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COMMISSION ON GENETIC RESOURCES FOR FOOD AND AGRICULTURE

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INTERGOVERNMENTAL TECHNICAL WORKING GROUP ON FOREST GENETIC RESOURCES

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DRAFT EXPLANATORY NOTES DESCRIBING, WITHIN THE CONTEXT OF THE ABS ELEMENTS,* THE DISTINCTIVE FEATURES OF FOREST GENETIC RESOURCES

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*) The *Elements to Facilitate Domestic Implementation of Access and Benefit-sharing for Different Subsectors of Genetic Resources for Food and Agriculture* (ABS Elements) are available in all UN languages at: http://www.fao.org/nr/cgrfa/cross-sectorial/abs/

I. INTRODUCTION

1. Sustainable Development Goal (SDG) Target 2.5 and SDG Target 15.6 require countries to "promote access to and fair and equitable sharing of benefits arising from the utilization of genetic resources and associated traditional knowledge, as internationally agreed."

2. In 2015, at its Fifteenth Regular Session, the Commission on Genetic Resources for Food and Agriculture (Commission), welcomed the *Elements to Facilitate Domestic Implementation of Access and Benefit-sharing for Different Subsectors of Genetic Resources for Food and Agriculture* (ABS Elements) and invited the Director-General of FAO to bring them to the attention of the Conference.[1] The FAO Conference, at its Thirty-Ninth Session in June 2015, welcomed the ABS Elements and invited Members to consider and, as appropriate, make use of them. The Conference also noted the complementarity between the work of the Commission and the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity (Nagoya Protocol) in regard to access and benefit-sharing (ABS) for genetic resources.[2]

3. In 2017, at its last session, the Commission "agreed to produce non-prescriptive explanatory notes describing, within the context of the ABS Elements, the distinctive features and specific practices of different subsectors of genetic resources for food and agriculture (GRFA), to complement the ABS Elements."[3]

4. The Commission invited Members, observers and other stakeholders to provide relevant inputs for such explanatory notes by electronic means, including on their practical experiences in implementing national ABS measures related to GRFA; and the distinctive features and the specific practices of different subsectors of GRFA.[4]

5. The Commission also requested the Secretariat to convene, in collaboration with the Secretariats of the International Treaty on Plant Genetic Resources for Food and Agriculture (Treaty) and the Convention on Biological Diversity (CBD), an international workshop to assist countries to raise awareness of distinctive features and specific practices of subsectors of GRFA in the context of the ABS Elements.[5] It requested that the open-ended workshop be attended by at least one representative per region of each of the Commission's intergovernmental technical working groups on plant, animal, forest and aquatic genetic resources and seven regionally representative experts from the subsectors of micro-organism and invertebrate GRFA.[6]

6. The International Workshop on Access and Benefit-Sharing for Genetic Resources for Food and Agriculture (Workshop) was held in Rome, Italy, from 10 to 12 January 2018. The Workshop considered inputs received from Members, observers and other stakeholders and provided a forum for participants to exchange information, experiences and views. The Workshop provided outputs for subsequent elaboration into non-prescriptive explanatory notes describing, within the context of the ABS Elements, the distinctive features and specific practices of different subsectors of GRFA.[7] More information on the workshop, including submissions received from Members, observers and other stakeholders, are available on the Commission's website.[8] The outputs of the workshop as well as the

[1] CGRFA-15/15/Report, paragraph 22(ii).
[2] C 2015/REP, paragraph 52.
[3] CGRFA-16/17/Report, paragraph 25 (iii).
[4] CGRFA-16/17/Report, paragraph 25 (iv).
[5] CGRFA-16/17/Report, paragraph 25(v).
[6] CGRFA-16/17/Report, paragraph 25 (v).
[7] CGRFA-16/17/Report, paragraph 25(v), e–g.
[8] http://www.fao.org/nr/cgrfa/cgrfa-meetings/abs/itwg-abs/en/

Proceedings have been made available to the Intergovernmental Technical Working Group on Forest Genetic Resources for Food and Agriculture (Working Group).[9]

7. This document proposes draft non-prescriptive explanatory notes describing, within the context of the ABS Elements, the distinctive features and specific practices of forest genetic resources (FGR). It briefly introduces the ABS Elements (Chapter II) and presents the distinctive features of FGR, as identified in the Annex to the ABS Elements (Chapter III). It further identifies areas where explanatory notes could further the aim of the ABS Elements to assist governments to take into account, in the development, adaptation or implementation of ABS measures, the importance of and distinctive features of FGR, while complying, as applicable, with international ABS instruments (Chapter IV).

