



COMMISSION ON GENETIC RESOURCES FOR FOOD AND AGRICULTURE

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DRAFT TARGETS AND INDICATORS FOR FOREST GENETIC RESOURCES

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I. INTRODUCTION

1. The Commission on Genetic Resources for Food and Agriculture (the Commission), at its Thirteenth Regular Session in 2011, requested FAO to continue developing targets and indicators within the planned or on-going processes of global assessments or action plans under the mandate of the Commission.¹ It also requested its intergovernmental technical working groups to continue reviewing targets and indicators within their respective sectors, and to provide recommendations to the Commission for their further development. The Commission stressed that indicators should be policy relevant, scientifically sound, understandable, feasible and sensitive to changes. The Commission further requested FAO to consider, and advise on, how such indicators could contribute to monitoring of progress towards the Aichi Biodiversity Targets, and in particular Target 13², of the Strategic Plan for Biodiversity 2011-2020, which was adopted by the Tenth Conference of the Parties to the Convention on Biological Diversity in 2010.

2. At its Fourteenth Regular Session, the Commission agreed on the *Global Plan of Action for the Conservation, Sustainable Use and Development of Forest Genetic Resources* (Global Plan of Action).³ Subsequently, the FAO Conference adopted the Global Plan of Action in June 2013.⁴

3. The Intergovernmental Technical Working Group on Forest Genetic Resources (the Working Group), at its Third Session in 2014, considered indicators for monitoring the implementation of the Global Plan of Action. It revised a draft list of indicators⁵ and recommended that the number of indicators should be further reduced to few key verifiable indicators⁶. The Commission, at its Fifteenth Regular Session, recognized that more work is needed to finalize the draft list of indicators for monitoring the implementation of the Global Plan of Action. The Commission requested FAO to continue the work on indicators for forest genetic resources and to coordinate an inter-sessional consultative process with the participation of the Working Group prior to its next meeting to further refine the draft list of indicators, and to identify a set of targets for the conservation, sustainable use and development of forest genetic resources.⁷

4. The consultative process on the targets and indicators was organized from February to March 2016. The consultation sought feedback to a proposed approach for finalizing the targets and indicators, as well as to a list of proposed targets, indicators and verifiers. Members of the Third Session and the Fourth Session of the Working Group, national focal points for *The State of the World's Forests Genetic Resources* and relevant international organizations were invited to provide their feedback. Comments were received from 10 countries⁸. All respondents considered that the proposed approach with two sets of targets and indicators is reasonable and feasible. Concerning the targets, it was pointed out that countries should be able to report on their progress or steps taken towards the targets and not only when they have achieved them. Several respondents noted that more work is needed on the verifiers and that various terms and concepts used need to be defined or clarified in the Guidelines for the Preparation of Country Progress Reports. Few respondents considered that some targets and indicators could be more

¹ CGRFA-13/11/Report, paragraph 98.

² Aichi Biodiversity Target 13: *By 2020, the genetic diversity of cultivated plants and farmed and domesticated animals and of wild relatives, including other socio-economically, as well as culturally valuable species, is maintained, and strategies have been developed and implemented for minimizing genetic erosion and safeguarding the genetic diversity.*

³ CGRFA-14/13/Report, paragraph 52.

⁴ C 2013/REP, paragraph 77.

⁵ CGRFA/WG-FGR-3/14/Report, Appendix C.

⁶ CGRFA/WG-FGR-3/14/Report, paragraph 17.

⁷ CGRFA-15/15/Report, paragraphs 19-20.

⁸ Canada, Ethiopia, Fiji, Finland, Germany, Hungary, Madagascar, Norway, Russian Federation and United States of America.

ambitious, and that more detailed data could be requested for other indicators (e.g. population level data instead of species level data).

5. Taking into consideration the comments received from the consultation, this document presents a proposed approach for finalizing the targets and indicators for forest genetic resources and a revised list of proposed targets and indicators. It also proposes a process for finalizing verifiers for the indicators and developing Guidelines for the Preparation of Country Progress Reports.

