



The International Treaty

ON PLANT GENETIC RESOURCES FOR FOOD AND AGRICULTURE



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Item 14 of the Provisional Agenda
FOURTH SESSION OF THE GOVERNING BODY
Bali, Indonesia, 14 – 18 March 2011
IMPLEMENTATION OF ARTICLE 6

Note by the Secretary

i) The Governing Body, at its Third Session, reiterated the fundamental importance of promoting the implementation of Article 6. The Governing Body noted that in many regions the implementation of Article 6 is lagging behind in comparison to other elements of the International Treaty, and that further financial resources, capacity building and technology transferred are required.

ii) At the Third Session, it was proposed to develop a toolbox to assist countries in designing measures to promote the sustainable use of PGRFA. The Governing Body requested the Secretary to clarify the notion of a toolbox in order to come to a common understanding with regard to such an instrument.

iii) The main aim of this document is to describe the concept of a toolbox, its justification and function, the elements that will constitute the toolbox, and who will benefit from its development and deployment. The document also contextualises the toolbox in the wider framework of Article 6 and suggests a number of possible initiatives in the direction of developing a work programme on sustainable use of PGRFA.

iv) The Governing Body is invited to:

- *Appraise the conceptualization of the toolbox and its constituent elements, and give guidance on the development of the toolbox;*
- *In order to support the designing of a work programme on sustainable use of PGRFA, agree on the organization of a stakeholders' consultation;*
- *Establish an Ad Hoc Technical Committee on Sustainable Use of PGRFA.*

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Appendix 1: Examples of tools in a toolbox for sustainable use

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I. INTRODUCTION

(a) Request of the Governing Body

1. The International Treaty on Plant Genetic Resources for Food and Agriculture (The Treaty) is an innovative and creative instrument to address simultaneously several global challenges that rely fundamentally on the successful use of plant genetic resources. These challenges include food security, biodiversity loss, climate change adaptation and poverty alleviation for small-holder farmers.
2. Article 6 of the Treaty specifically obligates Contracting Parties to employ means to sustainably use plant genetic resources for food and agriculture (PGRFA) for the benefit of humankind and especially the poor in developing countries.
3. The Governing Body, at its Third Session, reiterated the fundamental importance of promoting the implementation of Article 6 in order for Contracting Parties to enhance capacity to use PGRFA through plant breeding, including the utilization of modern tools, traditional varieties and the participation of farmers. The Governing Body noted that in many regions the implementation of Article 6 is lagging behind in comparison to other elements of the International Treaty, and that further financial resources, capacity building and technology transfer are required.
4. Since there does not appear to be an integrated and coordinated approach in most countries towards the promotion of sustainable use of PGRFA, countries may be assisted in the development of an integrated approach for better use of PGRFA and implementation of Article 6 of the Treaty. At the Third Session of the Governing Body, it was proposed to develop a *toolbox* to assist countries in the design of measures to promote the sustainable use of PGRFA. The Governing Body requested the Secretary to clarify the notion of a toolbox in order to come to a common understanding with regard to such an instrument.

(b) Aim of the document

5. The aim of this document is to describe the concept of a toolbox for PGRFA, its justification, the elements that will be included, the functions that it will serve, and who will benefit from its development. A basic tenet of the document is that management of PGRFA is a continuum across these components, as noted in Article 5 of the Treaty. Sustainable use of PGRFA cannot contribute optimally to improved livelihoods unless countries make the efforts to integrate the multiple components. This document introduces the concept of a toolbox to help achieve this integrative and comprehensive goal.
6. Furthermore, this document will explore the possibility of other initiatives to be conducted in the next inter-sessional period, mainly in order to develop a work programme on sustainable use of PGRFA.

(c) Other Governing Body documents on the subject

7. The Second and Third Sessions of the Governing Body included presentations from Contracting Parties on implementation of Article 6. The Second Session included reports by

Australia, Ecuador, Egypt, El Salvador, Germany, Lesotho, Madagascar, Niger, Pakistan, Seychelles, Syria, Sweden, Tanzania and Uruguay. The Third Session included reports by Australia, Canada and Italy, along with the Consultative Group for International Agricultural Research (CGIAR) and The Southeast Asia Regional Initiatives for Community Empowerment (SEARICE).

