February 2013

منظمة الأغذية والزراعة للأمم المتحدة | 联合国粮食及农业组织 | Food and Agriculture Organization of the United Nations | Organisation des Nations Unies pour l'alimentation et l'agriculture | Продовольственная и сельскохозяйственная организация Объединенных Наций | Organización de las Naciones Unidas para la Alimentación y la Agricultura

COMMISSION ON GENETIC RESOURCES FOR FOOD AND AGRICULTURE

Item 2.3 of the Provisional Agenda

Fourteenth Regular Session

Rome, 15 – 19 April 2013

ROADMAP ON CLIMATE CHANGE AND GENETIC RESOURCES FOR FOOD AND AGRICULTURE

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I. INTRODUCTION

1. The Commission on Genetic Resources for Food and Agriculture (the Commission), at its Twelfth Regular Session, recognized the need to address climate change in its Multi-Year Programme of Work, and requested FAO to carry out a scoping study on climate change and genetic resources for food and agriculture.[1] At its Thirteenth Regular Session, the Commission recognized the roles that genetic resources for food and agriculture play in climate change adaptation and in supporting efforts to achieve food security, now and in the future. It also recognized that genetic resources for food and agriculture have the potential to contribute to the mitigation of climate change.[2]

2. The Commission agreed on the need for a roadmap or work programme on climate change and genetic resources for food and agriculture. It requested its Secretary to advance and further develop such a roadmap or work programme, for consideration at its Fourteenth Regular Session, based on the following four main elements: strategies and policies; tools and technologies for genetic resources and climate change; forging partnerships; and monitoring progress. It further requested its Secretary to provide an overview of the financial implications of the full implementation of the roadmap or work programme. The Commission also agreed that the roadmap or work programme would be implemented through an integrated approach, with consideration given to sector- and region-specific needs and to the characteristics of agricultural ecosystems.[3]

3. The present document introduces a proposed Roadmap on Climate Change and Genetic Resources for Food and Agriculture and provides an indicative estimate of the extra-budgetary resources required for the implementation of the Roadmap activities. The proposed Roadmap is presented in *Appendix I* and the estimated extra-budgetary resource requirements in *Appendix II*.

II. ROADMAP ON CLIMATE CHANGE AND GENETIC RESOURCES FOR FOOD AND AGRICULTURE

Background

4. The sectoral studies[4] prepared for the Commission's Thirteenth Regular Session stress the importance of strengthening efforts to conserve genetic resources for food and agriculture and use them sustainably to cope with climate change. The studies recognized that climate change poses new challenges to food and agriculture, but also gave particular emphasis to the potential roles of genetic resources for food and agriculture in climate change adaptation. Hence, it is important to mainstream and integrate genetic resources for food and agriculture in the planning of climate change adaptation policies and measures at national and international levels. Climate change, among other things, will

[1] CGRFA-12/11/Report, paragraph 78.
[2] CGRFA-13/11/Report, paragraph 51.
[3] CGRFA-13/11/Report, paragraph 52 and 53.
[4] CGRFA Background Study Papers (BSP) are available at http://www.fao.org/nr/cgrfa/climatechange/
BSP No. 60: *Economics of PGRFA management for adaptation to climate change: a review of selected literature*;
BSP No. 57: *Climate change and micro-organism genetic resources for food and agriculture: State of knowledge, risks and opportunities*;
BSP No. 56: *Climate change and forest genetic resources - state of knowledge, risks and opportunities*;
BSP No. 55: *Climate change and aquatic genetic resources for food and agriculture - state of knowledge, risks and opportunities*;
BSP No. 54*: Climate change and invertebrate genetic resources for food and agriculture - state of knowledge, risks and opportunities*;
BSP No. 53: *Climate change and animal genetic resources for food and agriculture - state of knowledge, risks and opportunities*.
FAO Thematic Background Study. *Climate change and its effect on conservation and use of plant genetic resources for food and agriculture and associated biodiversity for food security*, by A. Jarvis, H. Upadhyaya, C.L.L. Gowda, P.K. Aggarwal, S. Fujisaka & B. Anderson, B. (2008) is available at http://www.fao.org/docrep/013/i1500e/i1500e16.pdf

increase the interdependency of countries in the use of genetic resources for food and agriculture, as countries will need to diversify and adapt their agricultural and food-production systems.