II. BACKGROUND

6. The Working Group took the strategic priorities of the Global Plan of Action as a starting point for developing indicators for forest genetic resources and therefore it has not yet considered any targets. The Global Plan of Action identifies 27 strategic priorities, clustered into four priority areas, which were considered as long-term goals. Most strategic priorities (18) call for action at the national level while other priorities encourage action at the regional (3) and global (6) levels. It should be noted that the formulation of many strategic priorities does not allow their use as targets without further clarification.

7. The draft list of indicators⁹, as discussed by the Working Group at its Third Session, included 31 indicators. Based on the lessons learnt from the preparation of *The State of the World's Forest Genetic Resources* and considering the data and information countries provided to this report, it is evident that many of the draft indicators could not be fully verified.

8. Targets and indicators should be designed carefully to avoid the need for revising them or related verifiers during the monitoring cycles. If targets and indicators are frequently revised or fine-tuned, both monitoring of progress and identification of trends become challenging, if not impossible. These can only be observed if the same type of information is collected and analysed at two or more separate points in time. If the targets and indicators for forest genetic resources are too specific, possible future changes to the Global Plan of Action may make certain targets and indicators obsolete. If, instead, the targets and indicators are developed; based on the broader needs and actions identified at the level of priority areas, a possible future revision of the Global Plan of Action is less likely to create a need for adjusting them.

9. Considering the above, the Working Group should first agree on targets for forest genetic resources based on the four priority areas of the Global Plan of Action, and then on a list of key indicators that measure progress towards the targets.

III. PURPOSE OF THE TARGETS AND INDICATORS FOR FOREST GENETIC RESOURCES

10. Targets (also called criteria or objectives) and indicators for forest genetic resources have been developed and tested for over 20 years. The purpose of various indicator schemes have ranged from monitoring of genetic diversity within tree populations at the forest management unit level¹⁰ to assessing evolutionary potential in tree species at the global level¹¹. In conclusion, all existing and proposed targets and indicators have been tailored for a specific purpose.

⁹ CGRFA/WG-FGR-3/14/Report, Appendix C, <http://www.fao.org/3/a-ml401e.pdf>

¹⁰ E.g. Namkoong et al. 2002. Criteria and indicators for sustainable forest management: assessment and monitoring of genetic variation. Forest Genetic Resources Working Paper 37, FAO, <http://www.fao.org/docrep/005/AC649E/AC649E00.HTM>

¹¹ E.g. Graudal, L. et al. 2014. Global to local genetic diversity indicators of evolutionary potential in tree species within and outside forests. *Forest Ecology and Management* 333: 35–51, http://ac.els-cdn.com/S0378112714002825/1-s2.0-S0378112714002825-main.pdf?_tid=1e84914c-c672-11e5-8427-00000aacb35f&acdnat=1454063094_76f8c349d8d8f96c4a09ef90c22f9852

11. The purpose of the targets and indicators that the Working Group have been requested to develop is threefold. The targets and indicators should:

- 1) Specify objectives for countries to achieve as their response to the Global Plan of Action and track how many countries have met these objectives, and to which extent;
- 2) Set objectives for the conservation, use and development of forest genetic resources, and measure the progress countries are making towards these objectives; and
- 3) Contribute to monitoring the progress made towards Aichi Biodiversity Target 13 (and a subsequent target replacing it for 2021-2030) as well as relevant targets of the Sustainable Development Goals¹².

12. Targets and indicators are part of assessment tools that can be used to conceptualize and evaluate the management of forest genetic resources.¹³ These assessment tools are divided into four levels of hierarchy, i.e. goals (or principles), targets (or criteria), indicators and verifiers.

- Goals provide the overall justification for targets, indicators and verifiers. An example of a goal is “Improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity” (see the Strategic Plan for Biodiversity 2011-2020).
- Targets, such as Aichi Biodiversity Target 13, make goals more meaningful and operational without being themselves direct measures for implementation.
- Indicators are based on components of natural or man-made systems that can be attributed to, or used as a proxy for, the sustainability or other aspects of these systems and their utilisation.
- Verifiers are data or information that provide means of verification. Each indicator needs one or more verifiers.

