agrobiodiversity in Hainan, China
- Conservation and sustainable use of globally important agrobiodiversity in Azerbaijan
- Promoting the application of the Nagoya Protocol through the development of nature-based products, benefit-sharing and biodiversity conservation in Costa Rica.

The projects have been developed in response to an analysis of strengths, weaknesses, opportunities and threats (SWOT). Here the main features of the SWOT analyses will be highlighted for each project, followed by presentations of the resulting key components of the projects. Based on the experiences from these three projects, take-away messages of relevance for a joint programme on biodiversity in agriculture for sustainable use of PGRFA are derived.

Participatory in-situ conservation and sustainable use of agrobiodiversity in Hainan, China, is a project focused on Shanlan rice and wild litchi, as well as some other crops.

The SWOT analysis identified the key threats to PGRFA in the area as deforestation, competing land uses, overgrazing and urbanization. Invasive alien species were also deemed a threat to PGRFA; furthermore, the current modernization of the agricultural sector was seen as detrimental to the maintenance of local crop varieties and livestock breeds.

Among the central weaknesses to which the project was designed to respond was the lack of cohesive inter-sectoral coordination mechanisms related to PGRFA management. Incentives for the conservation and sustainable use of PGRFA were found to be lacking. In general, there was limited capacity and awareness with regard to conservation and sustainable use of PGRFA in Hainan.

Substantial strengths were identified as points of departure for a project. An eco-province strategic framework currently under implementation has provided evidence of strong political will. A plan to control invasive alien species was in place. There were also various *in-situ* and *ex-situ* conservation and sustainable use activities in the province.

Three main opportunities were identified for improving PGRFA management in Hainan:

- If all agencies could work in an integrated and strategic fashion, that would substantially improve the framework conditions for sustainable use of PGRFA in Hainan;
- The establishment of viable markets and marketing networks for traditional crops and livestock would enhance the possibilities for farmers to engage in the sustainable use of PGRFA
- Demonstrating the economic potential of traditional knowledge, as well as the importance of *in-situ* agrobiodiversity to food security and poverty alleviation, were seen as keys to achieving sustainable use of PGRFA in Hainan.

On this background, a central component of the project is to strengthen the provincial framework by developing policies to support *in-situ* agrobiodiversity conservation, integrated across sectors within the framework of Hainan's Eco-province Strategy. The project further aims at demonstrating sustainable incentive mechanisms for *in-situ* conservation and sustainable use of agrobiodiversity in order to ensure that some 760 hectares of agricultural landscapes protect endemic species and varieties of crops. Other central project components include mainstreaming and institutional capacity strengthening, in order to increase the capacities of agricultural and environmental agencies, research organizations, NGOs and farmers organizations for *in-situ* conservation and sustainable use of agrobiodiversity. Finally, awareness-raising and knowledge management are important components. Here the establishment of a provincial agrobiodiversity database offers ongoing monitoring of agroecosystems health, information on indigenous varieties, farming practices and the impact of various incentive mechanisms.

Conservation and sustainable use of globally important agrobiodiversity in Azerbaijan is a project focused on wheat, barley, vegetable and forage crops mainly.

The SWOT analysis showed a main threat to be the distribution of uniform exotic crop varieties that displace the genetic diversity of indigenous crops. Other threats included the general degradation of agro-ecological systems and repeated drought in some areas of high crop diversification.

Among the weaknesses that the project set out to address were the underutilization of wild crop relatives and landraces. Limited institutional capacities to support the adoption of native crops were seen to be an important related weakness, together with the fact that there were few fiscal and market incentives for growing native crops and market products.

Among the most important strengths on which a project could build is the fact that Azerbaijan has taken measures to reduce food market dependency on imports via a State Programme on Reliable Food Supply. Moreover, a State Seed Fund has been established.

The main opportunities, as identified in the SWOT analysis, involved strengthening the delivery of relevant business and financial services, and improving access to niche markets and value-added products.

From this SWOT analysis, central components for the project were developed. In order to support the *in-situ* and *ex-situ* conservation of agro-biodiversity, field gene banks for at least 20 crop landraces were to be established and maintained. Importantly, the capacity to improve agricultural productivity and reduce land degradation was to be strengthened, and at least 300 agricultural staff and farmers should be trained in sustainable agricultural practices. Finally, incentives and markets to improve the uptake and commercial viability of native crops were to be developed, to result in at least 10 local farmers concluding supply agreements and gaining improved access to markets.

Promoting the application of the Nagoya Protocol through the development of nature-based products, benefit-sharing and biodiversity conservation in Costa Rica is a project focused on research and development of an environmentally friendly crop-protection agent to contribute to sustainable agricultural practices. This crop-protection agent was found in the seeds of a tree from the legume family, *Lonchocarpus* spp. Biologists observed that ants did not eat the seeds of this tree; and this led to research showing that the seeds included a compound known as DMDP. Further research found that DMDP was effective against nematodes from crops like as bananas and coffee.

A SWOT analysis showed the key threat in the area to be the impact of unsustainable agriculture activities involving chemical pesticides/herbicides which pollute the soil and water. The main weakness was the limited capacity for negotiating agreements on access to such crop-protection agents and the sharing of the benefits arising from their use (ABS) following prior informed consent and on mutually agreed terms.

A major strength was identified as the scientific basis for the utilization of such naturally occurring crop protection-agents, which provided a solid basis for a project.

A central opportunity was that over the years Costa Rica has built local capacities for research and development of products derived from biodiversity, including genetic resources. The government also perceived this project as an opportunity to strengthen the national technological platform based on the domestic natural capital to generate incomes through an ABS scheme.

Following this SWOT analysis, it was decided to apply the nature-based crop protection agent (DMDP) to two crops of economic importance to Costa Rica, to prove the concept. In particular, nematodes that affect those two crops were targeted and the project aimed at testing 2 formulations of DMDP evaluated in coffee in order to see if they would test positive with regard to destructive nematodes in the two selected crops. A further important component of the project was optimizing, scaling up and licensing crop-protection agents. Here the target was set to 0.5kg of DMDP per month from 200kg of dried plant material of *Lonchocarpus* spp. A central component was the sharing benefits derived from the use of these genetic resources: both monetary and non-monetary benefits were to be negotiated. Finally, increasing the national capacity to ratify and implement the Nagoya Protocol under the

Convention on Biological Diversity was important, and a central manifestation would be that on-line procedures for ABS applications were brought in place, as targeted by the project.

The take-away messages from these experiences are the following: (1) To enhance the sustainable use of PGRFA, it is vital to have strategies for *in-situ* as well as *ex-situ* agrobiodiversity conservation strategies and sustainable use, (2) Fiscal and market incentives are central to stimulate the use of PGRFA; (3) It is important to have strategies to control Invasive Alien Species; (4) Science and technology need to be developed for innovation, sustainable use and conservation of plant genetic resources for food and agriculture; (4) Coherent policies across sectors are crucial, and inter-sectoral policy reforms are necessary.

3.5 Maintaining and establishing community seed banks to ensure on-farm conservation of farmers' varieties in Ethiopia: The PR-80 Project, by Debissa Lemessa, Director for Forest and Rangeland, Ethiopian Biodiversity Institute, Ethiopia

The PR-80 Project was among the projects supported by the Benefit-Sharing Fund (BSF) during the second funding cycle. Implemented from 2014 until 2016, it aimed at maintaining and establishing community seed banks to ensure on-farm conservation of farmers' varieties in Ethiopia, with a total budget of USD 300,000.

Project objectives were to promote on-farm conservation of farmers' varieties by empowering local farming communities; to establish two new community seed banks and maintain eight community seed banks previously established by the Ethiopian Biodiversity Institute (funded by GEF); to ensure secure seed sources of farmers' varieties for the farming communities; and to raise awareness among stakeholders on the conservation of farmers' varieties.

The objectives were achieved during the project period. Two new community seed banks were established, and the eight previously established community seed banks were maintained. In addition, two farmers associations to conserve farmers' varieties were formed and a seed exchange scheme among the farming communities was established, to ensure the sustainable on-farm conservation of the farmers' varieties through *in-situ* on-farm conservation. For the community seed banks, bylaws, agreements and interest rates of seed loans were developed and applied by members of the community seed banks.

A major output was that seventeen quintals (1.7 tonnes) of seeds of eight crops were purchased from farmers and distributed to the community seed banks. Further, forty varieties of three crop species were restored through sustainable use on-farm. They were provided from the national gene bank of Ethiopian Biodiversity Institute. Radio broadcasts, workshops, trainings and the distribution of flyers promoted awareness of the importance of sustainable use of PGRFA. Some 380 farmers, 14 extension agents and 27 local experts participated in such measures.

A notable project impact has been the diversification of production. Farmers have gained access to an increased number of varieties that they can grow, thereby enhancing food security. Indeed, this project has shown that farmers' varieties are normally preferred by farmers, for their resistance to diseases, as well as for their taste, aroma, quality and adaptability to climate change. These varieties contribute to seed security in case of crop failure, for instance due to climate change. The project also impacted on science, by contributing to the selection, characterization, evaluation, breeding and crossing of crops. The community seed banks were recognized as a source of seed also for breeders who develop improved varieties.

Through its achievements, the project has contributed to the implementation of the Plant Treaty as regards the conservation of PGRFA (Article 5), the sustainable use of PGRFA (Article 6), national commitments and international cooperation (Article 7) and Farmers' Rights (Article 9).

However, there are challenges to the sustained achievements from the project. The agricultural policies of the national government are not coherent, and its strategy for ensuring food security and agro-industrial production promotes the transition to improved varieties – eliminating farmers' varieties from the fields. The rapid population growth in Ethiopia results in multiple pressures on land use, both in terms of housing and intensified agricultural methods. Moreover, although farmers' varieties are often more drought-resistant, recurrent severe droughts represent a threat also to them. An important challenge is the mistaken perception among many farmers as well as political decision-makers that farmers' varieties have lower yields as compared to improved varieties.

Several opportunities have arisen from the project. For example, on-farm conservation and sustainable use of farmers' varieties are integrated in the *in-situ* conservation strategy of the Ethiopian Biodiversity Institute. The Institute also has seven centres in various regions and agroecosystems, and currently manages more than 27 community seed banks. Collaboration with stakeholders from different sectors is important: in particular the collaboration between community seed banks and agricultural development agencies, cooperatives, land administration, seed industry and urban development initiatives has proved to be promising. Finally, the seed-loan system is already deeply rooted in the culture of farming communities and is therefore easily understood.

Several lessons have been learned, not least the value of establishing strong links with different stakeholders. It was also important to apply a holistic approach to the sustainable use of PGRFA, including natural resource conservation, energy production, bee-keeping and other aspects. Also important was establishing a strong network among community seed banks to ensure the future sustainability of these institutions.

3.6 The Swiss National Plan of Action for the Conservation and Sustainable Use of Plant Genetic Resources for Food and Agriculture, by Christian Eigenmann, Coordinator NPA-PGRFA plant genetic resources, Genetic Resources and Technologies Unit, Federal Office for Agriculture, Switzerland

In Switzerland, a special ordinance or regulation for PGRFA provides for measures to ensure the conservation of PGRFA and regulates the management of the national gene bank. This ordinance also promotes the sustainable use of PGRFA and regulates the funding of projects for this purpose. Finally, it sets out how access to PGRFA in the Swiss national gene bank can be obtained, on the conditions of the Standard Material Transfer Agreement under the Plant Treaty.