II. ELEMENTS TO FACILITATE DOMESTIC IMPLEMENTATION OF ACCESS AND BENEFIT-SHARING FOR DIFFERENT SUBSECTORS OF GENETIC RESOURCES FOR FOOD AND AGRICULTURE

8. The Nagoya Protocol has been hailed as a giant step towards the implementation of the third objective of the Convention on Biological Diversity (CBD): the fair and equitable sharing of benefits arising out of the utilization of genetic resources, including by appropriate access to them. Implementing this third objective should contribute to the conservation of biological diversity and the sustainable use of its components, the other two objectives of the CBD.

9. The Nagoya Protocol requires its Contracting Parties to consider, in the development and implementation ABS measures, the importance of GRFA and their special role for food security[10]. It also explicitly recognizes the importance of genetic resources to food security, the special nature of agricultural biodiversity, its distinctive features and problems needing distinctive solutions, the interdependence of all countries with regard to GRFA as well as their special nature and importance for achieving food security worldwide and for sustainable development of agriculture in the context of poverty alleviation and climate change and acknowledges in this regard the fundamental role of the Treaty.[11]

10. In 2011, the Commission initiated a process that ultimately led to the preparation of the ABS Elements. The Commission established an Ad Hoc Technical Working Group on Access and Benefit-sharing for Genetic Resources for Food and Agriculture which, *inter alia*, identified "relevant distinctive features of the different sectors and subsectors of genetic resources for food and agriculture".[12]

11. In 2013, the Commission replaced the Ad Hoc Working Group by the Team of Technical and Legal Experts on Access and Benefit-Sharing (ABS Expert Team) and mandated the latter to prepare, in collaboration with the Commission's Working Groups on plant, animal and forest genetic resources, draft ABS Elements, which would be "*voluntary tools to assist national governments, not new international access and benefit-sharing instruments*."[13]

12. In 2015, at its Fifteenth Regular Session, the Commission welcomed the ABS Elements. Subsequently, the FAO Conference, the highest Governing Body of FAO, at its Thirty-Ninth Session, welcomed the ABS Elements and invited Members to consider and, as appropriate, make use of them.[14]

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[9] CGRFA/WG-FGR-5/18/Inf.8; CGRFA/WG-FGR-5/18/Inf.9.
[10] Nagoya Protocol, Article 8(c).
[11] Nagoya Protocol, Preamble.
[12] CGRFA-14/13/6.
[13] CGRFA-14/13/Report, paragraph 40(xv).
[14] C 2015/REP, paragraph 52(c) & (d).

13. The ABS Elements aim to assist governments considering developing, adapting or implementing ABS measures to take into account the importance of GRFA, their special role for food security and the distinctive features of the different subsectors of GRFA, while complying, as applicable, with international ABS instruments.

14. The ABS Elements recommend, in particular, to:

- consider in the development, adaptation or implementation of ABS measures, the distinctive features of the subsector of GRFA concerned, including its activities, socio-economic environment and use and exchange practices;
- identify and consult relevant governmental entities and non-governmental stakeholders holding, providing or using GRFA;
- integrate ABS measures with broader food security and sustainable agricultural development policies and strategies;
- consider and evaluate available options for ABS measures;
- integrate the implementation of ABS measures into the (existing) institutional landscape;
- communicate and raise awareness of ABS measures; and
- assess *ex ante* and monitor the effectiveness and impact of ABS measures for GRFA.