13. This hierarchy means that these four elements are interlinked. While developing targets and indicators, it is important to also consider verifiers. Depending on how indicators are formulated, the data needed to verify them may require, for example, monitoring of molecular-level changes within tree populations or counting areas managed for the conservation of forest genetic resources. Furthermore, indicators and verifiers should build on the current or expected availability of data and information on forest genetic resources.

14. Indicators have often been developed within a conceptual framework that is based on state, pressure, benefit and response indicators.¹⁴ The formulation of a target determines largely the type of an indicator (or indicators) that is needed to assess progress in achieving a given target. Subsequently, the indicator type influences the choice of verifiers. Monitoring the implementation of the Global Plan of Action requires mostly state and response indicators. It is important to remember that the development of indicators always involves trade-offs between what should be monitored and what can be monitored with the human and financial resources available.

15. Recently, targets and indicators have also been considered in other international fora. In September 2015, the United Nations General Assembly adopted the resolution *Transforming our world: the 2030 Agenda for Sustainable Development*¹⁵ which identifies 17 Sustainable Development Goals and a set of related Targets. The 2030 Agenda also includes targets related to the conservation, restoration and sustainable use of forest ecosystems (Target 15.1) and the implementation of sustainable forest management (Target 15.2). Indicators for monitoring the Sustainable Development Goals and

¹² UN Sustainable Development Goals, <https://sustainabledevelopment.un.org/?menu=1300>

¹³ See Boyle, T.J. 2000. Criteria and indicators for the conservation of genetic diversity, in: Young, A. G., Boshier, D. H., Boyle, T. J. (Eds.), *Forest Conservation Genetics: Principles and Practice*. CABI Publishing, Wallingford, pp. 239–251.

¹⁴ See UNEP/CBD/AHTEG 2011. Report of the Ad Hoc Technical Expert Group on Indicators for the Strategic Plan for Biodiversity 2011-2020, <https://www.cbd.int/doc/meetings/ind/ahteg-sp-ind-01/official/ahteg-sp-ind-01-03-en.pdf>

¹⁵ A/RES/70/1, <http://daccess-dds-ny.un.org/doc/UNDOC/GEN/N15/291/89/PDF/N1529189.pdf?OpenElement>

related targets are currently being developed by the Inter-agency and Expert Group on Sustainable Development Goal Indicators, which include FAO as one of its members.

IV. PROPOSED APPROACH FOR FINALIZING THE TARGETS AND INDICATORS FOR FOREST GENETIC RESOURCES

16. Considering the above, the following approach is proposed for finalizing the targets and indicators for forest genetic resources:

- 1) The Working Group agrees on two sets of targets and indicators for forest genetic resources; one set for monitoring the responses of countries to the Global Plan of Action and another set for assessing the state of conservation, use and development of forest genetic resources. The first set of indicators should mainly consist of response indicators and the second set of state indicators.
- 2) The targets and indicators are formulated based on the broader needs and actions identified at the level of priority areas in the Global Plan of Action.
- 3) The targets and indicators focus on actions that need to be carried out at the national level. Regional and/or sub-regional networks on forest genetic resources and international organizations will be invited to prepare separate reports on actions that they have carried out at the regional and global levels, respectively.

V. PROPOSED TARGETS AND INDICATORS

17. Following the proposed approach for finalizing the targets and indicators and based on the list of draft indicators that the Working Group discussed at its Third Session two sets of targets and indicators are proposed. The recommendation of the Working Group to reduce the number of indicators to few key verifiable indicators and the feedback from the consultation process were considered while formulating the proposed targets and indicators.