8. The submissions in the Second Session illustrated that there are numerous and interrelating laws and policies relevant to promoting the sustainable use of PGRFA. These include general laws and policies relating to the environment, biodiversity, and agricultural development. These laws and policies may impact a number of government departments and agencies, which ultimately need to coordinate among themselves for a coherent overall strategy for sustainable use.

9. Contracting Parties identified several measures undertaken, targeted at different stakeholders, including policy assistance, technical and institutional capacity building, enhancing scientific research skills, development of baseline data, and promotion of incentives for all stakeholders to conserve and sustainably use PGRFA.

10. Importantly, the CGIAR addressed the need for a conceptual framework for analyzing sustainable use of PGRFA. This resulted in a workshop from 19-21 November 2007, part of which addressed this question (<http://www.sgrp.cgiar.org/?q=node/538>). The workshop discussed the relevance of the Treaty's emphasis on sustainable use to:

- promote sustainable agricultural systems;
- broaden the genetic base; assessing the genetic variability of materials used in breeding activities;
- gain better knowledge of the needs of farmers and consumers;
- create better access to genetic diversity (as promoted by the Treaty);
- manage information to accompany the exchange of germplasm.

11. In the Third Session, with only three countries reporting, the responses were narrower. From the Australian context, it emerged that sustainable use may fit within broad development goals. The objectives of Article 6 are being met by virtue of a modern agricultural sector serviced by effective research, development and extension services supported by natural resource management programs and environmental protection legislation.

12. Other documents have also reviewed the status of sustainable use of PGRFA from various perspectives. For example the Commission on Genetic Resources for Food and Agriculture (CGRFA) recently published the *Second State of the World's Plant Genetic Resources for Food and Agriculture* (SoW-PGR-2) (<ftp://ftp.fao.org/docrep/fao/meeting/017/ak528e.pdf>). It was endorsed at the Twelfth Session of the Commission on Genetic Resources for Food and Agriculture (Rome, 18-23 October 2009). Chapter 4 of this report specifically deals with sustainable use and represents a current very comprehensive overview of the subject.

II. BACKGROUND ON SUSTAINABLE USE OF PGRFA

(a) Definition

13. The eco-geographic variations across locations where crop agriculture is practiced have placed natural selection pressure on species to adapt to a wide range of situations – for variations in soils, temperature, water availability, and pest and disease pressure.

14. However, this natural selection could not account fully for the dramatic changes that domestication brought to crop plants in terms of variation in a broad range of traits. In addition to this natural selection, the cultivators of crops also changed gene frequencies through selectively propagating the preferred plants in the population.

15. As farmers looked for specific features, and the environment helped mould other traits, distinct populations developed into varieties – a population for which farmers maintained a separate identity, and often sowed separately from other varieties of the same crop species, having different characteristics. These varieties became known by scientists as *landrace varieties*, and are the fundamental components of most genebanks, whether in situ or ex situ.

16. PGRFA generally includes some combination of:

- wild ancestors or related species of modern crops;
- non-related species from which genes may be used for crop improvement, either through conventional crossing or through gene isolation and transfer (*transgenics*);
- landrace varieties;
- modern varieties developed by breeders.

17. Promoting sustainable use of plant genetic resources for food and agriculture, as described in the Treaty, requires the development and maintenance of a broad spectrum of policy, legal and technical measures and depends on the engagement of a wide range of stakeholders, including: farmers and farmer's organizations, researchers and public and private breeding institutions, the seed sector, non-governmental organizations, extensionists and local development agencies, national authorities for agriculture, food security and environment.

(b) Context

18. A toolbox for sustainable use will have its application mainly for farmers and for programmes that aim to conserve agricultural biodiversity and develop new crop varieties. It will also be used in those programmes at the interface between conservation and plant breeding (particularly pre-breeding), and at the interface between plant breeding and seed systems.

19. The actual toolbox will provide guidelines and identify resources that countries can use in the design and implementation of integrated management systems for sustainable use of PGRFA. These integrated systems must necessarily include the full range of management components: conservation, exchange of local varieties among farmers, integrated genetic improvement through application of the full range of techniques and tools, e.g. farmer selection, participatory breeding between farmers and breeders, molecular tools, multidisciplinary inputs, and comprehensive information management.

