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# COMMISSION ON GENETIC RESOURCES FOR FOOD AND AGRICULTURE

## Item 2.2 of the Provisional Agenda

### Fifteenth Regular Session

Rome, 19 - 23 January 2015

## TARGETS AND INDICATORS FOR FOREST GENETIC RESOURCES

### TABLE OF CONTENTS

	Paragraphs
I. Introduction.....	1 - 4
II. Process for identifying indicators and key considerations.....	5 - 10
III. Guidance sought .....	11

*Appendix I: Revised draft list of indicators*

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## I. INTRODUCTION

1. The Commission on Genetic Resources for Food and Agriculture (the Commission), at its Fourteenth Regular Session, reviewed and revised draft strategic priorities for action for forest genetic resources (FGR) and agreed on them as the *Global Plan of Action for the Conservation, Sustainable Use and Development of Forest Genetic Resources* (GPA FGR). It invited the Director-General of FAO to bring the GPA FGR to the attention of the FAO Conference.<sup>1</sup> The FAO Conference, at its 38<sup>th</sup> Session in June 2013, adopted the GPA FGR.<sup>2</sup>

2. The Commission also considered a provisional list of indicators<sup>3</sup> and requested FAO to continue working on this list to monitor the state of the world's forest genetic resources and the status of implementation of the GPA FGR. It invited its Intergovernmental Technical Working Group on Forest Genetic Resources (Working Group) to review the indicators.<sup>4</sup>

3. The Working Group held its Third Session from 7 to 9 July 2014, considered *Targets and indicators for forest genetic resources*<sup>5</sup> and reviewed and revised the draft indicators. The *Revised draft list of indicators* is contained in *Appendix I* to this document. The Working Group recommended that the number of indicators be reduced to a few key verifiable indicators and made suggestions for revision of those indicators from Priority Area 1 through Priority Area 3.<sup>6</sup> In addition, the Working Group recommended that the Commission request that a consultative process coordinated by FAO be initiated to further define the list of verifiable indicators. It further recommended that the refined list of indicators be submitted in due time to the next session of the Working Group for its consideration.<sup>7</sup> The Working Group also recommended that the Commission request FAO to continue the work on indicators and to prepare for the next session of the Working Group a set of targets for the conservation, sustainable use and development of FGR as well as a draft schedule for monitoring the implementation of the GPA FGR.<sup>8</sup>

4. This document provides background information on indicators for forest genetic resources, a revised draft list of indicators designed to specifically monitor the implementation of each Strategic Priority of the GPA FGR and a process to further improve and validate them, for consideration by the Commission. The document draws on the thematic study *Indicators of forest genetic diversity, erosion and vulnerability*<sup>9</sup>, prepared in the course of the preparation of *The State of the World's Forest Genetic Resources*.

## II. PROCESS FOR IDENTIFYING INDICATORS AND KEY CONSIDERATIONS

5. The overarching goal of the GPA FGR is to foster conservation, sustainable use and development of FGR worldwide. The GPA FGR is designed to be implemented at country, regional and global levels. Although most of the indicators will aim to monitor response and in some cases, benefits, other types of indicators will be required to monitor the outcomes (effectiveness) of the implementation of the GPA FGR. *Table 1* lists the different kinds of indicators that can be used to monitor both the progress in implementation and the effectiveness of the implementation, in terms of trends in the status of FGR.

6. For monitoring the implementation of the GPA FGR, benefit and response indicators are needed. For monitoring the outcomes of the GPA FGR, state and pressure indicators are needed, first to establish a baseline and then for monitoring changes over time. Some of the Strategic

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<sup>1</sup> CGRFA-14/13/Report, paragraph 52.

<sup>2</sup> C 2013/REP, paragraph 77.

<sup>3</sup> CGRFA-14/13/4.3 Appendix I.

<sup>4</sup> CGRFA-14/13/Report, paragraph 123.

<sup>5</sup> CGRFA/WG-FGR-3/14/4.

<sup>6</sup> CGRFA-15/15/12, paragraph 17.

<sup>7</sup> CGRFA-15/15/12, paragraph 18.

<sup>8</sup> CGRFA-15/15/12, paragraph 19.

<sup>9</sup> Graudal *et al.* (2014). *Indicators of forest genetic diversity, erosion and vulnerability*. <http://www.fao.org/docrep/013/i1500e/i1500e20.pdf>.

Priorities for Action call for “promoting” various actions, which are more difficult to monitor than Strategic Priorities that call for an action.

7. Indicators for monitoring biodiversity have been created at international, regional and national levels. Although some of the general biodiversity indicators can be used for monitoring the conservation and sustainable use and development of FGR, they generally do not apply. In defining indicators it is important to consider the availability of meaningful data, which varies widely from country to country.