5. Conservation and sustainable use of genetic resources for food and agriculture provide important option values related to the adaptability of agricultural production. However, to date, the role of genetic resources for food and agriculture in climate change adaptation has received little attention.

6. The studies identify a number of priority measures, which include:

- strengthening *in situ* and *ex situ* conservation of genetic resources for food and agriculture;
- improving characterization to identify appropriate genetic resources for coping with climate change;
- facilitating the transfer of appropriate genetic resources and their related knowledge to farmers, pastoralists, fisherfolk and fish farmers, as well as forest managers; and
- developing an integrated approach to the management of agro-ecosystems.

7. A number of ongoing activities undertaken by FAO and the Commission can serve as building blocks for strengthening work on climate change and genetic resources for food and agriculture. FAO's technical divisions provide guidance and technical advice to a number of countries on the integration of biodiversity and ecosystem services into climate change adaptation plans and efforts to improve ecosystem resilience. Document CGRFA-14/13/ Inf.10 provides a more detailed overview of FAO activities and of international processes of relevance to climate change and genetic resources for food and agriculture.

8. Climate change considerations are already integrated into the Global Plans of Action (GPAs) for plant and animal genetic resources for food and agriculture. The full implementation of the GPAs by countries would therefore contribute to the achievement of the Roadmap's objectives. The Climate-Smart Agriculture initiative and the FAO-Adapt framework offer further opportunities for strengthening the role of genetic resources for food and agriculture in FAO's work on climate change.

9. Climate change is also integrated within work on *in situ* conservation of crop wild relatives (CWR) and on-farm management of plant genetic resources for food and agriculture. The Working Group on Plant Genetic Resources for Food and Agriculture, at its Sixth Meeting, discussed issues such as genetic reserves for CWR, establishment of a global network and development of tools that address climate change and provide countries with means and methods for strengthening national conservation programmes.[5] This work could provide essential inputs to the development of an eventual urgent plan of action to conserve CWR threatened by climate change and, in terms of plant genetic resources for food and agriculture, to the compilation of information on hotspots of biodiversity for food and agriculture that are under particular threat from climate change. It should be noted that there are a number of initiatives that focus on the impacts of climate change on hotspots of biodiversity.[6] Methodologies and information identified by these studies could be adapted for use in the study of hotspots of biodiversity for food and agriculture that are under particular threat from climate change.

10. The second phase of the Joint Work Plan of the Secretariats of the Convention on Biological Diversity (CBD) and of FAO and its Commission provides a framework for collaboration on a number of topics, including climate change. Specific areas of collaboration on climate change are: impact of climate change on genetic resources for food and agriculture; lessons learned about ways and means to conserve and use genetic diversity to build resilience and adaptation to climate change

[5] CGRFA/WG-PGR-6/12/REPORT paragraphs 16 and 17, and CGRFA/WG-PGR-6/12/3 paragraphs 8–12.
[6] See, for example, the CBD's database of vulnerability studies (http://adaptation.cbd.int/vulnerabilities.shtml). See, also, CGIAR. 2011. *Mapping hotspots of climate change and food insecurity in the global tropics*, by P. Ericksen, P. Thornton, A. Notenbaert, L. Cramer, P. Jones & M. Herrero, CCAFS Report No. 5. Copenhagen (available at http://ccafs.cgiar.org/resources/climate_hotspots).

in food and agriculture systems; integration of genetic diversity considerations into climate change adaptation and mitigation planning; and integration of climate change considerations into sectoral and cross-sectoral planning for genetic resources.[7]