18. In the first set, as presented in *Appendix 1*, each priority area of the Global Plan of Action has one target and two or more indicators focusing on key actions that are crucial for achieving the proposed targets. The targets provide clear objectives for countries and the indicators track if countries have taken these actions as a response to the Global Plan of Action. Closely related strategic priorities (SPs) of the Global Plan of Action have been grouped under one indicator (for example, national *in situ* systems for conservation of forest genetic resources will be strengthened if countries take actions urged by SP5, SP7, SP8 and SP9). The proposed four targets for countries to respond to the Global Plan of Action are:

- 1) The availability of data and information on forest genetic resources is increased;
- 2) National *in situ* and *ex situ* systems for the conservation of forest genetic resources are strengthened;
- 3) Tree seed and breeding programmes, as well as extension efforts on the use of forest genetic resources, are reinforced; and
- 4) National coordination mechanisms on forest genetic resources are created, and national strategies for the conservation and use of forest genetic resources are developed and implemented.

19. Subsequently, ten indicators and their possible verifiers are proposed in *Appendix 1* for monitoring how many countries have met, or made progress towards, these targets.

20. The second set, contained in *Appendix 2*, consists of four targets for the state of conservation, use and development of forest genetic resources, as follows:

- 1) Forest genetic resources are assessed and characterized;
- 2) Forest genetic resources are conserved *in situ*, and complementary *ex situ* measures have been implemented;

- 3) Use and development of forest genetic resources are enhanced; and
- 4) Policies and capacities supporting the conservation and sustainable use of forest genetic resources are strengthened.

21. Progress towards these targets will be monitored with 10 indicators focusing on the state of conservation, use and development of forest genetic resources. Verifiers are also proposed for these indicators.

22. A draft schedule for monitoring the implementation of the Global Plan of Action will be presented as a separate document¹⁶ for the consideration of the Working Group at this session. According to the draft schedule, countries are expected to submit Country Progress Reports to FAO by December 2017 for the preparation of the First Implementation Report. Guidelines for the Preparation of Country Progress Reports will be developed once the Commission has adopted the targets and indicators for forest genetic resources. The guidelines will explain in detail the verifiers and include a glossary of terms for reporting purposes. The guidelines will be finalized in consultation with the Working Group and the national focal points on forest genetic resources by March 2017¹⁷. For the first set of targets and indicators, countries can report progress by indicating the degree to which targets are achieved on a Likert-type scale (e.g. if the establishment of a national inventory for forest genetic resources or similar arrangement is completed, underway or not started). Separate guidelines will be prepared for regional networks and international organizations that contribute to the implementation of the Global Plan of Action.

VI. GUIDANCE SOUGHT

23. The Working Group may wish to:

- i) review and revise, as needed, the proposed targets and indicators for forest genetic resources; and
- ii) provide guidance, as appropriate, for the finalization of the verifiers and the development of Guidelines for the Preparation of Country Progress Reports.

24. The Working Group may wish to recommend that the Commission:

- i) consider the targets and indicators for forest genetic resources, as revised by the Working Group, with a view to adopt them;
- ii) request FAO to finalize the verifiers and develop Guidelines for the Preparation of Country Progress Reports, as well as reporting guidelines for regional networks and international organizations; and
- iii) request the Working Group and national focal points to review, by electronic means, the verifiers and the Guidelines for the Preparation of Country Progress Reports by March 2017.

¹⁶ CGRFA/WG-FGR-4/16/4

¹⁷ CGRFA/WG-FGR-4/16/4, Appendix.

Appendix 1

Proposed targets, indicators and verifiers for monitoring the implementation of the Global Plan of Action for the Conservation, Sustainable Use and Development of Forest Genetic Resources (FGR).