20. FAO has expertise in developing an all-encompassing suite of interventions (*one-stop-shop*) to address research and development issues (see for example, Right to Food Methodology Toolbox – http://www.fao.org/righttofood/publi_02_en.htm).

21. This toolbox will be used as a reference material and a compendium – an easily accessible succinct suite of instruments that member countries can use to develop capacity for sustainable use of PGRFA.

(c) Stakeholders

22. Farmers are key to sustainable use of PGRFA, as they conserve and further select from local landraces. While farmer selection is declining as modern varieties are developed from public and private organizations, it is still a vital part of both conservation and sustainable use, especially in poorer countries and in regions of rich genetic diversity of crops. Farmers have observed and selected from within local genetic diversity for millennia, and enriched that diversity through exchange with neighbors or sometimes with distant traders and travelers.

23. However, changing times are impacting the ability of farmers to effectively select new varieties from within the genetic resources at their disposal. Historically, farmers could expect relative stability in their farming systems, and could make progressive, small incremental changes in the varieties they selected.

24. Agricultural systems are changing rapidly for a number of reasons. Human population increase puts pressure on fallow and rotational schemes and impacts the adaptation of varieties. Access to inputs creates demand for more responsive varieties. Diversifying markets create demand for new traits. Finally, climate change creates new environmental stresses that require dramatic varietal response (e.g. drought stress or pest resistance).

25. These rapid changes often mean that farmers are no longer able to select suitable varieties with the limited range of genetic resources at their disposal, or with the traditional tools of selection of new types. In order to face these multiple challenges, farmers and breeders need to team up and combine expertise and resources. While farmers should be one of the targets of a sustainable use tool, they will increasingly need the additional resources and tools that modern science offers.

26. Apart from farmers, other principal stakeholders who will utilize a toolbox for sustainable use are the practitioners of modern crop genetic improvement, including plant breeders, molecular biologists, and many other disciplines whose expertise is employed in evaluating and selecting new varieties. Genebank managers and seed specialists will be stakeholders in their interface with plant breeders. The toolbox will also contain elements that are specifically relevant to the work of educators, policy-makers, research administrators and donors.

27. The only specific stakeholder consultation on sustainable use of PGRFA and the Treaty specifically was convened by GFAR in order to identify possibilities of work to expand varieties conservation and exchange and the fair sharing of benefits to include a range of species that have huge local significance and in many cases, global market potential. This facilitated greater collaboration and synergies among the many GFAR programmes addressing these crops and the Treaty, a view that has been echoed throughout the Workshop by all those concerned about the future of these species.

28. The Workshop resulted in an initiative called *Initiative to develop opportunities in agro biodiversity* with the goal of strengthening the role and value of agro-biodiversity in development. The Development Opportunity Crops initiative, which brings together a wide range of research and development partners and programmes, will explore practical steps to take forward collaborative actions under Article 6. In particular, it will explore how international and national action in the sustainable use of agrobiodiversity can contribute to desired development outcomes of increasing incomes among the poor, contributing to food security, nutrition and health and provide sustainable ecosystem services.

(d) Status

29. Farmers have long recognized the link between biological diversity and their ability to grow successful crops. Plant breeders are now fully aware of their dependence on the wide range of diversity that landraces offer, in order to make long-term progress in developing new varieties. The needs of growers are constantly evolving, as cultural practices, market demands and the environment change. Most notably, farmers and breeders face the challenge of adapting many crops to the unpredictable future effects that climate change is likely to bring about – temperature change, increased atmospheric CO₂, drought, flooding, and new pest outbreaks, for example.

30. SoW-PGR-2 provides a comprehensive overview of the current status of PGRFA. There are some seven million accessions documented in genebanks, but there are many others that exist only in farmers' fields or in the wild (in the case of wild relatives).

31. SoW-PGR-2 also identified several gaps and needs relating to sustainable use, as follows:

- there is an urgent need to increase plant breeding capacity worldwide, in its various forms.
- there is a need for greater awareness among policy makers, donors and the general public of the value of PGRFA, and the importance of crop conservation and improvement, in meeting future global challenges.
- there is a need for countries to adopt appropriate and effective strategies, policies, legal frameworks and regulations that promote the use of PGRFA, including appropriate seed legislation.