11. Several opportunities to participate in international processes and raise awareness of climate change and genetic resources for food and agriculture have already been identified. For instance, the Commission Secretary delivered the keynote presentation "The value of genetic resources for food and agriculture for food security in the context of climate change" at the Nordic Seminar "Genetic resources – a treasure trove for the future?"[8]

12. Following the request of the Commission,[9] the Secretary transmitted the sectoral studies addressing genetic resources and climate change to the United Nations Framework Convention on Climate Change (UNFCCC), to the CBD and to the High Level Panel of Experts on Food Security and Nutrition (HLPE), as a contribution to their report on climate change and food security. The HLPE Report acknowledges the work of the Commission on climate change and, in Recommendation 2c), suggests that the "Commission on Genetic Resources for Food and Agriculture could consider identifying priority measures and developing a plan of action on the conservation and use of genetic resources for adaptation to climate change."[10] The subsequent meeting of the Committee on World Food Security (CFS 39) invited the Commission "to continue and strengthen its work on climate change and genetic resources."[11]

Objectives and key elements of the Roadmap

13. The proposed Roadmap has two objectives:

    A. The roles and values of genetic resources for food and agriculture in food security and nutrition and in ecosystem function and system resilience are understood.

    B. Countries are enabled to integrate genetic resources and biodiversity into the planning and implementation of adaptation strategies.

14. To achieve these objectives, the Roadmap foresees a number of activities targeting relevant international processes during the period to 2017, at which point the Roadmap could be reviewed by the Commission. The Roadmap should be regarded as a rolling process and might need to be modified in response to developments in the international arena.

15. The proposed key elements of the Roadmap are:

    I. **Tools and technologies:** Activities include gathering lessons learned, developing guidelines and producing technical material on the importance of genetic resources for food and agriculture for coping with climate change. These activities will assist countries and other stakeholders to fully exploit the potential of genetic resources for food and agriculture in climate change adaptation. This element of the Roadmap will draw on the sectoral studies on genetic resources and climate change and on the broader work of FAO, the Commission and partner organizations.

[7] Joint Work Plan of the Secretariats of the Convention on Biological Diversity of the Food and Agriculture Organization of the United Nations and its Commission on Genetic Resources for Food and Agriculture. Second Phase (2011-2020). CGRFA-13/11/Inf.11.

[8] Seminar held in Oslo, 22 – 23 November 2012, organized by the Norwegian Genetic Resource Centre and NordGen, with support from the Nordic Council of Ministers and the Norwegian Ministry of Agriculture and Food and under the Norwegian chairmanship of Nordic Council of Ministers.

[9] CGRFA-13/11/Report, paragraph 50.

[10] HLPE. 2012. HLPE Report 3: *Food security and climate change.* A report by the High Level Panel of Experts on Food Security and Nutrition of the Committee on World Food Security. (available at http://www.fao.org//fileadmin/user_upload/hlpe/hlpe_documents/HLPE_Reports/HLPE-Report-3-Food_security_and_climate_change-June_2012.pdf).

[11] Committee on World Food Security, 2012. CFS 2012/39 FINAL REPORT, Para 11 b) (available at http://www.fao.org/docrep/meeting/026/mf115e.pdf).

II. **Strategies and policies:** Activities will promote the mainstreaming of genetic resources for food and agriculture in climate change adaptation and mitigation strategies. The Commission will raise awareness among participants in international processes by delivering appropriate messages on the importance of genetic resources for food and agriculture for coping with climate change. Commission members and direct stakeholders, such as national focal points and genetic resources experts, may also contribute to this element of the Roadmap by raising awareness at national level.

16. The Roadmap will be implemented in partnership with organizations involved in agriculture (including fisheries, aquaculture and forestry), biodiversity or climate change. Partners such as the Secretariats of the Convention on Biological Diversity and of the International Treaty on Plant Genetic Resources for Food and Agriculture, and the Consultative Group on International Agricultural Research will be involved in specific Roadmap activities whenever relevant.

17. The Secretariat of the Commission will monitor the state of implementation of the Roadmap on a yearly basis. A review of the Roadmap is foreseen for the Commission's Sixteenth Regular Session.