15. The ABS Elements also provide guidance with regard to issues of particular relevance to ABS for GRFA, including FGR:

- ABS measures usually require prior informed consent for access to genetic resources "for their utilization." "Utilization", according to the Nagoya Protocol, means "to conduct research and development on the genetic and/or biochemical composition of genetic resources, including through the application of biotechnology"[15]. While certain practices, such as obtaining seed or cuttings for raising seedlings and planting them for reforestation might clearly not qualify as "research and development" and therefore not trigger the application of ABS measures, other activities may qualify. Provenance trials that help to identify seed sources best adapted to the conditions of a specific planting site may simply serve the purpose of reforestation and the production of timber; they may, however, also involve research and development aimed at selecting genetic resources for breeding programmes.
- The ABS Elements also address various options policymakers may wish to consider in designing ABS authorization procedures, on the one hand, and benefit-sharing arrangements, on the other. They refer, for example, to the possibility of facilitating benefit-sharing through partnership agreements. Such agreements may cover a whole range of genetic resources and address the sharing of various benefits as part of a longstanding partnership. Range-wide characterization of genetic diversity in tree populations across species' distribution range often include many seed sources from multiple countries. Provenance testing is usually very expensive and long-term research. All these aspects may speak in favour of tailor-made ABS arrangements, should countries consider exchanges of tree germplasm for provenance trials as "utilization".

16. While the ABS Elements thus address issues of particular relevance to GRFA, including FGR, the Commission, at its last session concluded that there is a need for more detailed explanatory notes, describing within the context of the ABS Elements, the distinctive features of GRFA.

III. DISTINCTIVE FEATURES OF FOREST GENETIC RESOURCES

17. Starting in 2012, the Commission, in collaboration with its intergovernmental technical working groups on plant, animal and forest genetic resources, identified a list of distinctive features of GRFA which is annexed to the ABS Elements. While these distinctive features aim to reflect an

[15] Nagoya Protocol, Article 2.

equilibrium between different types of GRFA, not every feature is necessarily applicable to each and every subsector. Moreover, the features are distinctive, but not necessarily unique to GRFA. Table 1 presents the distinctive features and highlights those features which are considered particularly relevant (marked in the table by plus signs [+]) or less (or not) relevant (marked in the table by minus signs [-]) to FGR.

TABLE 1: DISTINCTIVE FEATURES OF FOREST GENETIC RESOURCES

A. The role of GRFA for food security	A.1 GRFA are an integral part of agricultural and food production systems and play an essential role for achieving food security and the sustainable development of the food and agriculture sector.	+
	A.2 Plant, animal, invertebrate and micro-organism GRFA form an interdependent network of genetic diversity in agricultural and aquatic ecosystems respectively.	+
B. The role of human management	B.1(a) The existence of most GRFA is closely linked to human activity and (b) many GRFA can be regarded as human-modified forms of genetic resources.	-
	B.2 The maintenance and evolution of many GRFA depend on continued human intervention, and their sustainable utilization in research, development and production is an important instrument to ensure conservation.	-
C. International exchange and interdependence	C.1Historically, GRFA have been widely exchanged across communities, countries and regions over often long periods of time, and a relevant part of the genetic diversity used in food and agriculture today is of exotic origin.	-
	C.2Countries are interdependent with regard to GRFA and act both as providers of some GRFA and as recipients of others.	+
	C.3The international exchange of GRFA is essential to the functioning of the sector, and its importance is likely to increase in future.	+
D. The nature of the innovation process	D.1 The innovation process for GRFA is usually of incremental nature and the result of contributions made by many different people, including indigenous and local communities, farmers, researchers and breeders, in different places and at different points in time.	+
	D.2 Many GRFA products are not developed out of an individual genetic resource, but with the contributions of several GRFA at different stages in the innovation process.	-
	D.3 Most products developed with the use of GRFA can in turn be used as genetic resources for further research and development, which makes it difficult to draw a clear line between providers and recipients of GRFA.	+
	D.4 Many agricultural products reach the market place in a form in which they may be used both as biological resources and as genetic resources.	+
E. Holders and users of GRFA	E.1(a) GRFA are held and used by a broad range of very diverse stakeholders. (b) There are distinct communities of providers and users with respect to the different subsectors of GRFA.	-
	E.2The different stakeholders managing and using GRFA are interdependent.	+
	E.3A significant amount of GRFA is privately held.	-
	E.4An important part of GRFA is held and can be accessed ex situ.	-
	E.5An important part of GRFA is conserved in situ and on farm under different financial, technical and legal conditions.	+
F. GRFA exchange practices	F.1The exchange of GRFA takes place in the context of customary practices and existing communities of providers and users.	+
	F.2An extensive transfer of genetic material between different stakeholders along the value chain occurs in research and development.	-
G. Benefits generated with the use of GRFA	G.1 (a) While the overall benefits of GRFA are very high, (b) it is difficult to estimate at the time of the transaction the expected benefits of an individual sample of GRFA.	+
	G.2 The use of GRFA may also generate important non-monetary benefits.	+
	G.3 The use of GRFA may lead to external effects going far beyond the individual provider and recipient.	+