The Federal Office of Agriculture is responsible for strategies, guidelines, prioritization, project approval, coordination and control as regards the conservation and sustainable use of PGRFA within the National Plan of Action for the conservation and sustainable use of plant genetic resources for food and agriculture (NAP-PGRFA). However, the strategies and guidelines of the NAP-PGRFA in Switzerland are defined and implemented based on a multi-stakeholder approach together with a wide range of private and public institutions – all members of, and coordinated by, the [Swiss Association for the Conservation of Cultivated Plants](#). These partners include seed-saver organizations like ProSpecieRara, arboretums, seed shops, breeding and science institutions, agricultural organizations and other relevant stakeholder organizations. They all contribute to the realization of the National Action Plan, helping to ensure the conservation of plant genetic resources for food and agriculture.

The national gene bank for PGRFA actually consists of 56 collections managed by private and public organizations in various parts of the country. Agroscope, the Swiss centre of excellence in agricultural research, affiliated with the Federal Office for Agriculture, is working to ensure the conservation of seed-saved species in the biggest collection within the National Gene Bank of Switzerland. This collaboration with many partners helps to ensure conservation and the sustainable use of PGRFA.

The Swiss National Database on the Conservation of Plant Genetic Resources serves as a valuable instrument towards this end, as it provides information on large numbers of varieties of vegetables, berries, potatoes, other major crops, aromatic and medicinal plants, grapevine, fruits and forage plants (see: www.bdn.ch).

Sustainable use within the National Plan of Action aims at promoting a broad genetic diversity of PGRFA with positive effects for diverse, innovative or sustainable production, based on locally adapted varieties. Key measures for the sustainable use of PGRFA include the characterization and evaluation of plant genetic resources, making available propagation material according to phytosanitary requirements, and the enhancement of PGRFA for niche production. There is also considerable emphasis on public relations, with demonstration gardens, awareness raising and an annual national conference on PGRFA.

There are certain conditions for funding projects for sustainable use under the National Plan of Action on PGRFA. First, funding is provided primarily as ‘seed money’ to get started, and not as permanent subsidization. Funding is limited to a maximum of eight years. There must be a high level of self- and third-party financing. Solidarity contributions to the Benefit-Sharing Fund under the Plant Treaty are also encouraged. In addition, recipients of project funds are encouraged to deposit genetic material arising from their work in the national gene bank.

Examples of projects that have received funding under the National Plan of Action for PGRFA include the following (for a complete list see <https://www.bdn.ch/pan/>):

- evaluation of grain legumes and their potential use
- development of new niche varieties in vegetables
- improvement of pear-shaped onions, ‘Gniff’ carrots and turnips for niche markets
- traditional tomato varieties: breeding for increased disease tolerance, against *Phytophthora infestans*
- traditional potato varieties: Increasing disease tolerance against *Phytophthora infestans*
- positive mass selection in two types of spelt
- sustainable use of land maize varieties
- promoting sustainable use of NAP-PGREL varieties through crowd funding
- using apple genetic resources for organic farming
- evaluation of genetic diversity in emmer wheat (*Triticum dicoccum*)
- evaluation of genetic resources for developing an anthracnose-tolerant white lupine
- vineyard peaches – evaluation of the most valuable varieties of Switzerland
- seed community breeding ‘Sagezu’
- development of new niche varieties of tuber fennel and Brussels sprouts
- securing and using Swiss sorb tree varieties
- promotion of a local variety of artichoke *l'artichaut violet de Plainpalais*

The National Plan of Action for PGRFA is based on Articles 5, 6 and 9 of the Plant Treaty, i.e. on conservation, sustainable use and Farmers’ Rights. Experience from implementation of the National Action Plan has shown the following factors to have conducive effects:

- maintenance of diverse farming systems

- participatory plant breeding / participatory varietal selection
- farmer innovation / Farmers' Rights
- maintenance / marketing of landraces / farmers' varieties
- use of under-utilized species
- conservation of plant genetic diversity, *in situ* and *ex situ*
- use of a wide diversity of species and varieties on-farm
- seed (exchange) networks
- recognition of the value of traditional knowledge
- access to plant genetic diversity for use in breeding programmes
- access to information on plant genetic diversity
- policy amendment/development leading to conservation of crop diversity
- knowledge management and capacity building.

The seed law in Switzerland regulates variety release and seed distribution in harmony with EU legislation. Thereby Swiss farmers and breeders have access to all registered varieties in Europe. In addition, Swiss legislation allows the propagation of niche varieties within Switzerland, including conservation varieties. Whereas the amateur sector is not covered by these regulations, individual gardeners are free to use a wide diversity of varieties. All in all, the Swiss legislation is adapted to the need of different systems for seed and propagation material and to the needs of various user groups of PGRFA, supplying them with appropriate and diverse varieties or PGRFA. Moreover, the *farmers' privilege* is recognized in Swiss national legislation on plant variety protection.

Finally, the plant breeding strategy towards 2050 has been noted as a contributing instrument for the sustainable use of PGRFA. Developed by the Federal Office of Agriculture involving a multi-stakeholder working group with representatives of breeders and scientists, farmers' associations, other professional associations and seed producers, through a consensual process, it defines the common targets for public breeding in Switzerland until 2050.

The strengths of the Swiss situation are conducive policies for the sustainable use, funding opportunities through the National Plan of Action for PGRFA and the fact that different seed systems exist side by side in a complementary way. Moreover, it was possible to develop this programme for sustainable use of PGRFA on the basis of a broad-based inventory. The main weakness is the massive coordination effort needed to ensure conservation of PGRFA within this programme with so many stakeholders. A possible threat to the sustainable use of older varieties may be that the agronomic potential of such varieties lags behind their marketing potential. The most important opportunities concern NGOs that engage, deeply and enthusiastically, in the conservation and sustainable use of PGRFA; generally coherent policies; and the huge marketing opportunities for varieties with special traits or stories.

3.7 The Benefit-sharing Fund: experiences and lessons learned, by Mary Jane Ramos dela Cruz, Technical Officer, Secretariat of the International Treaty, and Andrew Mushita, Director, Community Technology Development Trust (CTDT), Zimbabwe

The International Treaty's Benefit-sharing Fund (BSF) is a unique mechanism which finances high-impact projects supporting farmers in developing countries, addressing food security, adaptation to climate change and conservation and sustainable use of agricultural biodiversity. It gives the international community an opportunity to advance implementation of the Treaty's objectives, contribute to the attainment of the Sustainable Development Goals and the Aichi Biodiversity Targets, and transform the lives of smallholder farmers in developing countries.

The BSF, operational since 2009, supports the management and conservation of plant genetic resources for food and agriculture (PGRFA) for the benefit of farmers in developing countries. It invests directly in high-impact projects supporting farmers in developing countries who conserve and utilize crop diversity in their fields, as well as assisting farmers and breeders in identifying specific traits and producing new varieties that respond to the changing needs and demands caused by climate change and other environmental challenges. To date, funding has been contributed by Australia, Austria, Canada, the EU, the European Seed Association, Germany, IFAD, Indonesia, Italy, Norway, Spain, Sweden and Switzerland.

The Governing Body of the International Treaty has established three basic priorities for the BSF. In accordance with the guidance provided in Article 13.4 of the Treaty, to ensure a balanced approach to the implementation of the Treaty, these priorities are:

- information exchange, technology transfer and capacity building
- managing and conserving plant genetic resources on-farm
- the sustainable use of plant genetic resources

More than USD 20 million has been invested, in three project cycles. In all, 61 projects have been funded in more than 45 developing countries, supporting participatory plant breeding, development, testing and promotion of climate-ready crop varieties, development and transfer of relevant PGRFA technologies, training and capacity building. The fourth cycle of the BSF was launched in 2017, and the evaluation of proposals is underway.

Since its launch in 2009, a modest start with few small grant projects, the BSF has proven to be a useful mechanism for promoting the realization of the objectives of the International Treaty. Among its important progress and achievements, we may note the following:

- More than 1 million farmers, researchers, technicians and policy-makers have benefited directly from project activities
- Some 215 grassroots organizations have been directly involved in field activities funded through the BSF
- Approximately 300 partner institutions are involved in BSF-funded projects, including universities and institutes, international organizations, governmental and non-governmental organizations
- Around 7000 varieties, mostly important staple food crops, have been evaluated jointly by farmers and scientists with a view to utilizing and improving crop performance
- More than 2300 varieties have been subjected to molecular characterization conducted by research institutions; identified genotypes have been incorporated for resistances to biotic and abiotic stresses
- The Fund has supported the development of regional and national strategic action plans for PGRFA aimed at helping countries to cope with climate change, achieve sustainable food production and reduce the risks to food security and nutrition.

Moreover, BSF-funded projects have facilitated farmers' access to germplasm and breeding materials, provided training and capacity building for farming communities, contributed to the empowering of women farmers as regards the conservation and sustainable use of PGRFA, contributed to securing food and nutrition, biodiverse production systems and greater resilience against climate change. An important element in this context has been the reintroduction of local crop varieties that can withstand drought, pest and diseases.

A highlighted example of projects supported by the BSF is the multi-country project in Zimbabwe, Zambia and Malawi. This project is directed towards policies as well as practices and aims to facilitate

the implementation of strategic action plans for plant genetic resources conservation and use, in order to improve food and nutritional security in these three countries, in light of climate change.

Under this project, 174 demonstration plots have been established to promote the use of the targeted, climate-resilient crop varieties from six crops: sorghum, cowpeas, pearl millet, finger millet, bambara nuts and pigeon peas. A rapidly increasing number of Farmers' Field Schools have been organized: in 2017/2018, altogether 173. The aim here is to improve farmers' skills to conduct participatory varietal selection and enhancement, as well as seed multiplication, and to cultivate diversity plots. Important providers of germplasm for the project are national, regional and international gene banks, especially ICRISAT and CIMMYT, which have been providing advanced segregating lines to smallholder farmers. To date, the project has repatriated 153 lost crop varieties from farmers' fields. These crop varieties were obtained from national, regional and international gene banks and regenerated by farmers during the cropping seasons 2016–2018.

The BSF multi-country project in Zimbabwe, Zambia and Malawi has benefited the local communities in various ways:

- connection with community seed banks and national, regional and international gene banks
- learning from collaboration and partnerships with the CG System (CIMMYT and ICRISAT) and other international organizations;
- access to germplasm from national crop improvement programmes for restoration and enhancement
- learning from cooperation and partnerships in research and development
- involvement in capacity building, which not only improves their knowledge and skills, but also empowers farmers (both men and women), as well as local authorities (chiefs and headmen) and farmers' organizations
- possibilities for engaging in dialogue with policy-makers at the national level
- access to new technologies through participation in field days to showcase such technologies
- participation in annual food and seed fairs and finally,
- the facilitation of on-farm seed production, exchange, and sharing of seeds between and among farmers contributes to the implementation of Farmers' Rights.