Priority area	Target	Indicator (response)	Verifier(s)*
Improving the availability of, and access to, information on forest genetic resources	Availability of data and information on FGR is increased	Extent of national FGR inventories or similar arrangements	Number and list of countries with operational national FGR inventories or similar arrangements
		Extent of up-to-date national FGR information systems	Number and list of countries with up-to-date national FGR information system(s)
<i>In situ</i> and <i>ex situ</i> conservation of forest genetic resources	National <i>in situ</i> and <i>ex situ</i> systems for FGR conservation are strengthened	Extent of national <i>in situ</i> conservation systems	Number and list of countries with operational national <i>in situ</i> conservation systems
		Extent of national <i>ex situ</i> conservation systems	Number and list of countries with operational national <i>ex situ</i> conservation systems
Sustainable use, development and management of forest genetic resources	Tree seed and breeding programmes, as well as extension efforts on FGR use, are reinforced	Extent of national tree seed programmes	Number and list of countries with operational national tree seed programmes or similar arrangements
		Extent of tree breeding programmes	Number and list of countries with operational tree breeding programmes
		Extent of extension efforts promoting appropriate use of FGR	Number and list of countries with ongoing extension programmes or activities on FGR use
Policies, institutions and capacity-building	National coordination mechanisms on FGR are created, and national strategies for FGR conservation and use are developed and implemented	Extent of national coordination mechanisms on FGR	Number and list of countries with national coordination mechanisms on FGR
		Extent of national strategies for FGR conservation and use	Number and list of countries implementing national strategies for FGR conservation and use
		Extent to which national strategies contribute to the implementation of regional or sub-regional FGR conservation strategies	Number and list of countries whose national strategy contribute to the implementation of regional or sub-regional FGR conservation strategy

* Countries can report progress by indicating the degree to which targets are achieved on a Likert-type scale.

Appendix 2

Proposed targets, indicators and verifiers for assessing the state of conservation, use and development of forest genetic resources.

Priority area	Target	Indicator (state)	Verifier(s)
Improving the availability of, and access to, information on forest genetic resources	Forest genetic resources are assessed and characterized	Assessment of forest genetic resources	Number and list of species for which the national distribution range has been documented
		Characterization of forest genetic resources	Number and list of species for which the national distribution range has been characterized based on non-molecular information (e.g. provenance trials, ecological or climatic zonation) Number and list of species for which the national distribution range has been characterized based on molecular information (e.g. range-wide sampling of populations for molecular marker studies)
<i>In situ</i> and <i>ex situ</i> conservation of forest genetic resources	Forest genetic resources are conserved <i>in situ</i> , and complementary <i>ex situ</i> measures have been implemented	Amount of forest genetic resources conserved <i>in situ</i>	Number and list of species included in <i>in situ</i> conservation programmes Area (ha) designated and managed for <i>in situ</i> conservation per species Number of <i>in situ</i> conservation populations by species
		Amount of forest genetic resources conserved <i>ex situ</i>	Number and list of species included in <i>ex situ</i> conservation programmes Area (ha) designated and managed for <i>ex situ</i> conservation per species Number of <i>ex situ</i> conservation populations per species

			Number of <i>ex situ</i> accessions (seed and clone banks) per species
Sustainable use, development and management of forest genetic resources	Use and development of forest genetic resources are enhanced	Species included in tree seed and breeding programmes (including international breeding cooperation and efforts carried out by the private sector)	Number and list of species included in national tree seed programmes Number and list of species included in tree breeding programmes
		Production of forest reproductive material	Area (ha) and number of seed stands per species Area (ha) and number of seed orchards per species Amount (average number per year) of planting stock produced through macro and micropropagation per species
		State of tree breeding programmes	Testing and selection cycle (1 st , 2 nd etc. generation) by species
Policies, institutions and capacity-building	Policies and capacities supporting FGR conservation and sustainable use are strengthened	Integration of FGR conservation and use into relevant national policies	Number of countries which have integrated FGR conservation and use into their national forest programme and/or national forest policy Number of countries which have integrated FGR conservation and use into their national biodiversity action plans and/or related policies Number of countries which have integrated FGR conservation and use into their national adaptation strategies for climate change
		Participation in regional/sub-regional collaboration on forest genetic resources	Number of countries participating in regional/sub-regional networks on forest genetic resources
		Participation in international research and development cooperation on forest genetic resources	Number of countries and national organizations participating in international R&D cooperation on forest genetic resources