32. A lack of adequate characterization and evaluation data and the capacity to generate and manage it, remain serious constraints to the use of many germplasm collections.

III. THE CHALLENGES OF SUSTAINABLE USE OF PGRFA AND NEED FOR A TOOLBOX

33. One of the central conclusions of SoW-PGR-2 is that there is far more that can be done to take advantage of the existing genetic resources -- to contribute to the improvement of crops in ways that will lead to better livelihoods, especially for the world's poor.

34. It is becoming clearer, with new tools and better knowledge, that more diversity should also be conserved either in its original locations (*in situ*), where the plant populations can continue to evolve, and/or in the global genebanks (*ex situ*) that are the principal basis for plant breeding. There are crops where much of the genetic diversity remains at risk because it has not been adequately conserved. However, there is a growing consensus of the urgency of effective beneficial use of the genetic resources already conserved.

35. The use of PGRFA should be approached in a comprehensive and systematic manner to assure the long term benefits for those most in need, especially the poor in developing countries. This approach is known as a *sustainable use* strategy. While there is no sharp demarcation between sustainable use and use for short-term benefit, the need to focus on the former can be illustrated by a few examples.

36. Example 1: If plant breeders seek to improve yields that can only be supported by heavy inputs of pesticides, this could be seen as potentially having long-term negative environmental and human health effects, and therefore not a sustainable option. A *sustainable use* strategy of PGRFA in this case might aim at finding genes for durable pest resistance among farmers' landraces, and incorporating them into a breeding program that also selects for higher yield potential.

37. Example 2: In an area that is believed to be highly vulnerable to increasing drought stress, predicted by climate change models, a *sustainable use* strategy will likely include exploitation of genes controlling different modes of drought tolerance. In contrast a non-sustainable strategy might ignore the predictions for climate change, utilize or produce crop varieties without adequate drought tolerance, and leave growers at the risk of crop failure.

38. SoW-PGR-2 identifies five major areas of constraints to improved use of PGRFA: human resources, funding, facilities, cooperation and linkages, and information access and management.

39. The Treaty takes a major step toward promoting sustainable use of PGRFA and, through its Article 6, the Contracting Parties agreed to promote a range of actions aimed at this goal.

(a) Why a toolbox and a toolbox strategy

40. Crop selection by farmers has a history of over 10,000 years, and science-based plant breeding has a history of more than 100 years. However, *sustainable use* of PGRFA is still an evolving concept. There are in fact many gaps in our complete understanding of what constitutes *sustainable practices* or a *sustainable approach*. The ongoing need to improve approaches to sustainable use relates to both the continuing generation of new knowledge, as well as the evolving goals of farmers and plant breeders.

41. As described above, farmers face continual changes in the physical and biological environments, as well as the market environments. Therefore the development of new varieties always aims at moving targets; the goals are constantly changing.

42. The Treaty indicates the need for a comprehensive approach to sustainable use, including policy and regulatory measures, and strengthening research.

43. There are several identifiable areas where further understanding is fundamental to defining strategies for sustainable use of PGRFA:

- a. *Modeling of climate change*. Climate change seems certain to have continuing and increasing fundamental impact on how PGRFA are best used. Support to developing ever more precise models will contribute to sustainable use.
- b. *Farmer choices in variety adoption*. Farmers choose to keep or to discard crop varieties for many reasons; often these reasons are poorly understood. This lack of good information, especially in the more traditional, more complex farming systems, makes it difficult for plant breeders to precisely identify the traits of importance to increase the chances of farmer adoption. Participatory approaches to breeding and related research contribute to better understanding of farmer choices and thus to better chances of sustainable use of PGRFA.
- c. *Genebank characterization*. The genetic resources held in genebanks can only be used if they are known. One of the greatest impediments to sustainable use is the incomplete knowledge of the traits available in genebanks. Characterization is a

- never-ending process, as new traits are sought for new product uses or for new challenges.
- d. *Information on PGRFA policy options that work.* The landscape of PGRFA policy is rather uneven, and the relationship between policy and sustainable use not always well-defined. The importance of having a PGRFA policy is only recently coming into play for some countries, and for many others, has not yet gotten on the radar. The Treaty (as a legally binding agreement) and the SoW-II (relating the current status of conservation and use of PGRFA throughout the world) have been major instruments to get governments to think about PGRFA policy.
 - e. *Delivery systems.* Plant breeders do not have impact unless the varieties they create are effectively delivered to growers. This often depends on having in place a functioning seed system (including both technical and policy/regulatory elements). Information about optimum systems for different circumstances is needed to design the most effective delivery from breeding program to growers.