Targeted processes

18. A number of international processes deal with climate change and have direct or indirect influence on national adaptation programmes and activities. Increasing awareness within these processes of the potential roles of genetic resources for food and agriculture in climate change adaptation will support countries in the planning and implementation of adaptation strategies. These processes are therefore considered specific targets of the Roadmap.[12]

19. *United Nations Framework Convention on Climate Change (UNFCCC).* The UNFCCC established the Adaptation Committee to serve as the overall advisory body to its Conference of the Parties (COP) on adaptation to the adverse effects of climate change and to promote the implementation of enhanced action on adaptation.[13] The Adaptation Committee has recently developed a three-year workplan, which foresees collaboration in the establishment of dialogues and ad hoc expert groups.[14] A series of regional training workshops on adaptation was initiated in collaboration with the Global Environment Facility and its agencies, including FAO, with the aim of providing technical support for the design of implementation strategies for National Adaptation Programmes for Action (NAPAs). The implementation of National Adaptation Plans (NAPs) in line with the technical guidelines will require support in terms of knowledge and tools. In this respect, Parties and relevant organizations have recently been invited to share best practices and lessons learned in addressing adaptation.[15]

20. *Committee on World Food Security (CFS).* The CFS, at its Thirty-ninth Session (October 2012), held a Policy Roundtable on Food Security and Climate Change, informed by a report from its HLPE. The Committee, among other things, invited "the FAO Commission on Genetic Resources for Food and Agriculture to continue and strengthen its work on climate change and genetic resources including conservation and use of genetic resources for adaptation to climate change".[16] The decisions of CFS and the HLPE report have been transmitted to the UNFCCC.

21. *Working Group on Climate Change of the High Level Committee on Programme of the United Nations (HLCP).* The HLCP has initiated a process, led by its Working Group on Climate Change, to – among other things – coordinate the inputs provided by UN agencies in support of climate change negotiations. The key activities of the Working Group are: information and knowledge

[12] More information on these processes and initiatives can be found in the information document CGRFA-14/13/Inf.10.
[13] UNFCCC Decision 2/CP.17.
[14] Draft UNFCCC COP18 Decision "Work of the Adaptation Committee".
[15] Draft UNFCCC COP18 Decision "National Adaptation Plans".
[16] CFS 2012/39 Final Report, paragraph 11 b) and 11 f).

sharing; joint implementation of climate action; informing members of the UN Chief Executives Board on climate change issues; coordinating the UN position and presence at UNFCCC COP and other relevant fora; and preparing joint outreach and communication tools.[17] This process will be monitored to identify opportunities to support mainstreaming activities, such as by contributing to joint side events and participating in the preparation of documents and submissions.

22. *Rio+20 follow up process* and *Post-2015 Development Agenda*. The Rio+20 Conference on Sustainable Development highlighted that "adaptation to climate change represents an immediate and urgent global priority".[18] Climate change has been identified by governments as a major threat to, *inter alia*, sustainable agriculture, food security and the eradication of hunger.[19] As part of the follow-up, governments decided to launch a process to develop a Post-2015 Development Agenda and a set of Sustainable Development Goals.

23. *Global Conference on Agriculture, Food Security and Climate Change*. The first Global Conference on Agriculture, Food Security and Climate Change, held in The Hague in 2010, identified a Roadmap for Action, which includes genetic resources among the tools and technologies for climate-smart agriculture. A second Global Conference was held in Hanoi in 2012. The process recognizes the FAO Climate Smart Agriculture Initiative as an important instrument for coping with climate change.

Proposed activities of the Roadmap (2013 – 2017)

24. Taking the above-described processes into consideration, a number of activities have been identified for the proposed Roadmap and are outlined below.

Tools and technologies

25. One focus of Roadmap activities is the collection of scientific knowledge, experience and success stories that demonstrate the potential roles of genetic resources for food and agriculture in climate change adaptation. Special consideration is given to sector- and region-specific needs and to the characteristics of agricultural ecosystems. This will be achieved by continuously drawing on FAO's experience and on the experience of its networks and partners.