18. The Working Group, at its Third Session, listed the following aspects of forest genetic resources which it recommended for consideration when dealing with access and benefit-sharing for FGR:

- FGR are often undomesticated species and populations.
- Forest species migrate on their own (albeit slowly) and do not recognize borders.
- There is a long history of moving species around the world. Many plantation programs depend on exotic species (e.g. *Pinus, Eucalyptus, Gmelina, etc*).
- Many of the benefits derived from forests are "ecosystem services" and are difficult to value. Unlike production crops, it is difficult to put a monetary value on what may come from a breeding or restoration program.
- The benefits derived from tree breeding take decades to realize. Breeding intervals range from 10 to 15 years, plantation ages can range from 8 to 40 years. A temperate forest tree breeding program would need close to 35 years to see any real economic value from a material transfer (maybe less if the seed could be sold for increased value, but the economic benefit of the seed would be minimal).
- Unlike agricultural crops, a forest does not need a new crop every year; there is no large market for seed sales as is the case for corn, beans, rice, etc.
- Disease resistance is a key trait for which exotic germplasm is often needed. Aspects to consider:
    - Sometimes the benefits are simply establishment of a healthy forest, with no plans for harvest in some cases;
    - Often the disease for which resistance is sought through breeding programmes originates from the same region of the germplasm (i.e., the problem originated from the source of the resistance).[16]

IV. DRAFT EXPLANATORY NOTES DESCRIBING, WITHIN THE CONTEXT OF THE ABS ELEMENTS, THE DISTINCTIVE FEATURES OF FOREST GENETIC RESOURCES

19. The following draft explanatory notes aim to (1) provide relevant background information to policy-makers developing, adapting or implementing ABS measures and (2) clarify some of the issues raised in the ABS Elements as they are relevant to FGR.

Background information on forest genetic resources

20. ABS policy-makers may find it useful to receive some background information on the use and exchange of FGR.[17] Explanatory notes could therefore explain that:

> The exploration, assessment and movement of forest reproductive material have a long history in the forest sector. Early provenance trials revealed the existence of "geographical races" within tree species and also that the origin of the seed has a major influence on the survival and performance of tree planting efforts. Numerous international provenance trials have been established for many tree species to test the performance of tree germplasm from different countries. Subsequently, the results of these provenance trials have had a large influence on the demand of certain seed sources as compared to others and increased germplasm transfers

[16] CGRFA/WG-FGR-3/14/Report, *Appendix D*.
[17] See Background Study Paper No. 44.

between countries and regions. Provenance trials have also provided incentives for the conservation of FGR.

One of the main uses of FGR is direct use as reproductive material (in the form of seeds, cuttings and other propagating parts of a tree) for reforestation, afforestation or establishment of agroforestry systems.[18] The extent to which FGR are used in systematic exploration and breeding programmes varies a lot among different tree species. For several fast-growing tree species used for industrial and smallholder planting, systematic exploration and improvement started some 50 years ago and has mainly focused on the most common plantation tree species such as acacias, eucalypts and pines. For various temperate and boreal tree species, exploration and assessment efforts started more than 200 years ago, although more systematic improvement programmes were initiated, for the most part, only in the course of the twentieth century. More recently, tree breeding has progressed to encompass a range of biotechnological techniques, including marker-assisted breeding and other molecular marker applications as well as genomic sequencing.

For the majority of other tree species, improvement efforts still remain limited and are mostly restricted to provenance trials and the selection of seed stands. In general, forest tree breeding is determined by long generation intervals and breeding cycles and most species are still within the first generations of genetic improvement. However, genetic gains per generation can be quite substantial due to the fact that many species are virtually wild and diversity and selection opportunity is very high. Additionally, some species such as tropical eucalypts, acacias and some pines are progressing relatively rapidly because of shorter generation intervals (typically less than 10 years) and early selection techniques. The genepools of many tree species, even in breeding programmes, are still semi-wild, and tested, selected or improved material is only available for a relatively small number of tree species. According to the level of improvement involved, reproductive material of forest tree species may be obtained from a wide variety of sources. For example, the collection of seeds from wild stands and natural populations for mass propagation of plantations or forest regeneration is still common. Additionally, seed orchards, special facilities associated with organized breeding programmes, are managed specifically for seed production. The genetic material produced in these orchards has usually been tested and selected in provenance trials across different sites and climatic conditions, and may be optimized for specific commercial traits such as wood volume, pulp yield, biomass yield or leaf oils. Large-scale nurseries producing tree seedlings and/or cuttings are often managed by large companies or state agencies, but small-scale nurseries operated by farmers and local communities are often the main source of tree seedlings in rural areas, especially in areas where no commercial forestry is practised.