8. Indicators are meant to help define and achieve goals. As such, an indicator is a tool used to measure the attribute of an object related to implementing the GPA-FGR and its outcomes. This object is the unit of observation. Observations (also called variables or verifiers) used for describing an indicator can be of several formats, e.g. dichotomic, categorical or numerical. Variables need to be easily observable and usable, reliable, comparable across indicators and meaningful. Indicators can be grouped by domains and areas of relevance (also referred to as operational indicators).

**Table 1 Indicators for monitoring FGR and how they can be classified according to their purpose**

Basic question	Type of indicator	Intended significance of indicator
How is the status of FGR changing?	S – State	Analyzing the conditions and status – are we loosing genetic diversity? Where, which and how?
Why is genetic diversity being lost?	P – Pressure	Monitoring the extent and intensity of the causes of loss
What are the implications for society?	B – Benefit	Quantifying the benefits that humans derive from biodiversity
What does society do about it?	R – Response	Measuring the implementation of policies or actions to prevent or reduce loss

9. The revised draft indicators, as given in *Appendix I*, are still in an early stage of development. The Working Group therefore highlighted the need for FAO to continue the work on indicators, to initiate a consultative process coordinated by FAO to further define the list of verifiable indicators and to consider the refined list of indicators at the Working Group’s next session.

10. The GPA FGR is a 10 year plan and the Working Group highlighted the need for the development of a set of targets for the conservation, sustainable use and development of FGR as well as a draft schedule for monitoring the implementation of the GPA FGR.

### III. GUIDANCE SOUGHT

11. The Commission may wish to:

- i. review and revise, as necessary, the revised draft list of indicators for monitoring the implementation of the GPA FGR, as given in *Appendix I* to this document;
- ii. request FAO to continue the work on indicators, in further consultation with the FAO Statistics Division, and to coordinate a consultative process to further refine the list of verifiable indicators and to identify a set of targets for the conservation, sustainable use and development of FGR as well as a draft schedule for monitoring the implementation of the GPA FGR, for the consideration of the Working Group at its next session; and

- iii. request its Working Group to finalize the list of indicators for the consideration of the Commission at its Sixteenth Regular Session.

## APPENDIX I

## REVISED DRAFT LIST OF INDICATORS

Priority area	Strategic priority	Level <sup>x</sup>	Verifiable indicator
<b>Priority area 1: Improving the availability of, and access to, information on FGR</b>	SP1. Establish and strengthen national FGR assessment, characterization and monitoring systems	N	Trend in number and proportion of species for which distribution is known, FGR are monitored and characterized and for which information are available in REFORGEN.
	SP2. Develop national and subnational systems for the assessment and management of traditional knowledge on FGR	N	
	SP3. Develop international technical standards and protocols for FGR inventories, characterization and monitoring of trends and risks	I	
	SP4. Promote the establishment and the reinforcement of FGR information systems (databases) to cover available scientific and traditional knowledge on uses, distribution, habitats, biology and genetic variation of species and species populations	I, R, N	
<b>Priority area 2: <i>In situ</i> and <i>ex situ</i> conservation of FGR</b>	SP5. Strengthen the contribution of primary forests and protected areas to <i>in situ</i> conservation of FGR	N	Trend in number of tree species populations within Primary forest or Protected Areas, managed as seed sources for provision of forest reproductive and/or directly targeted for conservation.
	SP6. Promote the establishment and development of efficient and sustainable <i>ex situ</i> conservation systems, including <i>in vivo</i> collections and genebanks	N	Trend in number of tree species conserved in genebanks (seed banks, clone banks, DNA banks, pollen banks), arboreta, conservation plantations and in trials contributing to conservation.
	SP7. Support assessment, management and conservation of marginal and/or range limits forest species populations	N	Trend in number and proportion of marginal and/or range limits forest species populations directly targeted by conservation programmes.
	SP8. Support and develop sustainable management and conservation of FGR on farmland	N	Trend in number and proportion of important agroforestry species for which there is a conservation and/or sustainable use and management programme.
	SP9. Support and strengthen the role of forests managed by indigenous and local communities in the sustainable management and conservation of FGR	N	Trend in number, proportion and area of forests or conservation stands managed by local communities or indigenous people.

<sup>x</sup> N= National; I=International; R=Regional.