As almost 10 years have passed since the BSF came into operation, it is possible to derive experiences and lessons learned about best practices as regards supporting smallholder farmers. BSF-supported projects have promoted a better understanding of conservation and sustainable use of PGRFA in the countries in which they operate. They have also contributed to boosting the synergies inherent in complementing of *in-situ* on-farm with *ex-situ* conservation strategies. Projects supported by the BSF have highlighted practical approaches that enable smallholder farmers to conserve and develop crop genetic resources for food and agriculture. More generally, BSF-supported projects have shown that participatory approaches such as farmers' field schools, community seed banks, food and seed fairs, field days and participatory plant breeding are promising ways to support and promote the sustainable use of PGRFA.

Donors to the BSF are encouraged by these developments. Juan Manuel Velasco, Policy Officer, DEVCO, EU, put it this way: 'The European Union is pleased to partner with the International Treaty on Plant Genetic Resources for Food and Agriculture to help farmers cope with the impact of climate change'. Hanne Maren Blåfjelldal, Deputy Minister for Food and Agriculture of Norway, visited a BSF-supported project in Malawi in March 2018. She said: 'What the farmers in Malawi's Mzuzu district are doing in their fields through this Benefit-Sharing Fund project is important for their families and their local communities, but also for the global community.'

3.8 Summary of presentations and discussions as background for SWOT analysis, by the facilitators

After a brief discussion of the presentations, including a short presentation of the Joint Capacity Building Programme on the Implementation of Farmers' Rights by Juanita Chaves Posada from the Global Forum on Agricultural Research and Innovation (GFAR), the facilitators summarized the presentations and discussion as a basis for the following SWOT analysis.

The facilitators thanked the presenters for sharing their experience and thoughts on the relevance of developing a joint programme on biodiversity in agriculture for sustainable use of PGRFA. Several common lessons and themes emerged from these presentations.

The speech of welcome by Treaty Secretary Kent Nnadozie, and the presentations of Mario Marino and Mary Jane Ramos de la Cruz of the Secretariat on the Programme of Work on Sustainable Use of PGRFA and on the Benefit-sharing Fund (the latter presented in collaboration with Andrew Mushita) highlighted the importance of biological and institutional linkages in connection with the sustainable use of PGRFA. For example, the Secretary noted the importance of recognizing the links between the sustainable use of PGRFA and water scarcity, nutrition, climate and sustainable agricultural practices that do not harm the environment. The joint presentation on the Benefit-Sharing Fund discussed the explicit reference to advancing the ITPGRFA objectives as well as the importance of the projects funded to achieving the CBD Aichi Targets and the Sustainable Development Goals. In presenting the accomplishments of the Programme of Work on Sustainable Use of PGRFA, Mario Marino noted that Articles 5 and 6 of the Treaty provide a non-exhaustive list of measures to be taken by Contracting Parties; he encouraged the meeting to consider common needs, gaps, as well as opportunities for partnerships and collaboration.

Viewing the presentations through the lens of a joint programme of work, common lessons can be said to fall into four general categories. The first category highlights the context in which the sustainable use of PGRFA must be considered, if Article 6 and related articles are to be implemented successfully. The second category addresses what this implies as regards what needs to be done to ensure that the sustainable use of PGRFA is part of the larger context which was identified. The third category lists the forums the presentations identified as important for reciprocal collaboration in safeguarding the sustainable use of PGRFA. Finally, the fourth category identifies some of the tools noted by presenters as important to collaboration aimed at supporting the sustainable use of PGRFA.

(1) The sustainable use of PGRFA should be seen in the context of:

- A holistic view of development and the need for coherent policies to reflect this (e.g. on water, nutrition, land and natural resource management, poverty alleviation, and employment). Lack of policy coherence was a challenge mentioned in many presentations.
- A problem-solving approach: for instance, with hunger periods, what is the role of the sustainable use of PGRFA in solving this problem; when there is problem with growing obesity and micronutrient deficiency, what is the role of PGRFA and particularly neglected and underutilized species in this context?
- Planning and implementation at the landscape or territorial level (as with the UNDP project in Hainan and its Eco-Province Strategic Framework).
- Effective inter-sectoral coordination, which was described as a challenge in several presentations.

(2) To address the sustainable use of PGRFA in a larger context there is a need for:

- Inclusive policy development and implementation, including capacity development for farmers' engagement, particularly women (e.g. the multi-country project in Malawi, Zambia and Zimbabwe supported by the Benefit-Sharing Fund);

- Identifying and preventing risks, and managing tensions: competing priorities and even priorities at cross-purposes were noted as challenges to the sustainable use of PGRFA in several presentations;
 - Raising awareness (e.g., an emphasis on public relations and outreach helped to make the Swiss seed legislation and National Action Plan adapted to the needs of different systems for seed and propagation material and the needs of various types of users);
 - Increasing political will: several presentations noted that some interests were more powerful than others and that the sustainable use of PGRFA requires greater awareness of its importance but also political will as reflected in policy and action;
 - Communicating and disseminating evidence widely (for instance, one strength of the Oxfam Sowing Diversity = Harvesting Security programme is the convincing evidence from aggregated national experiences that is communicated to the national level and beyond.)
- (3) Key institutions, forums or types of forums to consider in formulating a formal joint programme on biodiversity in agriculture for sustainable use of PGRFA that goes beyond project-based cooperation:
- CBD programmes on nutrition and on Aichi Targets (for instance, with Bioversity International's programme on neglected and underutilized species, partnerships were seen as important to its progress)
 - The UN Department of Economic and Social Affairs and UN Sustainable Development Goals, where there is ongoing work with NGOs, UN agencies, donors and governments on interlinkages
 - The UN Standing Committee on Nutrition
 - Disaster Relief Agencies (for instance, BSF-supported projects with repatriation components have provided opportunities for collaboration)
 - The United Nations Framework Convention on Climate Change (the Oxfam Novib programme is working to raise the profile of the important linkage between sustainable use of PGRFA and climate resilience)
 - Urban- and territorially-focused institutions (e.g. UN Habitat, The New Urban Agenda, guidelines on urban and rural linkages being developed with UN agencies)
 - The United Nations Convention to Combat Desertification
 - Global Forum on Agricultural Research and Innovation (GFAR).
- (4) Possible tools through which collaboration may take place include:
- Networks and open knowledge platforms;
 - Policy dialogues and platforms.

All in all, the presentations and the discussion might be summarized along five parameters to provide the basis for SWOT analyses in the subsequent session:

1. Scope: Sustainable use of PGRFA covers crops as well as their wild relatives – an important point to keep in mind for a joint programme on sustainable use of PGRFA. Further, sustainable use of PGRFA and the conservation of PGRFA *ex-situ*, *in-situ* and on-farm are interdependent measures and need to be approached in an integrated manner. It should also be borne in mind that sustainable use is not only about maintaining varieties: it also involves innovation and further developing varieties and the diversity of PGRFA. Sustainable use of PGRFA must be seen in the broader context of a holistic approach to sustainable development, as a central factor for poverty alleviation, water use, food and nutrition security, and for adapting agriculture to the extreme and uncertain environmental conditions resulting from climate change.

2. Levels: Management related to the sustainable use of PGRFA is performed in various ways at all levels in society, from the local to the national levels and on to the regional and international. It is important to be aware of the differing functions at the various levels and across scales. Networking is essential for improving the management of PGRFA across scales, as well as countries and regions.
3. Actors: Farmers are central actors as regards sustainable use of PGRFA. Farmers engaged with agrobiodiversity are custodians and often innovators of PGRFA in the field. However, experience has shown that many different stakeholders are involved in best practices of sustainable PGRFA use, including scientists, breeders, extension service officers, marketing experts, communication specialists, and policy decision-makers. Multi-stakeholder collaboration is essential for the sustainable use of PGRFA.
4. Platforms: Most platforms that promote the sustainable use of PGRFA have a participatory character. These platforms include community seed banks, community biodiversity registries, farmers' field schools, participatory plant breeding schemes, seed fairs, field days and national programmes for the conservation and sustainable use of PGRFA. In particular, it was found that community seed banks provide promising features as platform for the sustainable use of PGRFA, as they are often considered centres of excellences facilitating information exchange, knowledge management, and the interface with agricultural research institutions as a mechanism for accessing and developing new crop varieties and populations as a strategy for benefit sharing. They also promote on-farm conservation and sustainable use of PGRFA and strengthen farmers' seed exchange through seed fairs and enhancing crop diversification in the face of climate change. As such they can be considered a kind of meta platforms. Platforms are normally established at the local level, but may have potentials of being scaled up to the national level;
5. Actions: Many types of activities were mentioned in the presentations and discussions. They can be grouped in four main categories: (a) political/policy measures enabling the sustainable use of PGRFA, such as developing national strategies and action plans, establishing targeted programmes and revising legislation; (b) economic measures, such as establishing fiscal and financial mechanisms as well as market incentives and structures, supporting the sustainable use of PGRFA; (c) practical measures, such as organizing community seed banks, farmer field schools, or participatory plant breeding; and (d) supportive measures, such as research.

Participants also highlighted the importance of keeping the international context in mind, in particular other international instruments relevant for the sustainable use of PGRFA, with a view to potential synergies. They emphasized the opportunity that developing a joint programme can provide for the Treaty Secretariat to expand its collaboration and partnerships with other international organizations and stakeholders with shared and complementary interests.

The presentations and discussions all noted the opportunities provided by the call for developing a joint programme of work which could move beyond project-based funding to a robust and enduring global strategic programme of work.

4 SWOT analysis

The main goal of the meeting was to define substantial elements of a possible joint programme on biodiversity in agriculture for sustainable use of PGRFA, for the period 2020–2030. The presentations above, and exchanges among the participants and their experiences in the field provided the basis for this task. Participants were invited to undertake a modified analysis of strengths, weaknesses, opportunities and threats (SWOT) concerning how the sustainable use of PGRFA is currently managed

at the domestic level, as a point of departure for identifying gaps and needs and defining goals and central elements of a joint programme.

4.1 The SWOT methodology

SWOT analysis is a framework for identifying and analysing internal and external factors that can have an impact on the viability of a project or other endeavour. It is used as a strategic planning exercise and analyses four elements:

- Strengths: Internal attributes and resources that support a successful outcome
- Weaknesses: Internal attributes and resources that work against a successful outcome
- Opportunities: External factors that the can be capitalized on or used as an advantage
- Threats: External factors that could jeopardize success.

Various SWOT templates are in use. The following matrix was applied for the meeting, with the order of the elements changed for the purpose of the analysis, starting with threats and weaknesses and ending with strengths and opportunities:

Figure 5: The approach to SWOT analysis used in the expert meeting

	Enhancing factors	Inhibiting factors
Internal factors	<p>3 STRENGTHS</p>	<p>2 WEAKNESSES</p>
External factors	<p>4 OPPORTUNITIES</p>	<p>1 THREATS</p>

Participants were divided in two groups and were asked to do the same analysis: Identifying the threats, weaknesses, strengths and opportunities of the current management of the sustainable use of PGRFA at the domestic level. This meant that they focused on how to cope with challenges, how to take advantage of opportunities and strengths, and to avoid or mitigate threats. On that basis they derived gaps and needs, with a focus on the latter, as a point of departure for defining objectives and central elements of a joint programme on biodiversity in agriculture for sustainable use of PGRFA.