Some ex situ collections of FGR have been established for conservation and research purposes and are usually managed by public or semi-public research institutions. While the movement of FGR around the world has a long history and the proportion of exotic forest reproductive material used for plantation and afforestation is quite high, considerable differences exist between species with regard to their involvement in international exchange of germplasm and the extent to which they have spread outside their natural distribution ranges. For example, several fast-growing plantation species, such as acacias, pines and eucalypts, have been moved extensively throughout the world and are nowadays cultivated far beyond their natural distribution ranges. Also, some tropical high-value speciality timber species such as mahogany, Spanish cedar and teak are grown as exotics in many countries.

Although the exchange of some species, such as agroforestry tree species, may have taken place on a smaller scale, their distribution to countries beyond their native ranges has played

[18] This section draws on Part 1.C of Background Study Paper No. 59.

an important role in the development of the sector. However, for many species exchange of genetic material has been limited to date, and takes place mainly on a regional level or between countries sharing the same climatic conditions. Various species are also used largely within their natural habitats in native forests and are only exchanged very occasionally, for example for specific research purposes.

Legal, policy and administrative measures, including existing practices

21. The ABS Elements refer to specific legal administrative or legislative measures that may already exist for ABS for certain subsectors of GRFA. Reference is made, in particular, to the Treaty. Explanatory notes could therefore explain:

> The Treaty covers all plant genetic resources for food and agriculture. Its Multilateral System of Access and Benefit-sharing (MLS) covers also a few tree crops (apple (*Malus*); breadfruit (*Artocarpus*); citrus (incl. *Poncirus* and *Fortunella* as root stock); coconut (*Cocos*)) and some forages that are woody plant species. Under the Treaty, access to these genetic resources shall be provided pursuant to a Standard Material Transfer Agreement (SMTA) for the purpose of utilization and conservation for research, breeding and training for food and agriculture, provided that such purpose does not include chemical, pharmaceutical and/or other non-food/feed industrial uses.[19] The Treaty's Governing Body, at its Sixth Session, initiated the elaboration of a "full draft revised SMTA focusing especially on the development of a subscription system" with the aim to increase the income of the Benefit-Sharing Fund. In addition, options for expanding the coverage of the MLS are being considerd.[20] The Ad Hoc Open-Ended Working Group to Enhance the Functioning of the Multilateral System continues to consider these issues.

22. The ABS Elements also refer to commercial or research practices for the use and exchange of genetic resources for research and development which some of the subsectors may have already developed and encourage governments to consider in the development of ABS measures these practices.[21] Explanatory notes could therefore explain:

> Tree breeding is often carried out by cooperatives to pool the resources of collaborators through joint breeding programmes. Governments may wish to reflect this common *modus operandi* of modern tree breeding in their ABS measures with a view to encourage and support through them the pooling of forest genetic resources and facilitate the sharing of benefits arising from their utilization, including through cooperation agreements that go beyond ABS.

Identification and consultation of relevant governmental entities and non-governmental stakeholders holding, providing or using GRFA

23. The ABS Elements recommend consulting government entities and non-governmental stakeholders holding, providing or using GRFA.[22] Explanatory notes could explain that:

> The competent authority for ABS will often not be the authority which is responsible for the forest sector. As most stakeholders in the forest sector have limited knowledge of ABS and the implications of ABS for their sector, consultations could help to raise the awareness among stakeholders and allow policy- and decision-makers to get an insight into the specificities of forest research and development and existing use and exchange practices of the subsector.

[19] Treaty, Article 12.3(a).
[20] IT/GB-6/15/Report, Appendix A.1.
[21] ABS Elements, paragraph 15.I.c.
[22] ABS Elements, paragraph 15.II.