Priority area	Strategic priority	Level <sup>*</sup>	Verifiable indicator
	SP10. Identify priority species for action	N	Trend in number and proportion of priority species identified for action by countries.
	SP11. Develop and implement regional <i>in situ</i> conservation strategies and promote ecoregional networking and collaboration	N, R	Number of species for which relevant effective regional conservation networks and/or programmes exist and are maintained over time.
	SP12. Develop and reinforce national seed programmes to ensure the availability of genetically appropriate tree seeds in the quantities and of the (certified) quality needed for national plantation programmes	N	1- Number of national seed programmes that specifically integrate the importance of genetically appropriate tree seeds in the quantities and of the (certified) quality needed for national plantation programmes. 2- Trend in number of tree species and seed sources which are managed for use of forest reproductive material.
<b>Priority area 3: Sustainable use, development and management of FGR</b>	SP13. Promote restoration and rehabilitation of ecosystems using genetically appropriate material	N	Science based guidelines/regulations for restoration and rehabilitation of ecosystems using genetically appropriate material (e.g. for matching species, seed source, planting sites, composition and harvest of seed sources, number of mother trees, etc.) are developed, and implemented.
	SP14. Support climate change adaptation and mitigation through proper management and use of FGR	N	Science based guidelines/regulations to support climate change adaptation and mitigation through proper management and use of FGR (e.g. for matching species, seed source, planting site, composition and harvest of seed sources, number of mother trees, under climate change scenarios) are developed, and implemented.
	SP15. Promote appropriate use of emerging technology to support the conservation development and sustainable use of FGR	N	Trend and number of species subject to biotechnology research and/or applications, to support conservation and sustainable management programmes.
	SP16. Develop and reinforce research programmes on tree breeding, domestication and bioprospection in order to unlock the full potential of FGR	N	1- Change in number of operational tree improvement and breeding programmes/institutions. 2- Trend and number of faculties or graduate schools with tree improvement and breeding programmes.
	SP17. Develop and promote networking and collaboration among concerned countries to combat invasive species (animals, plants and micro-organisms) affecting FGR	N	1- A relevant network that assesses the impact of management of invasive species on FGR exists is effective and maintained over time. 2- Trend and number of invasive species affecting forest genetic resources.
	SP18. Develop national strategies for <i>in situ</i> and <i>ex situ</i> conservation of FGR and their sustainable use	N	Policy tools for <i>in situ</i> and <i>ex situ</i> conservation of FGR in place in each country.

<sup>\*</sup> N= National; I=International; R=Regional.

Priority area	Strategic priority	Level*	Verifiable indicator
<b>Priority area 4: Policies, institutions and capacity-building</b>	SP19. Update FGR conservation and management needs and integrate them into wider policies, programmes and frameworks of action at national, regional and global levels	N	Relevant FGR assessment parameters are included in National Forest Inventories (NFI) and National Forest Monitoring Programmes.
	SP20. Develop collaboration and promote coordination of national institutions and programmes related to FGR	N	Trend in number of national coordination institutions that include FGR and the implementation of the GPA FGR in their mandate.
	SP21. Establish and strengthen educational and research capacities on FGR to ensure adequate technical support to related development programmes	N	1- Number of university courses/ training courses offered in forest genetics related subjects. 2- Trend in number of tree geneticists and tree breeders.
	SP22. Promote the participation of indigenous and local communities in FGR management in the context of decentralization	N	Trend in number, proportion and area of community and indigenous managed forests and tree-based production systems.
	SP23. Promote and apply mechanisms for germplasm exchange at regional level to support research and development activities, in agreement with international conventions	R	1- Regional regulations and mechanism for forest reproductive material exchange in place. 2- Trends in number and type of seed lots and quantities of seeds traded/exchanged for research and development.
	SP24. Reinforce regional and international cooperation to support education, knowledge dissemination, research, and conservation and sustainable management of FGR	R, I	Number of active networks (i.e. holding meetings and producing reports at least yearly) supporting education, knowledge dissemination, research, conservation and sustainable management of FGR.
	SP25. Encourage the establishment of network activities and support development and reinforcement of international networking and information sharing on FGR research, management and conservation	R, I	
<b>END OF REVIEWED INDICATORS</b>			
	SP26. Promote public and international awareness of the roles and values of FGR	I	1- Number of courses including FGR at national level (D) 2- Trends in inclusion of FGR consideration in global plans of action of international relevant bodies / conventions / initiatives
	SP27. Strengthen efforts to mobilize the necessary resources, including financing, for the conservation, sustainable use and development of FGR	N, R, I	1- Trends in number of funding calls specifically mentioning FGR at national and international levels 2- Trends in level and proportion (in relation to other conservation and use schemes) of funding available for FGR projects at national and international levels 3- Trends and proportion of SPs being implemented at national level

\* N= National; I=International; R=Regional.