In general, participants suggested compiling previous SWOT analyses on the sustainable use of PGRFA and its various elements, to get a more comprehensive understanding of the strengths, weaknesses, opportunities and threats, as a background for a Joint Programme on Biodiversity in Agriculture for Sustainable Use of PGRFA.

4.2 Threats to the management of sustainable use of PGRFA at the domestic levels

A key threat to the sustainable use of PGRFA is the genetic erosion within and among crop species, in particular of landraces and farmers' varieties, and their wild relatives. Genetic erosion has many drivers, at multiple levels. At one level, poorly regulated global markets and short-sighted national and local policies that seek to appease widespread demands for cheap and predictably uniform food supplies contribute to genetic erosion, placing the focus on an ever-narrowing number of crops and varieties within crops. Also, deforestation and land degradation threaten crop wild relatives (CWR). At another level, the sometimes substantially increased yields of genetically uniform crop varieties have driven their adoption: as a result, much crop diversity has been displaced or lost. Meanwhile, the economic uncertainty involved in farming, the legitimate desire of farmers to seek other work opportunities, and the widespread prejudice against agriculture and rural peoples lead to the displacement of smallholder farmers, and to more farm consolidation. Most people across all levels, from policy-makers, home food buyers, industry leaders to farmers, do not adequately factor in the environmental and social costs of the decisions that they make. The many factors from the various levels of the agri-food systems of the world drive a trajectory towards homogenized food systems and genetic erosion; they all play key roles in the four groups of threats identified below:

- *Agricultural and land-use patterns limit the land available for sustaining the diversity of PGRFA, and lead to genetic erosion:*
 - Industrialized agriculture that is based on genetically uniform varieties, grown over sizeable areas, displaced the diversity of PGRFA previously grown in these areas.
 - Land-use changes and urbanization may reduce the land available for agriculture and thereby also for growing a diversity of PGRFA
 - Industrialized agriculture based on monocultures and chemicals, as well as deforestation, also represent threats to CWR.
 - The introduction of invasive alien species constitutes a threat to some local crop species/varieties and their wild relatives.
 - These factors, together with deforestation, lead to the degradation of agro-ecological systems, including knowledge about them, which is also vital for the conservation and sustainable use PGRFA.

- *Environmental changes alter the growing conditions for PGRFA and exacerbate genetic erosion:*
 - Soil degradation due to soil erosion and/or salinization are often caused by the expansion of industrialized agriculture; this generally reduces the possibilities of growing diverse crops and maintaining CRW.
 - Climate change has brought increased temperatures in many regions; crop varieties normally grown in a certain area may become unviable or have to be moved to another area at a certain altitude to avoid pests and diseases and sustain yields. In many cases this restricts the possibilities of maintaining diversity and leads to genetic erosion. For CWR, rapid climate change also represents a threat, due to the change of habitats and thus the loss of natural environmental conditions, leading to genetic erosion.
 - Recurrent drought has led to crop failures in centres of origin and diversity of PGRFA, causing genetic erosion.
 - Pollution from pesticides and herbicides, as well as from industrial wastes, may deplete diversity.
 - The use of chemicals in industrialized agriculture as well as other threats to pollinators, such as deforestation, reduce plant reproduction and may contribute to genetic erosion.

- *Demographic patterns reduce the scope for maintaining PGRFA*
 - Rural urban migration and insufficient policy focus on rural livelihoods tend to entail a loss of knowledge and diversity in the rural areas.
 - The aging of farming populations represents a threat to the maintenance of crop genetic diversity as well as to the related traditional knowledge. Crops and related knowledge are lost when farmers pass away, especially if succeeding generations lack the incentives to remain in rural areas and hence migrate to cities, or do not value traditional knowledge and PGRFA.

- *Lack of financial and technical capacity and policy space for accountable institutional arrangements and governance in the public interest contributes to genetic erosion*
 - Governments constrained by lack of power, resources, knowledge, experience or adequate institutional arrangements may be in a difficult position to plan and implement actions to safeguard the sustainable use of PGRFA, taking into account the interests of all stakeholders, particularly smallholder farmers and other poor and marginalized people.
 - The decline in government spending on agricultural development coupled with a corresponding rise in corporate interest and particularly in corporate consolidation along the food systems may contribute to changing land use patterns, land degradation and deforestation, and the loss of both crop genetic diversity and crop wild relatives. Inequality of wealth distribution and lack of appropriate land tenure rights constitute threats, as the guardians of landraces and farmers varieties are often among the poorest members of the population, with the least financial means to sustain crop genetic diversity. In many countries, there are no support mechanisms for these farmers.
 - Lack of strong institutions and of appropriate governance arrangements may reduce the prospects for coordination across government sectors and levels, as well as hinder the due consideration of all stakeholders' interests, particularly smallholder farmers and other poor and marginalized people. This may impair the capacity of countries to develop and maintain coherent policies regarding sustainable use of PGRFA.

4.3 Weaknesses of the management of sustainable use of PGRFA at the domestic level

The key issue in most countries is the very limited activity to achieve sustainable use of PGRFA. This is caused by the following weaknesses, *inter alia*:

- *Lack of awareness of the importance of PGRFA to the resilience of agricultural production systems and hence the ability to ensure food and nutrition security, particularly in the face of climate change, makes it difficult to achieve progress in sustainable use of these vital resources:*
 - Due to lack of awareness among politicians, the political framework conditions are often not conducive to the sustainable use of PGRFA.
 - The lack of understanding of the interconnections between the sustainable use of PGRFA and essentially all the Sustainable Development Goals from poverty alleviation, to health and sustainable cities inhibits alliances that would incorporate the sustainable use of PGRFA, if these connections were understood.
 - Local food culture is not sufficiently valued, resulting in reduced attention to and demand for crop genetic diversity.

- Lack of public awareness results in a corresponding lack of demand for crop genetic diversity, among consumers as well as farmers and gardeners.
 - Lack of awareness of the ITPGRFA makes it difficult to utilize the opportunities within the Treaty framework.
 - Farmers Rights, as set out in the Treaty, are seen as a threat by some stakeholders.
- *Lack of adequate policy support for the sustainable use of PGRFA impedes progress in this regard:*
 - In many countries, legislation poses barriers to the sustainable use of PGRFA, by restricting or delimiting farmers' customary practices related to seed and propagating material, such as saving, using, developing and exchanging seed.
 - Policies are often dominated by the needs of the formal seed sector, and do not sufficiently respond to the needs of the local custodians and developers of biodiversity in agriculture.
 - In many countries, the policies of various sectors, institutions and regions are not coherent; this lack for policy coherence and clear governance often results in poor support for PGRFA management, with fragmented efforts, if any.
 - Lack of understanding that the management of PGRFA must be carried out taking into account the complementarity of the different forms of conservation and sustainable use (*ex situ*, *in-situ*, and on-farm), since *ex-situ* conservation has been the main, if not the only, approach by public research institutes in most countries.
 - The lack of a holistic approach that values the contributions of both the formal and informal seed sectors to crop genetic diversity constitutes a barrier to conducive policies for the sustainable use of PGRFA.
 - International policies and donor conditions, such as requiring the adoption of certain types of intellectual property or seed certification regimes (see first bullet above), can limit a country's ability to take appropriate measures for the sustainable use of PGRFA.
 - Competition legislation or anti-trust legislation is not applied, which, in combination with other factors can narrow availability and choice with regard to seeds, leading to the erosion of PGRFA.
- *Lack of financial, fiscal and market support for the sustainable use of PGFA impedes progress*
 - The lack of financial and fiscal support in terms of amount and allocations for the maintenance of diverse crop varieties and populations represents a serious obstacle to the continuation and development of this work
 - The lack of financial support for gene banks and community seed banks limits their possibilities to contribute to the conservation and sustainable use of PGRFA and their capacity to respond to farmers' and gardeners' requests for seed and propagating material.
 - The lack of a financial mechanism for support to the conservation and sustainable use of PGRFA reduces the opportunities for taking action in this regard.
 - Market mechanisms are generally not conducive to promoting the sustainable use of PGRFA:
 - Commercial food enterprises focus on few species and varieties.
 - Consumption patterns in many countries are changing from traditional diversity to Western-style food, reducing the demand for crop genetic diversity.

- *Lack of seeds of diverse crop varieties and related information limits farmers' possibilities to make sustainable use of PGRFA*
 - Selecting, storing and managing seed is labour-intensive and often with small economic returns to farmers. Thus, farmers often prefer to buy seeds or plantlets from genetically uniform varieties, thereby limiting the seeds of diverse varieties available for farming.
 - Lack of characterization of, descriptors for, and information on germplasm from diverse varieties, including underutilized species, makes it difficult to use these varieties sustainably.
 - Phytosanitary challenges pose limitations to the distribution of genetic material.
 - Weak quarantine systems enable the spread of invasive species and diseases which may replace or infect plants representing diversity of PGRFA, including CWR.

- *The lack of adequate institutions to spearhead sustainable use of PGRFA limits the possibilities to promote such activities in many countries*
 - Policy-based organizations at the national level often do not have local experience and capacity in various technical issues related to the sustainable use of PGRFA.
 - It is difficult to find organizations with a 'hands-and-feet'-presence for implementing projects and programmes to enhance sustainable use of PGRFA.
 - Institutional boundaries limit cooperation, coordination and the understanding that a sustainable, healthy food system must begin with the sustainable use of PGRFA.
 - In most countries, there is no institutional space for dialogue between and among stakeholders that could stimulate collaboration and activities for the sustainable use of PGRFA.
 - In other countries, some collaboration takes place, but with high transaction costs in terms of time and money, and with unclear added value.
 - Limited links between gene banks and users (farmers) impedes conducive collaboration that could enrich gene-bank collections and ensure farmers' access to the seed and propagating material. There is often a missing link.
 - Lack of collaboration and coordination between the agriculture and environment sectors in many countries constitute a critical weakness in the conservation of crop wild relatives.

- *There is limited capacity among stakeholders to use PGRFA sustainably and promote activities in this regard*
 - There is little or no expertise on PGRFA issues in public communication.
 - There is limited expertise in fundraising among stakeholders involved in *in-situ* on-farm management and sustainable use of PGRFA.

- *The management of knowledge in plant breeding is often not conducive to the sustainable use of PGRFA*
 - The formal seed sector dominates knowledge management, with little space for knowledge relevant for the sustainable use of diverse PGRFA.
 - The willingness of scientists and breeders from the formal seed sector to link their knowledge to traditional knowledge is often low (despite positive developments in some countries), thereby limiting the possibilities of further knowledge development for the formal and informal sectors alike.

4.4 Strengths of the management of sustainable use of PGRFA at the domestic level

The main strengths that constitute the basis for promoting activities to enhance the sustainable use of PGRFA are the inherent values of these vital resources, the related knowledge and the success stories and best practices already taking place.