Integration of ABS measures with broader food security and sustainable agricultural development policies and strategies

24. The ABS Elements recommend to consider ABS for GRFA in the wider context of sustainable agricultural development and food security.[23] Explanatory notes could therefore explicitly refer to specific forest policies and legislation which could either integrate or refer to relevant provisions for ABS for FGR:

> Trees have an important role in contributing to food security. They rarely provide a complete diet, but the supply of fruits, nuts and leaves is crucial to complement agricultural production, especially during drought, famine, disasters and conflicts. Natural forests are also critical for the survival of forest-dwellers, including many indigenous peoples, and they help deliver clean water to agricultural lands by protecting catchments. Farmers increase food security by retaining trees on agricultural land, by encouraging natural regeneration and by planting trees and other forest plants. For most of the year, herders in arid and semi-arid lands depend on trees as a source of fodder for their livestock. Thus, forests, trees and agroforestry systems contribute to food security and nutrition in many ways, even though such contributions are often poorly reflected in national development and food security strategies. Besides, poverty can be reduced and food security increased through commercial forestry. Thus, ABS measures for FGR should form part of broader food security considerations and relevant forestry policies policies.[24]
>
> The risk of spreading pests and diseases through transfer of tree germplasm is often considerable. Restricting the spread of these pests and diseases continues to be a major challenge and is the objective of phytosanitary measures. Such measures, as well as codes of practice could make reference to ABS for FGR, with a view to reduce the bureaucratic burden and streamline administrative procedures.

Integration of implementation of ABS measures into the institutional landscape

25. ABS measures often cut across different subsectors and GRFA, which are often the responsibility of different ministries and competent authorities. The ABS Elements suggest to consider using existing administrative structures in the subsectors for the implementation of ABS measures, rather than creating new and additional administrative layers.

> Existing arrangements for forest governance could be used for the implementation of ABS measures for FGR. While, at country level, a central authority may oversee the implementation of ABS measures, the ABS competence for FGR could be delegated to the national forest agency or forest research institute, given its expertise, its knowledge of stakeholders and its responsibility for the implementation of other FGR-related rules or regulations (e.g. certification of forest reproductive material for domestic use and/or international trade).

Flows of germplasm, including international flows and possible gaps in ABS measures

26. The ABS Elements recommend that in developing, adapting and implementing ABS measures, the relevance of germplasm flows should be considered[25]. Explanatory notes could explain that:

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[23] ABS Elements, paragraph 15.III.
[24] See Background Study Paper No. 44, p. p.21.
[25] ABS Elements. paragraph 15 I.e.

> Over the last 200 years, genetic resources for forest trees have been increasingly transferred, within and outside of species' native distribution ranges, for forestry and for research and development. Transferred germplasm has been deployed to grow trees for numerous purposes, ranging from the production of wood and non-wood products to the provision of ecosystem services, such as the restoration of forests for biodiversity conservation, climate change mitigation and watershed management.
>
> *Acacia* seeds from Asia and Oceania were exported to southern Africa. *Eucalyptus camaldulensis and Eucalyptus globulus* were introduced from Australia to 91 and 37 other countries, respectively. *Theobroma cacao* was introduced from Venezuela to Indonesia in 1560 and into the Philippines around 1600. Provenance trials typically include several countries and imply the testing of seeds from various countries in other countries. Although in more recent times the documentation of germplasm transfer of agroforestry trees to support agricultural practices has improved, much information, especially on the origin of provenances, is still unknown.
>
> International transfers of FGR, including for research and development, are likely to continue on a routine basis.

Possible implications of the scope of ABS measures

27. The ABS Elements stress that ABS measures need to be clear as to which GRFA are covered by relevant access provisions and which are not.[26] This consideration applies likewise to the temporal and the subject-matter scope of ABS measures. Explanatory notes could explain that:

> FGR have been used extensively in systematic research and development for about 100 years. For FGR accessed and utilized for the first time many decades ago, ABS measures covering GRFA collected prior to their entry into force may have significant implications.
>
> FGR often reach the market in a form in which they may be used both as "biological resource" (e.g., for planting) or as a genetic resource (i.e. for research and development, including breeding). Regulating access to FGR used as "biological resource" may have significant impact on trade of forest reproductive material and could impede the exchange and use of such material. If ABS measures do not regulate access to genetic resources for their use as biological resource, they may still require the user to request a permit and share benefits should the intention change and the genetic resource be used for research and development.