26. The compilation of information on hotspots of biodiversity for food and agriculture under particular threat from climate change, as well as the development of a plan for urgent actions to conserve crop wild relatives, are amongst the main proposed activities under tools and technologies.

27. An expert meeting will be organized to identify lessons learned on ways and means to conserve and use genetic diversity to build resilience and adaptation to climate change in food and agricultural systems, taking into account the need for an integrated approach. The expert meeting will contribute to the development of technical and awareness-raising materials, as well as to the development of guidelines on the integration of genetic resources for food and agriculture into climate change adaptation planning at different levels (which is also linked to strategies and policies).

Strategies and policies

28. Mainstreaming genetic resources for food and agriculture in climate change adaptation and mitigation strategies and policies involves several activities that mainly focus on disseminating knowledge and raising awareness of the importance of genetic resources for food and agriculture for coping with climate change. Proposed activities include providing a formal submission to UNFCCC and dissemination of other documentation that will sensitize delegates to relevant international processes to the potential roles of genetic resources for food and agriculture in climate change adaptation. Opportunities for participation at side events, together with partners, will also be

[17] Note by the Chair CEB/2012/HLCP-XXIV/CRP.4.
[18] UNGA document A/RES/66/288, paragraph 190.
[19] A/RES/66/288, paragraph 111.

investigated fully. Side events at the various existing climate change processes are considered important networking places and provide learning opportunities for experts at all levels, from practitioners to policy makers.

The Commission's Intergovernmental Technical Working Groups

29. Specific involvement of the Commission's Intergovernmental Technical Working Groups is foreseen in the implementation of the Roadmap. They could, for instance, contribute to the development of guidelines on the integration of genetic diversity in climate change adaptation planning (NAPs, NAPAs).

30. Specific agenda items on climate change will be included at the meetings of the Working Groups and advice will be sought from the Working Groups, within their areas of competence, on how to respond to emerging issues, when applicable.

Partnerships

31. The Roadmap activities will be implemented in collaboration with partners taking into account existing agreements for collaboration with the Secretariats of the CBD and of the International Treaty for Plant Genetic Resources for Food and Agriculture. Other partnerships could be established on a case by case basis, especially with research and policy organizations.

Monitoring

32. The development of the Roadmap will be monitored as part of the Multi-Year Programme of Work and the Commission will be kept informed about the progress made. The Roadmap will be revised by the Commission at its Sixteenth Regular Session.

33. Moreover, as the future agendas of international processes have in many cases not yet been fully determined until 2017, or may change, there is a need to monitor their development continuously. This will allow identifying emerging issues and taking advantage of opportunities for raising the profile of genetic resources for food and agriculture in coping with climate change.

III. GUIDANCE SOUGHT

34. The Commission may wish to:

i. Reaffirm the importance of genetic resources for food and agriculture for coping with climate change and the need for raising awareness of their potential roles in coping with climate change;

ii. Adopt the Roadmap as presented in *Appendix I*;

iii. Request its Secretary, subject to the availability of funding, to initiate the implementation of the Roadmap;

iv. Appeal to its Members to provide the financial resources needed for the implementation of the Roadmap; and

v. Request its Secretary to report on progress in the implementation of the Roadmap, for consideration by the Commission at its Sixteenth Regular Session.