- *Plant genetic resources for food and agriculture have properties needed for agriculture to adapt to the effects of climate change, and other challenges facing agriculture, as well as human needs for food, nutrition, cultural identity, food security, poverty alleviation and livelihoods.*
 - PGRFA contain properties required for plant breeders and farmers to adapt crop plants to rising temperatures, recurrent droughts and other effects of climate change, and thus to sustain and develop agriculture for short- and long-term food security.
 - Plant genetic diversity is a central factor in the fight against poverty, as diversity between, among and within crops is an effective means of spreading the risks of crop failure for farmers, particularly in marginal environments.
 - The diversity of PGRFA comprises species and varieties with high nutritional values, which is important for food and nutrition needs.
 - The nutritional values and other properties of PGRFA as well as the related knowledge constitutes an economic potential in terms of market value which may be utilized to improve livelihoods.
 - Local crop diversity constitutes the basis for food culture, which is an important ingredient in cultural identity: crop diversity fosters cultural diversity.
 - In turn, diverse traditional knowledge and cultural customs provide a wide range of methods and practices that promote the sustainable use of PGRFA.
 - Crop genetic material, and to some extent crop wild relatives, are conserved and maintained in national and international gene banks, community seed banks, on-farm and in *in-situ* conditions, there are databases with characterized germplasm, and there is still a rich heritage of traditional knowledge in local communities, some of it documented in the available literature to support this diversity.
- *Sustainable use of PGRFA is already taking place and examples of success stories and best practices provide lessons as well as potentials for scaling up activities.*
 - The many examples of successful programmes and projects around the world provide lessons for other stakeholders and have potentials for being further applied and scaled up.
 - Some studies have been carried out to document these experiences, providing important knowledge for the further development of activities to enhance the sustainable use of PGRFA. They indicate that:
 - Community seed banks provide important arenas for stimulating the sustainable use of PGRFA.
 - Other forms of local seed source utilization are also important for the sustainable use of PGRFA.
 - Multi-stakeholder approaches to promoting sustainable use are often successful.
 - Participatory plant breeding and other participatory approaches involving farmers, breeders and scientists have great potentials.
 - Involving technical support and extension service may help in scaling up sustainable use activities.

- State seed funds established to collect, recover and propagate local seed varieties represent examples of good financial mechanisms for promoting the sustainable use of PGRFA.
- Public and private institutions, organizations, networks and farmers are already promoting activities for the sustainable use of PGRFA
 - Various forms of organizations, cooperation and networks have been established to promote the sustainable use of PGRFA many places.
 - Participatory approaches involving stakeholders, farmers in particular, are in focus, and a bottom–up approach to the work has gained attention and recognition.
 - There is greater cooperation between national gene banks and community seed banks: this represents an important bridge from national gene banks to farmers engaged in biodiversity management.
- *There is competence available for the sustainable use of PGRFA at many levels and capacity development is increasing*
 - The traditional knowledge of farmers represents an important resource for the sustainable use of PGRFA.
 - Derived from experiences, tools and studies have been developed to support policy development as well as practical implementation.
 - There is some relevant competence in ministries and research institutions.
 - In some countries the topic is part of university courses and national curricula.
 - Relevant technologies for characterizing collections are available to support the sustainable use of PGRFA.
- *Current policies, strategies, programmes and plans demonstrate national commitment to the sustainable use of PGRFA*
 - Generally, there is no political opposition to the sustainable use of PGRFA, and most countries have some level of national commitment.
 - Many countries have developed national strategic action plans on biodiversity. Some of these include the conservation and sustainable use of PGRFA, and some countries have separate action plans on crop genetic resources, even including CWR.
 - Some countries have programmes aimed at raising public awareness.
 - Moreover, in several countries there are on-going programmes and policies that, to some extent, support the sustainable use of PGRFA.

4.5 Opportunities for the management of sustainable use of PGRFA at domestic level

The most important opportunities for promoting and enhancing the sustainable use of PGRFA are current gastronomic trends, increased political awareness and promising international developments.

- *Recent gastronomic trends and the movement towards healthier diets provide opportunities to increase the awareness and popularity of PGRFA due to the nutritional properties and gastronomic potentials of many traditional or rare crops.*
 - The change in public attitudes towards healthier, local, more environmentally sound and tasty local food (e.g. Slow Food, Zero km food) provides ample possibilities for raising public awareness of PGRFA. If channelled into political impact, this awareness is powerful.
 - These societal changes also have scope for creating new professions and thus job opportunities promoting the sustainable use of PGRFA and related traditional knowledge.

- In some countries efforts are underway to reduce the reliance of food imports, which may also strengthen the gastronomic trends and opportunities for more attention towards PGRFA.
- *Some countries show growing interest and political will to promote the sustainable use of PGRFA and may create good entry points for spearheading concerted action for the sustainable use of PGRFA.*
- *Some international agreements and institutions support the sustainable use of PGRFA, and there are also some regional and national support available.*
 - The International Treaty is the major international instrument available to facilitate the development of policies and action for the sustainable use of PGRFA.
 - The Treaty has supported the development of assessment studies and projects that can be further developed and implemented, enabling action on sustainable use of PGRFA, such as the Actions Plans of the Latin American Network for the Implementation of the ITPGRFA.
 - Other international agreements, such as the Convention on Biological Diversity, support the sustainable use of PGRFA, and the International Treaty is to be implemented in harmony with CBD.
 - UN agencies (e.g. FAO, United Nations Environment Programme, United Nations Development Programmes, etc.) have international programmes related to sustainable use of PGRFA.
 - Multilateral financial institutions (e.g. GEF, IFAD, etc.) and the Green Climate Fund, have funding available to support activities for the sustainable use of PGRFA.
 - The World Health Organization, the United Nations System Standing Committee on Nutrition, the Committee on World Food Security as well as many civil society initiatives (like IPES-Food) are promoting a food system approach to nutrition where the diversity of production is in focus; partnerships are being made with institutions with a biodiversity focus. This is an opportunity for the ITPGRFA.
 - The United Nations Department on Economic and Social Affairs, as the Secretariat for the United Nations High-level Political Forum (HLPF) on Sustainable Development, is examining the interlinkages amongst Sustainable Development Goals and the links between hunger, agricultural biological diversity and smallholder producers. This has been noted in outputs of three Expert Group Meetings. The 2019 review of the form and functioning of the HLPF is an opportunity to explore how interlinkages and partnerships can be better supported.
 - The Benefit-Sharing Fund supports the sustainable use of PGRFA; it is a financial mechanism with great potentials to support such efforts in future – if it is provided with sufficient means.
 - In some areas, regional and national programmes offer financial support on a project basis. Although the project approach is often quite limited in time, and thus inappropriate as regards the time required for sustainable use measures, such support is important in a short-term perspective.

4.6 Deriving needs to address in a joint programme on biodiversity in agriculture for sustainable use of PGRFA

To promote and enhance the sustainable use of PGRFA, awareness raising, capacity building, enabling legal and policy environments, technical and financial support, conducive market mechanisms, improved knowledge management and concrete efforts to support the activities on the ground are

needed. In the context of a joint programme on biodiversity in agriculture for sustainable use of PGRFA, there is a particular need to raise awareness of the importance of the sustainable use of PGRFA to other sectors and what this means for ensuring an enabling legal and policy environment at all levels.

AWARENESS RAISING AND CAPACITY BUILDING

- In general, awareness raising on the importance of PGRFA is necessary at all levels, from the field and to the chambers of political decisions at the national and international levels.
- Awareness must be raised on the importance of complementarity among the different forms of PGRFA management (*ex situ*, *in-situ*, and on-farm), as opposed to focusing only on *ex-situ* conservation.
- Targeting youth is important, to increase their involvement and encourage them to be active participants in the conservation and sustainable use of agrobiodiversity.
- Using the Sustainable Development Goals (SDGs) as a comprehensive framework, it is important to raise awareness of the relationship of PGRFA to achieving the vision of Agenda 2030 and the SDGs, and to disseminate the already robust existing evidence to show that PGRFA is not a niche issue but critical to the achievement of these goals.
- More studies are needed to document and analyse experiences from the sustainable use of PGRFA at all levels, to provide guidance and support for capacity building.
- It is essential to utilize the knowledge gained through such studies for exchange of experiences, technical advice and support.
- Capacity-building measures such as trainings and gatherings that can promote the exchange of experiences are required at various levels and across scales from the grassroots and up to the top political level.
- There is a need for appropriate infrastructures and technologies, including central databases for monitoring exchange of material, in order to support the sustainable use of PGRFA.
- There is a need for more experts on communication, economy, marketing, engineering as well as agronomy and agroecology who can utilize their competences to further the sustainable use of PGRFA.

ENABLING LEGAL AND POLICY ENVIRONMENT

- Legislation must be conducive to the sustainable use of PGRFA. In the context of a joint programme this means, first and foremost, a comprehensive review of all policy and legislation potentially affecting PGRFA, even if PGRFA is not what the law or policy was designed to address. It means reviewing, and if necessary adjusting, breeding strategies and regulations concerning variety release and seed distribution and other legislation relevant for the sustainable use of PGRFA. It also implies safeguarding and promoting the realization of Farmers' Rights in this regard.
- More research is required on the effects of legislation and policies on the sustainable use of PGRFA, to guide and assist countries in developing enabling legal and policy environments. More country-specific analyses are needed.

- Consolidated national action plans must be developed, to ensure that measures are taken across sectors and scales to mainstream, promote and enhance the sustainable use of PGRFA in an integrated and coherent manner.
- Solutions to common challenges should be identified that are flexible and widely applicable, facilitating problem solution across countries and regions. At the same time, attention must be paid to regional and local specificities and needs.
- In reviewing, adjusting and developing legislation, policies, strategies, action plans and practical solutions, as outlined above, a multi-stakeholder approach with active participation of farmer representatives is recommended.
- More should be done to make national gene banks relevant for farmers, matching farmers' needs with materials in gene banks. Here breeders can play a facilitating role, for instance through participatory plant breeding.
- Relevant international organizations should be mandated to develop and provide advice and/or technical support on the sustainable use of PGRFA.
- There should be greater focus on the synergy potentials by linking the implementation of the articles of the Plant Treaty (including the outcomes of groups established under the Plant Treaty) to enhance synergies. Here some countries and stakeholders may need additional guidance on the procedures for access and benefit sharing, as a means of promoting the sustainable use of PGRFA.
- It would be useful to establish links to enable efficient mainstreaming of international agreements such as the ITPGRFA, CBD, UNFCCC and UNCCD with regard to the principles of sustainable use of PGRFA in agriculture, as set out in the International Treaty.

TECHNICAL AND FINANCIAL SUPPORT AND CONDUCIVE MARKET MECHANISMS

- Given the importance of PGRFA for food security, poverty alleviation and adaptation of agriculture to climate change, far greater attention – in terms of international cooperation and a substantial increase in funding – should be directed to the sustainable use of these resources. Greater international technical and institutional cooperation is also required in this context.
- At the national level, financial mechanisms like 'seed funds' or other funding schemes should be established to enhance and promote sustainable use of PGRFA. Such financial mechanisms should have a long-term focus, as the sustainable use of PGRFA is typically a long-term engagement. It is also important to keep in mind that whereas some species and crop varieties may have market value today, others may be of importance for plant breeders and the market in the future. Thus, the management of PGRFA cannot be left to market forces alone.
- For the sake of efficiency in the use of resources, efforts should be made to further develop or implement studies and projects that have already been supported by through instruments of the International Treaty and that can contribute to the sustainable use of PGRFA.
- Financial mechanisms should support agro-ecological farming and other agricultural approaches aimed at maintaining PGRFA, including CRW. Piloting such mechanisms to test and demonstrate their effectiveness and efficiency would be useful to spearhead and up-scale such mechanisms.