Provenance trials as "utilization"?

28. Access to genetic resources for their "utilization", as defined by the Nagoya Protocol, will usually trigger the application of ABS measures. "Utilization", according to the Nagoya Protocol, means "to conduct research and development on the genetic and/or biochemical composition of genetic resources, including through the application of biotechnology"[27]. The ABS Elements point out that it may be difficult in some cases to decide whether a GRFA is utilized within the meaning of the Nagoya Protocol.[28] Explanatory notes could explain:

> Provenance trials that help to identify seedlings best adapted to the conditions of a specific planting site may simply serve the purpose of reforestation and the production of wood or non-wood products on sites that are similar to the test environment. On the other hand, provenance research is an important component of tree breeding and is often considered "research and

[26] ABS Elements, paragraph 36.
[27] Nagoya Protocol, Article 2.
[28] ABS Elements, paragraph 46-48.

development."[29] ABS measures should therefore draw a clear line between FGR-related activities that are considered "utilization" and those which are not. In drawing this line, they may wish to consider that provenance trials usually use seed collected from many sites and often from different countries. In some cases there are no records of the agency that collected the seed or of the site where seed was collected. Trials are often established across national borders and sometimes worldwide. The organization that established the trial may or may not have been the one that collected the seed, and could be different from those who have invested in the establishment and maintenance of the trial.

ABS arrangements

29. The ABS Elements mention that GRFA are often exchanged in the framework of close working collaborations and partnerships, with many stakeholders acting as intermediaries in the value chain, i.e. being neither the original provider nor the end user of a specific GRFA. Explanatory notes could explain:

> If ABS measures consider provenance trials as "utilization" they could still accommodate this specific form of research and development by providing for the possibility of concluding framework agreements that authorize access to and utilization of a range of FGR and addressing benefit-sharing for all partners contributing to the trials.

Benefit-sharing for FGR

30. Monetary benefits to be shared under ABS arrangements may include various forms, such as access fees, up-front payments, salaries etc.. In the case of FGR, the time span between access to the resource and the generation of benefits may be extremely long. Explanatory notes could explain:

> While ABS arrangements will often require that benefits be shared as they accrue, it may be worthwhile in the case of FGR to consider alternative triggers for the benefit-sharing as the time span between access to FGR and the generation of benefits may be extremely long. Up-front payments have the advantage of securing benefits at the time of access independent of whether or benefits will be ultimately be generated. Their disadvantage is that they will usually be relatively low as the benefits are uncertain at the early stage of access.

Creating ABS rules specific to FGR

31. If ABS measures establish subsector-specific rules for specific subsectors of genetic resources, such as FGR, there will be a need to define the scope of application of these rules. Explanatory notes could explain:

> If ABS measures establish subsector-specific rules for FGR, policy-makers will have to look into the scope of "FGR". Issues to be considered include whether FGR-specific ABS measures should apply to all FGR that contribute directly or indirectly to food security. FGR could thus include all established use and exchange practices for forest reproductive and genetic material (e.g. seeds, seedlings, rooted cuttings, genes) ranging from tree species providing tree fruits, other edible products for humankind and cattle, and/ or species providing other services relevant to food and agriculture (e.g. erosion control; water storage and filtration; soil fertility improvement; wind shelter; biodiversity conservation, bee forage for honey; nitrogen fixation; shade, etc.) to trees that allow foresters to generate income from non-food forest products (e.g. timber, fibre, clothing, shelter, energy, tannin, resin, ecotourism, etc.). In many cases, trees will of course serve several purposes at the same time or their originally envisaged purpose

[29] See J. Koskela, B. Vinceti, W. Dvorak, D. Bush, I.K. Dawson, J. Loo, E.D. Kjaer, C. Navarro, C. Padolina, S. Bordács, *et al.* Utilization and transfer of forest genetic resources: a global review. For. Ecol. Manage., 333 (2014), pp. 22-34.

will change, which may raise the question of how access to FGR for utilization should be regulated in such cases.

V. GUIDANCE SOUGHT

32. The Working Group is invited to

- Confirm, as appropriate, the relevance of the distinctive features to FGR, as identified in Table 1 of this document, and
- Review and revise, as appropriate, the explanatory notes contained in this document and suggest additional explanatory notes, for submission to the Commission.