APPENDIX I

PROPOSED ROADMAP (2013 – 2017)

The Roadmap on Climate Change and Genetic Resources for Food and Agriculture will be implemented in the period 2013 to 2017, i.e. until the time of the proposed review of the Roadmap by the Commission. As the Roadmap targets specific international policy processes, activities are presented according to a timetable that follows the schedule of these processes. In addition to the scheduled processes, it will also be necessary to address processes whose agendas have not yet been set or that involve continuous activity. These processes will have to be monitored, and appropriate activities developed on an ad hoc basis. These processes include:

- Working Group on Climate Change of the UN High Level Committee on Programme
  - Whenever appropriate, provide contributions or participate in joint side events and other activities in support of climate change negotiations.
- UNFCCC Adaptation Committee
  - Provide information and knowledge related to genetic resources for food and agriculture.
- Committee on World Food Security
  - Provide updates on progress made on genetic resources for food and agriculture and climate change, whenever relevant to the agenda.
- International Treaty on Plant Genetic Resources for Food and Agriculture
  - Whenever appropriate, provide contributions or participate in joint side events and other activities in support of climate change negotiations.
- Rio+20 follow-up process and Post-2015 Development Agenda.
- Global Conference on Agriculture, Food Security and Climate Change.
- Activities of the centres of the Consultative Group on International Agricultural Research
  - Invite centres to report on studies and activities related to climate change and genetic resources for food and agriculture.

2013

Tools and technologies	• Preparation of technical material on genetic resources for food and agriculture (GRFA) and climate change to facilitate the implementation of NAPAs and NAPs, as well as awareness-raising material for planners and policy makers. • Organize expert meeting on GRFA and climate change on the theme of "Lessons learned about ways and means to conserve and use genetic diversity to build resilience and adaptation to climate change in food and agriculture systems" (identified in the Joint Work Plan with CBD).
Strategies and policies	• Provide formal submission to the UNFCCC on the importance of GRFA in climate change adaptation. • Explore the possibility of a side event at UNFCCC COP 19 (November 2013, Poland), which is expected to take stock of and, if relevant, revise NAP guidelines. • Respond to invitation from the UNFCCC Adaptation Committee to provide information. • Provide material and information in support of training workshops on

	adaptation. • Explore the possibility of a side event at, or providing documentation to, CBD SBSTTA 17.

2014

Tools and technologies	• The Commission's Working Groups to develop guidelines for the integration of genetic-diversity considerations into climate change adaptation planning (NAPs, NAPAs).
Strategies and policies	• Participate in activities of the work plan of the UNFCCC Adaptation Committee, as relevant. • Explore the possibility of a side event at, or providing documentation to, CBD SBSTTA 18. • Explore the possibility of a side event at CBD COP 12.

2015

Tools and technologies	• Compile information on hotspots of biodiversity for food and agriculture under particular threat from climate change.
Strategies and policies	• Explore the possibility of a side event, or delivering a submission, at UNFCCC Subsidiary Body for Implementation (SBI 42 expected to make recommendations to COP 21 on monitoring and evaluation of progress made in the NAP process). • Explore the possibility of a side event at, or providing documentation to, CBD SBSTTA 19.

2016

Tools and technologies	
Strategies and policies	• Explore the possibility of a side event or submission at UNFCCC COP 22 (will review progress and performance of the Adaptation Committee). • Explore the possibility of a side event or document at CBD SBSTTA 20. • Explore the possibility of a side event at CBD COP 13.

2017

- Report to the Commission, at its Sixteenth Session, on progress in the implementation of the Roadmap for consideration of possible future work.

APPENDIX II

COST ESTIMATES FOR EXTRA-BUDGETARY RESOURCE REQUIREMENTS

Activities	**Resources required USD**
Tools and technologies	
Production of material and briefs – targeting technical experts	75 000
Expert meeting: "*Lessons learned about ways and means to conserve and use genetic diversity to build resilience and adaptation to climate change in food and agriculture systems*"	100 000
Development of guidelines for the integration of genetic resources for food and agriculture into adaptation planning (NAPs/NAPAs)	70 000
Development of a plan for urgent actions to conserve crop wild relatives (Integration of ongoing activity of WG-PGRFA – see para. 9)	50 000
Compilation of information on hotspots of biodiversity for food and agriculture under particular threat from climate change	75 000
Strategies and policies	
Mainstreaming and awareness-raising activities – targeting to policy makers and processes – Dissemination of information, publications, communication materials, submissions, side events	70 000
Total Roadmap implementation 2013-2017	**USD**
Total amount	**440 000**