- Support from international and national sources should target hotspots for PGRFA, including centres of origin and diversity, as well as areas and species experiencing rapid genetic erosion.
- It is important to ensure that all relevant parties have equal and transparent access to funds.
- Market mechanisms must be developed to stimulate the sustainable use of PGRFA and facilitate access to the products of these resources. Key factors here are access to markets and information to consumers.
- Practical approaches to the conservation and sustainable use of PGRFA that reduce reliance on project funding among farmers need to be identified, to create opportunities for self-sustaining activities to maintain/develop PGRFA.
- To enable the continued sustainable use of PGRFA, access to germplasm from national gene banks is important. As gene banks also struggle with financial limitations, more funding is needed. Such funding may also stimulate increased collaboration between and among gene banks.

IMPROVED KNOWLEDGE MANAGEMENT

- It is important to open the genetic diversity conserved in gene banks through characterization and information sharing, to make it accessible for farmers and available for sustainable use. Approaches should be developed to match farmers' needs with relevant material in gene banks and among breeders, to give farmers the best choices of PGRFA and to safeguard gene bank collections through increased sustainable use of the material.
- There are great potentials for the sustainable use of PGRFA in linking scientific with traditional knowledge; more should be done to stimulate such exchange and collaboration.
- Continued harmonization of PGRFA information systems would enhance information sharing.

SUPPORTING SUSTAINABLE USE ACTIVITIES ON THE GROUND

- Activities targeted towards sustainable use of PGRFA should be developed with, by and for farmers, taking their needs as points of departure and to ensure their longer-term involvement.
- Such activities must benefit farmers through: better food and nutrition security, improved livelihoods, improved knowledge and capacity, and better access to seeds and technology.
- In developing activities to promote the sustainable use of PGRFA, particular attention should be paid to creating new opportunities for the employment of young people.
- Such activities should target self-sufficiency while also ensuring long-term commitment, if self-sufficiency is not possible.
- Information sharing on PGRFA, related knowledge and examples of best practices are important factors supporting the sustainable use of PGRFA on the ground.

5 Elements of a joint programme on biodiversity in agriculture for sustainable use of plant genetic resources for food and agriculture

This chapter elaborates the results of the second day of the expert meeting, where the elements of a joint programme on biodiversity in agriculture for sustainable use of PGRFA were derived from the SWOT analysis carried out the day before. The group provided elements of a rationale (Section 5.1) and an overall goal (Section 5.2) for such a programme and developed a goal hierarchy with focus on what is required to enhance and promote the sustainable use of PGRFA at a global scale (Section 5.3). Finally, the chapter elaborates some thematic areas for a joint programme that cut across the work of other institutions and stakeholders (potential partners), providing a platform for collaboration (Section 5.4).

5.1 Rationale for a joint programme on biodiversity in agriculture for sustainable use of PGRFA

The Governing Body of the International Treaty requested the Secretary to explore the possibility of establishing a Joint Programme on Biodiversity in Agriculture for Sustainable Use of PGRFA 2020–2030, involving relevant international organizations and other stakeholders. The resultant proposal will be considered by the Governing Body at its next session in 2019.

The idea is to find ways to work with other organizations and stakeholders to effectively implement the provisions of the International Treaty on sustainable use of PGRFA. This represents an opportunity to address many of the threats and weaknesses identified in the presentations and in the SWOT analysis above, while building on the strengths and opportunities that were highlighted.

A major challenge is the lack of awareness of how PGRFA is connected to the interests of those who are concerned about water, energy, land degradation, climate change and the global burden of diet-related diseases. It was considered critically important to apply a holistic approach to policy development and action related to sustainable development, in order to ensure that solving one problem does not create another and to maximize the benefits of intervention. A joint programme of work can offer an opportunity to build on the work of the current programme and form broader partnerships that raise the profile of PGRFA and the Treaty and support the integration and mainstreaming of PGRFA into a more holistic approach to sustainable development from local to global levels.

The group also felt the Joint Programme should support processes and engagement with partners where there are important synergies and PGRFA connections. This was because of concern that a project-by-project focus will be too *ad hoc*; that it cannot provide sustainability to the current programme of work on sustainable use and will not provide the level and stability of funding needed to sufficiently support the implementations of Articles 5, 6 and 9 of the Treaty. The need to shift funding to more stable, predictable and ongoing support was a strong catalyst for identifying interlinkages and partners and then working with those partners to ensure their input to, and support of, a joint programme on biodiversity in agriculture for sustainable use of PGRFA. The group felt that situating PGRFA in the larger context of which it is an integral part can enable the joint programme to be presented as a critical part of the process of change needed to achieve the transformation called for by Agenda 2030. The aim of this orientation is to attract the kind of stable and predictable funding needed to support the implementation of the Treaty provisions on sustainable use of PGRFA.

5.2 Overall goal for a joint programme on biodiversity in agriculture for sustainable use of PGRFA

Based on the results of the discussions of the expert meeting, the following formulation is proposed:

The overall goal of the Joint Programme is to contribute to sustainable food and nutrition security, poverty alleviation and resilience to climate change and other challenges through supporting the development of policies, measures and activities that promote the sustainable use of plant genetic resources for food and agriculture.

5.3 A goal hierarchy for a joint programme on biodiversity in agriculture for sustainable use of PGRFA

This section highlights central elements of a goal hierarchy for a joint programme on biodiversity in agriculture for sustainable use of PGRFA, with focus on what is required to enhance and promote the sustainable use of PGRFA on a global scale.

Derived from the overall goal presented in section 5.2, the following objectives were identified:

1. *Promote awareness and capacity building of stakeholders such as decision-makers, farmers' organizations and other relevant institutions and sectors, scientists, local farmers, agribusinesses, and the general public*
2. *Create an enabling environment for sustainable use of PGRFA through coherent policies, legislation, strategies and action plans*
3. *Strengthen market and financial mechanisms towards the sustainable use of PGRFA through support and guidance to governments and relevant stakeholders*
4. *Facilitate the coordination, synergy and management of scientific and traditional knowledge for the sustainable use of PGRFA*
5. *Boost sustainable use activities on the ground through an integrated approach to in-situ, on-farm and ex-situ strategies*

For each of these objectives the group derived expected results from a joint programme on biodiversity in agriculture for sustainable use of PGRFA, as presented below.

1. Promote awareness and capacity building of stakeholders such as decision-makers, farmers' organizations and other relevant institutions and sectors, scientists, local farmers, agribusinesses, and the general public

Results:

- a) Decision-makers, farmers' organizations and other relevant institutions and sectors, scientists, local farmers, agribusinesses, and the general public have greater awareness of selected policies, financial mechanisms and the value of sustainable use of PGRFA, as well as the complementarity of *in situ*, on-farm management and *ex situ* conservation of PGRFA.

- b) Decision-makers, farmers' organizations and other relevant institutions and sectors, scientists, local farmers and agribusinesses are trained in the implementation of selected policies, financial mechanisms and the sustainable use of PGRFA.
2. Create an enabling environment for sustainable use of PGRFA through coherent policies, legislation, strategies and action plans

Results:

- a) Contracting parties and stakeholders receive support for inter-sectoral and inter-institutional policy and legislation that promote the sustainable use of PGRFA, including guidance for:
 - i. review of legislation relevant for sustainable use of PGRFA (e.g., on variety release, distribution of seed and plant propagation material, phytosanitary issues and intellectual property rights)
 - ii. achieving coherence in policies and strategies affecting sustainable use of PGRFA
 - b) Contracting parties and stakeholders receive support for the development of strategies and action plans to promote and enhance the sustainable use of PGRFA, including the conservation and utilization of crop wild relatives, involving all stakeholders.
3. Strengthen market and financial mechanisms to promote the sustainable use of PGRFA through support and guidance to Governments and relevant stakeholders

Results:

- a) Governments have established national financial strategies for the sustainable use of PGRFA
 - b) There is greater funding, including public funding, for the sustainable use of PGRFA
 - c) Market- and non-market-based incentives have been established for the sustainable use of PGRFA
4. Facilitate the coordination, synergy and management of scientific and traditional knowledge for the sustainable use of PGRFA

Results:

- a) Operational linkages have been developed between scientific and traditional knowledge that enhance the sustainable use of PGRFA
- b) Conservation activities at local/on-farm, national, regional and international levels support the sustainable use of PGRFA
- c) Information exchange and sharing of experiences on best practices improve the conservation and sustainable use of PGRFA
- d) Synergies among informal and formal conservation sectors, community seed banks, research institutions and agribusiness companies enhance the sustainable use of PGRFA
- e) Central databases for mobilizing and monitoring exchange of materials and information at multiple levels enhance the knowledge needed for sustainable use of PGRFA

5. Boost sustainable use activities on the ground through an integrated approach to *in-situ* on-farm and *ex-situ* strategies

Results:

- a) Methods and approaches for sustainable use of PGRFA for nutrition and food security in the context of climate-change adaptation and sustainable development contribute to the:
 - identification of preferred traits by farmers
 - characterization and evaluation of gene-bank materials
 - matching the identification of traits preferred by farmers with characterization of gene-bank materials
 - pre-breeding to enhance plant genetic diversity
 - enhancement of diversity through selection and breeding
 - development of community seed banks
 - linkages among community seed banks
 - linkages between community seed banks, and national and international seed banks
 - enhanced cultivation, use and marketing of local varieties

5.4 Thematic areas that cross-cut with the work of other institutions and stakeholders relevant as partners in a joint programme

The group elaborated thematic areas for a joint programme that would cross-cut with the work of other organizations and stakeholders/potential partners, thereby providing a platform for collaboration. The focus was on areas where there is a growing understanding of the importance of PGRFA to another sector and an increased willingness and desire to reflect the relationship in policy and action. Four areas were identified:

- *Disaster relief and the conservation of natural capital:* Human-induced and natural disasters are on the rise. The conservation and sustainable use of natural capital, including PGRFA, is essential to maintain the functioning of ecosystems. This part of the joint programme would help with disaster prevention but also include the development and testing of protocols for the restoration of agricultural biological diversity in disaster relief.
- *PGRFA and an attractive rural life:* Urban migration is a huge challenge to agricultural production, rural livelihoods and demography, as well as the sustainable use of PGRFA. It is essential to put culture and dignity back into agriculture and make rural life attractive. This part of the joint programme would focus on reward and economic benefits from the sustainable use of PGRFA as well as off-farm livelihoods, with particular attention to the role and impact on women and youth.
- *A food-system approach to food and nutrition security and ensuring resilience to climate change:* Hunger and malnutrition are on the rise, while more and more people struggling with obesity. The global burden of disease is now increasingly diet-related. Dietary diversity offers a highly efficient and cost-effective approach to hunger and malnutrition in all its forms. In addition, the ability to produce food requires an ability to adapt to climate change. PGRFA is crucial to both; this part of the programme could focus on nutrition sensitive agriculture in the age of climate change and in light of other global changes, such as socio-economic transformation.

- *Systemic and holistic approaches to the sustainable use of PGRFA in an enabling legal and institutional environment* at all levels. There is a need to raise awareness of the role of PGRFA in many of the challenges addressed in the Sustainable Development Goals. The lack of understanding, coupled with institutional boundaries and power imbalances, needs to be addressed. This programme could bring together sectors addressed by the SDGs within which PGRFA must be acknowledged, to look for win–wins and how trade-offs can be mitigated in an enabling legal and institutional environment.

For each of these thematic areas, potential objectives, rationales for why these areas are important to PGRFA, suggestions of ways to build the connection and the identification of potential partners are outlined below. In the sub-sections titled ‘Ways to build the connection’ the group identified some means that applied to more than one thematic area. These are noted with an ‘*’. Here it should be noted that the sections on ways to build the connection and potential partners are non-exhaustive: they are the results of what could be achieved during the time available in Bari.

5.4.1 Disaster relief and the conservation of natural capital

Conservation and sustainable use of natural capital is important because the function of ecosystems is the very basis of life. The function of ecosystems regulation is of particular importance in this context (e.g. the water cycles, the capacity of vegetation to purify water).

The function of ecosystems and their regulation is important for climate-change adaptation, food and nutrition security, and for building and maintaining a sustainable environment. It provides a basis for social coherence, triggers collective responsibility and provides a wide biological pool. It delivers crucial services to humanity and the fundamental elements of economic development.

Understanding the functions of the agroecosystem is a tool for addressing the actions involved in restoration of lost biological diversity in cases of disaster.

PGRFA-sensitive disaster relief is crucial to enable disaster-struck farming populations to revert to the agricultural production and nutrition to which they have been accustomed, the related cultural identity, and to re-establish sustainable food and nutrition systems in the wake of disasters.

Some ways to build the connection:

- Strengthening education and capacity-building on *inter alia*:
 - understanding the functions of agroecosystems;
 - knowledge management of agriculture;
 - integration of knowledge on the sustainable use of PGRFA among those involved in biological, scientific and local development for the enhancement of relevant technologies;
 - integration of agro-ecology skills among those involved in the informal and formal sectors in agriculture (e.g. extension services, research and development, land-use planning);
 - management of biological diversity;
 - restoration after disasters (including integration of PGRFA issues in disaster management and recovery plans).
- Supporting policy and activities to:
 - promote the exchange of seeds and sharing knowledge on farm seed production;
 - promote seed fairs;

- promote community seed banks for restoration after disasters;
- enhance and mainstream the multifunctional roles of farmers in agriculture, societal life, food processing, tourism, etc.;
- activate payments or other forms of public support for ecosystem services provided by farmers who conserve and manage PGRFA, recognizing the roles that these farmers and resources perform in the functions and ecological sustainability of natural resources;
- develop tools, methodologies and models for the restoration of agricultural biodiversity on farms as well as off-farm activities (e.g. related to wildlife).

Potential partners:

- The UN, including UNICEF and the World Food Programme, and other multilateral humanitarian relief agencies such as the International Federation of the Red Cross
- Civil society relief agencies, such as Oxfam International, Action Against Hunger, Catholic Relief Services and Mercy Corps
- Farmer organizations and networks aimed at cooperation to conserve ecosystems functions in certain areas
- Policy-makers, public bodies, private sector, local authorities, scientists, farmers, seed system, international agencies, regional bodies through a multi-stakeholder approach
- Scientists and farmers cooperating for capacity building
- Networks that can be activated for collaboration and cooperation

5.4.2 A food-system approach to food and nutrition security and resilience to climate change

In addition to being essential for the resilience and stability of agricultural production systems and the ability to adapt to climate change and other stressors (like food security), PGRFA is fundamental to the security of human nutrition.

One in nine people, or about 795 million globally, go to sleep on empty stomach each night. Hidden hunger, also known as micronutrient deficiencies, afflicts more than 2 billion individuals, or one in three people, globally.⁸ The 2017 State of Food and Nutrition Security in the World Report informed the world community that 2016 saw the first increase in the number of hungry people in a decade. Today, at least 2 billion people consume excess calories, many of whom also do not get enough nutrients. Malnutrition is often taken to mean too little nutrition, but in fact it means poor nutrition.

Underpinning both overconsumption and undernutrition is dietary over-simplification. The benefits of a more diverse diet are widely recognized. A diverse and balanced diet can ensure exposure to a broader set of nutrients and non-nutrients, which may have antioxidant, anti-cancer and other beneficial properties.

Diversity of diet, founded on diverse farming systems and growing nutrient-dense foods, delivers better nutrition and greater health, with additional benefits for human productivity and livelihoods. Additionally, it is essential for coping with the predicted impacts of climate change. Unfortunately, much of this food diversity is under threat worldwide, as current production and consumption revolves

⁸ Cited in the Global Hunger Index of 2014 (published by Welt Hunger Hilfe, IFPRI and Concern Worldwide) at https://www.ifpri.org/sites/default/files/ghi/2014/feature_1818.html, referring to The State of Food and Agriculture 2013 of the FAO, <http://www.fao.org/docrep/018/i3300e/i3300e.pdf>.

around only twelve major crops, three of them providing close to 50% of all calories consumed.⁹ The loss of on-farm diversity depletes the very resources that are the foundation of the ability to adapt to global environmental change. In addition, the abandonment of diverse farm management practices associated with the arrival of industrial agriculture erodes smallholder farmers' capacity to innovate in response to environmental and socio-economic changes.

Some ways to build the connection:

- Raise awareness of food and nutrition systems from production to consumption and put the 'culture' back into agriculture, by *inter alia* strengthening:
 - connections between farmers, PGRFA and gastronomic trends;
 - connections across rural–urban continuums to build understanding that farmers and the sustainable use of PGRFA are crucial for ending hunger and malnutrition sustainably in both rural and urban areas, and of the synergies available by supporting these linkages;
 - education, at all levels, in where food comes from, why food and diversity are important to health (a food systems approach to health and nutrition, why food is something important to all of us and is something to enjoy);
 - education, at all levels, in how agro-ecological approaches that support the sustainable use of PGRFA are necessary to transform food systems while safeguarding the environment and ensuring the resilience of agricultural production systems and hence our ability to feed ourselves.
- Align policies and metrics to support nutrition sensitive production and consumption where PGRFA is an integral factor, by, *inter alia*:
 - evaluating the drivers of production and consumption of unhealthy diets and developing and adopting metrics that takes into account the three dimensions of sustainable development (economic, social and environmental) and move beyond the usual production metrics (i.e. yield/hectare, including nutrition density/ha; and energy–water–resource use/ha)
 - promoting agro-ecological approaches that support the sustainable use of PGRFA, integrated crop-livestock-forest systems, and sustainable water management, while reducing reliance on agrochemicals;
 - implementing agricultural policies and practices that guarantee the rights of smallholder farmers and support sustainable and nutritious diets and livelihoods.
- Strengthen rural–urban linkages – including physical, economic, social, and political connections – linking in particular to farmers who manage and sustainably use PGRFA through: *
 - applying integrated territorial planning to create links between rural and urban stakeholders, with a focus on farmers managing and sustainably using PGRFA and ensuring the participation of rural people, in particular farmers managing and sustainably using PGRFA, in this planning and implementation;
 - supporting public procurement schemes and other innovative policies that promote the production and consumption of locally-sourced, healthy, diverse foods;
 - regulating the availability of ultra-processed foods in the food supply chains through policies that might include for instance marketing regulations to limit or prohibit

⁹ FAO, 2016: *Save and Grow in Practice. Maize, Rice, Wheat. A Guide to Sustainable Cereal Production*. Rome: FAO. Available at: <http://www.fao.org/3/a-i4009e.pdf>.

marketing to children, as well as incentives and disincentives (e.g., sugar-sweetened beverage tax).

Potential partners:

- UN organizations, such as the United Nations Standing Committee on Nutrition (UNSCN), the Food and Agriculture Organization of the United Nations (FAO), the International Fund for Agricultural Development (IFAD) and the World Food Programme (WFP), the Committee on World Food Security (CFS) and the World Health organization (WHO)
- the Secretariat of the Convention on Biological Diversity (CBD)
- Bioversity International (coordinating e.g. the multi-country and multi-partner initiative Biodiversity for Food and Nutrition in collaboration with *inter alia* the CBD)
- UN-Habitat (which, in collaboration with partners such as Cities Alliance, FAO – Food and Agriculture Organization, GIZ/Germany, IFAD – International Fund for Agricultural Development, OECD – Organization for Economic Cooperation and Development, UNCRD – United Nations Centre for Regional Development, UN Environment – United Nations Environment Programme, WFP – World Food Programme, and WHO – World Health Organization, is developing guidelines on urban-rural linkages. The CBD is now getting involved as well and may launch its own initiative.)

5.4.3 Making rural life attractive

Over 50 per cent of the world population now live in urban areas, a proportion that is expected to increase to 66 per cent by 2050.¹⁰ Nevertheless, in the two regions with the highest rates of poverty – sub-Saharan African and South Asia – 57 per cent and 60 per cent respectively of the population will still be rural in 2025, with these rural populations continuing to grow for many years.¹¹ Government policies often focus on urban sectors, increasing rural–urban migration despite the inability of cities to absorb and employ displaced rural populations. This leads to congestion, slums and ever-increasing unemployment.

Connecting farmers, the sustainable use of PGRFA and making rural life attractive, particularly while raising awareness of the importance of this to stemming the growth of congestion, slums and rising unemployment in urban areas, can create synergies with regard to the environment (climate resilience, ecosystem services etc.), health and employment. For the ITPGRFA Secretariat, a relevant point is this thematic area – making rural life attractive – ties closely to the thematic area on nutrition and climate change enabling synergies and coordinated work and action possible. The objectives include making rural life attractive, especially for women and youth; reducing urban migration, putting culture and dignity back into agriculture and sustain PGRFA and use to generate on- and off-farm/livelihood benefits in rural areas, especially for women and youth. Why is this necessary?

- Without people on the land, there will be no food on the table: aging farming populations and migration of workforce constitute a major challenge;
- Genetic erosion – reduction of intra and interspecific crop diversity – is occurring at a fast pace;
- Loss of farming and PGRFA knowledge are increasing;

¹⁰ United Nations Department of Economic and Social Affairs, 2018: *68% of the world population projected to live in urban areas by 2050, says UN*. Press release available at <https://www.un.org/development/desa/en/news/population/2018-revision-of-world-urbanization-prospects.html>.

¹¹ United Nations, 2014: *World's population increasingly urban with more than half living in urban areas*. Press release available at <http://www.un.org/en/development/desa/news/population/world-urbanization-prospects-2014.html>.

- Prejudice against farming and rural life, the expanding gap between rich and poor as well as in technology access;
- Loss of knowledge on food culture and value, food preparation, and bio-cultural information;
- Increasing dependence on fast and less nutritious food.

The thematic area was also chosen because of the heightened understanding and interest in building rural–urban linkages – including physical, economic, social, and political connections – to end hunger and malnutrition sustainably in rural and in urban areas. Integrated territorial planning creates linkages between rural and urban stakeholders, can support integrated value chains across the rural–urban continuum and promote diets based on nutritious, diverse and locally produced food. It has the potential to promote local employment and holistic approaches to the sustainable management and use of water, energy and biodiversity. There is a growing understanding among decision-makers nationally and internationally that a focus *on the rural dimension of urbanization* is critical for sustainable development. However, the connection to PGRFA is less understood, and more attention should be given to the value of support to more marginalized farmers who use PGRFA sustainably.

Some ways to build the connection:

- Recognition of the contributions of rural farmers and knowledge holders in the conservation and sustainable use of PGRFA, especially for quality, biodiverse production systems, and positive social impact, by, *inter alia*,:
 - Finding ways and means to support economic improvement of rural livelihoods including developing and using incentives that promote the use of what is produced by rural people, especially youth and women.
- Target policy and capacity-building for, *inter alia*,:
 - conservation, improving PGRFA, product development (planting materials to downstream value-addition), processing, marketing;
 - transmitting and enhancing PGRFA knowledge (tradition, indigenous and scientific) and practices;
 - participation by smallholder farmers, especially women and youth, in decision-making;
 - empowering farmers as scientists and protagonists of change rather than recipients and beneficiaries.
- Strengthen rural–urban linkages, including physical, economic, social, and political connections, linking in particular to farmers who manage and sustainably use PGRFA through:*
 - Applying integrated territorial planning to create links between rural and urban stakeholders, with a focus on farmers managing and sustainably using PGRFA and ensuring the participation of rural people, in particular farmers who manage and sustainably use PGRFA, in this planning and implementation;
 - Facilitating constructive interactions among urban and rural dwellers;
 - Supporting public procurement schemes and other innovative policies that promote the production and consumption of locally-sourced, healthy, diverse foods;
 - Raising awareness, understanding and connection between farmers, PGRFA and gastronomic food systems movements.*
- Devise and use metrics, including:
 - percentage of youth out-migrating vs staying locally;
 - numbers of local new business and business longevity;
 - measure of baseline and increased documentation and access of knowledge systems;

- increased intra- and inter-specific diversity of PGRFA use at household and community levels.

Potential partners:

- UN and other multilateral organizations (UNDP – United Nations Development Programme, UN Environment – United Nations Environment Programme, IFAD – International Fund for Agricultural Development, FAO – United Nations Food and Agriculture Organization, World Bank)
- UN Habitat and organizations noted in the thematic area on nutrition
- Global Forum on Agricultural Research and Innovation (GFAR)
- CGIAR centres (for certain capacity building)
- Civil society organizations (research and academe, NGOs, farmers’ organizations)
- National governments

5.4.4 Systemic and holistic approaches to the sustainable use of PGRFA in an enabling legal and institutional environment

To effectively implement the sustainable use provisions of the ITPGRFA, a holistic and systemic approach surrounded by an enabling legal and institutional framework is needed to:

- acknowledge and promote the activities of farmers and local communities in the maintenance and diversification of PGRFA;
- support institutional and legal environment for conservation and use of CWR and wild harvested species;
- adjust any laws and policies that may not support these communities and activities;
- create coherence across instruments.

The lack of a holistic approach to policies promoting sustainable development often results in the disregard of the importance of farmers and the sustainable use of PGRFA to achieving critical sustainable development goals that may not be seen as ‘PGRFA’ goals (e.g. in the areas of employment, urban nutrition, ecosystem services and climate resilience)

Some ways to build the connection:

- Regarding policy- and decision-making, there is a need to, *inter alia*:
 - identify and assess the impacts of the existing legal and policy measures on the implementation of Art. 5, 6 and 9;
 - provide recommendations for adjustment, alignment and/or for new measures and institutional arrangements;
 - review legislation and institutional arrangements to ensure complementarity between *in-situ* and *ex-situ* conservation;
 - review existing legislation to improve conservation of CWR, and develop a supportive institutional and legal environment for CWR and wild harvested species, if none exists;
 - ensure legislative and policy support for community seed banks, including pathways for access to resources from national and global gene banks and for collaboration with these;
 - ensure participation in decision-making, particularly of Indigenous and local communities and smallholder farmers;
 - review effective mechanisms and require that they recognize and support farmer seed supply system, and farmer innovation. Provide policy support and recognition of

community seed banks, seed fairs, farmer field schools, promote participatory approaches crop improvement and ensure complementarity between *in-situ* and *ex-situ* conservation.

- Regarding capacity building there is a need to:
 - build capacity, including of policy-makers, scientists and farmers to understand and engage in policy-making;
 - build capacity of national decision-makers, smallholder farmers and farming organizations to understand the international legal landscape affecting implementation of the ITPGRFA, including any that may limit options for implementation including building capacity to implement guidelines of relevance to Articles 5, 6 and 9;
 - provide support to Contracting Parties to integrate policy for sustainable use into national frameworks (CBD, SDGs, GPA).
- Regarding information needs, there is a need to:
 - create a platform for exchange of experiences, including lessons learned and best practices;
 - create effective information channels to communicate global policy to local level and customary practice and local practices from local to global;
 - promote a multi stakeholder/ inter-sectorial dialogue for the development and implementation of policies and legal frameworks.

Potential partners:

- Secretariat of the CBD
- Biodiversity International and other CGIAR centres
- Other research institutions
- IDLO – International Development Law Organization, UNEP – United Nations Environment Programme, FAO – United Nations Food and Agriculture Organization, UNDP – United Nations Development Programme, IFAD – International Fund for Agricultural Development
- Global Forum on Agricultural Research and Innovation (GFAR)
- Oxfam-Novib and other NGOs engaged in PGRFA management.

6 Concluding recommendations

The participants of the informal meeting of experts 23–25 May 2018 at CIEAM, Bari, recommend to the Secretary of the International Treaty on Plant Genetic Resources for Food and Agriculture to consider identifying partners and sources of funding, leveraging resources, expertise, experiences and in-kind contributions for the implementation of a joint programme on biodiversity in agriculture for sustainable use of PGRFA for 2020 – 2030. The joint programme should build on existing initiatives, promoting synergies, ensuring that duplication of efforts is avoided and respecting the mandates of involved international organizations and other institutions and stakeholders involved in the programme. The joint programme could be implemented through selected components as expressed through the elements identified at the informal expert meeting in Bari, as presented in this report.

Appendixes

Appendix A: Programme

Appendix B: List of participants

Appendix C: PowerPoint presentations

INTERNATIONAL TREATY ON PLANT GENETIC RESOURCES
FOR FOOD AND AGRICULTURE

**Informal meeting of Experts on the implementation of the sustainable use of
PGRFA and the Joint Programme on biodiversity in agriculture**

Bari, Italy 23 – 25 May 2018

Draft Agenda and Indicative Timetable

Agenda

1. Opening
2. The Programme of Work on Sustainable Use of PGRFA (2016-2019)
3. Exchanging experiences, best practices and lessons learned on sustainable use
of PGRFA in agriculture
4. Identifying common needs and gaps
5. Exploring possibilities for a Joint Programme on biodiversity in agriculture for the sustainable
use of PGRFA
6. Wrap up and closing

Indicative timetable

Time	Agenda Item	Title
Tuesday, 22 May 2018		
During the day a shuttle bus will be available to pick the participants on arrival from the airport Bari "Palese to Boston Hotel in Bari (http://www.bostonhotelbari.com).		
Wednesday, 23 May 2018		
08.45		Bus Departure from Boston Hotel to CIHEAM – IAMB campus (Valenzano, Bari)
Session I		
09:30–10:00	1	Opening 1.1 Welcome from the Treaty Secretariat 1.2 Presentations from the local hosts, CIHEAM IAMB 1.3 Participant introductions
10:00–10:50	2	The Programme of Work on Sustainable Use of PGRFA (2016-2019) 2.1 Overview 2.2 Outcomes of the Seventh Session of the Governing Body (Kigali 30 Oct -3Nov 2017) 2.3 Discussion
10:50–11:00		Coffee break
Session II (To be led by the facilitator)		
11:00–13:00	3	Exchanging experiences, best practices and lessons learned on sustainable use of PGRFA in agriculture 3.1 Participants presentations and discussion
13:00–14:30		Lunch
14:30–17:30	4	Identifying common needs and gaps 4.1 Discussion
17:30-18.00		Wrap up of day 1

19:00-21:00		Dinner hosted by CIHEAM IAMB
21.00		Bus to Boston Hotel
Thursday, 24 May		
08.45		Departure from Boston Hotel to CIHEAM –IAMB
Session III (To be led by the facilitator)		
09:30–11:00	5	Exploring the possibilities for a Joint Programme on biodiversity in agriculture for the sustainable use PGRFA
11:00–11:30		Coffee break
11:30–12:30	5	Exploring possibilities for a Joint Programme on biodiversity in agriculture for the sustainable use of PGRFA (cont'd)
12:30–13:30		Lunch
13:30–15:00	5	Exploring possibilities for a Joint Programme on biodiversity in agriculture for the sustainable use of PGRFA (cont'd)
15:30–16:30		Final discussion
16:30–17:00	6	Wrap up and closing
17:00		Return to Boston Hotel
Friday, 25 May: Visit to the Seed Bank and Organic Farms		
08.30		Departure from Boston Hotel
08.45- 10.00		Seed Bank of the National Research Council (Bari)
10.00- 11.00		Transit
11.00-12.30		Visit to the Organic Farm
12.30-14.00		Lunch
14.00-15.30		Visit to the Biodynamic Farm
15.30-17.00		Return to Boston Hotel Bari

Appendix B: List of participants

List of participants

<p>CONGO (Democratic Republic)</p>	<p>Mr Damas MAMBA MAMBA Chef de Division chargé de la Production des Végétaux Direction de la Production et Protection des Végétaux Ministère de l'Agriculture, Pêche et Élevage Kinshasa, Congo DPR Email: damasmamba@yahoo.fr</p>
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<p>INTERPRETERS (for IPC only)</p>	<p>Ms Lara WEAVER</p> <p>Ms Audrey MOUYSSET</p>

Appendix C: PowerPoint presentations

- Presentation of CIHEAM IAMB, by Generosa Jenny Calabrese, International Officer and Research Coordinator, on behalf of Maurizio Raeli, Director, CIHEAM IAMB
- Presentation of the programme for the meeting and some background, by Mario Marino, Technical Officer, ITPGRFA Secretariat
- Use enhancement of neglected and underutilized species (NUS): experiences, lessons and ways forward, by Stefano Padulosi, Senior Scientist, Bioversity International, Italy
- Sowing Diversity = Harvesting Security: Contributions to Articles 6 and 9, by Gigi Manicad, Programme Leader, Oxfam Novib, the Netherlands
- Experiences and best practices on the sustainable use of PGRFA: UNDP's Work on Agrobiodiversity, by Santiago Carrizosa, Senior Technical Advisor and Global Advisor on ABS, UNDP, Panama
- Maintaining and establishing community seed banks to ensure on-farm conservation of farmers' varieties in Ethiopia: The PR-80 Project, by Debissa Lemessa, Director for Forest and Rangeland, Ethiopian Biodiversity Institute, Ethiopia
- The Swiss National Plan of Action for the Conservation and Sustainable Use of Plant Genetic Resources for Food and Agriculture, by Christian Eigenmann, Coordinator NPA-PGRFA plant genetic resources, Genetic Resources and Technologies Unit, Federal Office for Agriculture, Switzerland
- The Benefit-Sharing Fund: experiences and lessons learned, by Mary Jane Ramos de la Cruz, Technical Officer, ITPGRFA-Secretariat and Andrew Mushita, CTD, Zimbabwe