(b) What a toolbox can and cannot provide

44. The sustainable use of PGRFA is not a stand-alone activity; it is part of a continuum that relies on a broad range of knowledge, genetic resources and institutional resources. Sustainable use is *fed by* an effective conservation system (which includes secure conservation, evaluation and regeneration for access), and in turn *feeds into* a delivery system to move the new varieties to growers.
45. In many cases, however, this process is not fully developed as a continuum, but rather as discreet functions. As a result, there is often a breakdown in the linkage between conservation and breeding, and between breeding and seed systems. The political and institutional boundaries often do not facilitate the kind of working together that is necessary for optimum success. While everyone working within this continuum has responsibilities for making the process fully functional, the plant breeders, occupying the *mid-section* of the continuum, have a special responsibility to reach back to the genebank managers, and to reach forward to the seed system specialists. This *reaching back* and *reaching forward* create the interfaces between sustainable use and the rest of the continuum of crop genetic improvement.
46. The interface between conservation and plant breeding is often a weak link in the continuum that leads to sustainable use. Plant breeders find that working with diverse germplasm collections can involve using parents that are very poorly adapted in the target environment. When crosses are made with these poorly adapted materials, it may require several additional generations of crossing and selection to get suitable adaptation and agronomic traits.
47. This process is often referred to as *pre-breeding* – the process of moving a gene or genes from unadapted germplasm to a population or line that the plant breeder can use directly as a parent to produce adapted, superior progeny containing the new gene(s) of interest. Pre-breeding can be slow, expensive and risky (in terms of likelihood of success). It is little surprise then that plant breeders are cautious about using pre-breeding as part of their strategy, especially if other, less time-consuming options are available.
48. On the other hand, pre-breeding may offer access to valuable genes in unadapted germplasm or related wild species. As breeders struggle to find the traits they need, in order to make continual, long-term genetic progress, they often look to the broader gene pool for these traits. One of the fundamentals of pre-breeding is that it necessarily involves the interaction between the genebank manager and the breeder. This interaction requires resources and a collaborative attitude, and in turn provides a means to access genes that are otherwise unavailable.

49. Participatory plant breeding (PPB) is another element of sustainable use that brings crop genetic improvement back into farmers' hands and also encourages a return to diversity. PPB is a means for plant breeders and farmers to work together in defining plant breeding goals and in evaluating the products of a plant breeding programme. In this process, local knowledge and modern science are combined in the most effective pathway to sustainable use.

50. Whatever approaches or forms of plant breeding, the main beneficiaries will be the growers of the new varieties with value-added traits.

51. Just as pre-breeding feeds into the *input side* of plant breeding, the *output side* involves the transition between producing a new variety and having that variety widely adopted by growers. This latter step is managed through seed systems, and the transition takes place at the interface between the plant breeder's final testing and preliminary multiplication, and the seed specialist's broad-scale multiplication, certification and distribution. Unless this interface is well planned and well coordinated, there is likely to be breakdown in the continuum, with loss of time, or worse, loss of opportunity for growers to access superior new varieties.

52. A toolbox *can* provide stakeholders with the means to design and implement systematic, integrated programmes for sustainable use of PGRFA.

53. A toolbox *cannot* guarantee success in achieving sustainable use. There are no simple formulas for the complex planning and implementation across a diverse set of physical, biological and institutional environments. A toolbox is only useful in the hands of well-trained and capable and motivated people, who are provided with the resources to accomplish their goals.

IV. CONTENTS OF THE TOOLBOX

(a) Definition

54. The notion of a toolbox describes the collection of *validated technologies, practices, procedures, policy instruments, etc.*, available for crop improvement to constitute a compendium that is easily accessed by stakeholders. The concept should include the full range of tools, whether traditional or advanced, that farmers and scientists can access and use to develop and disseminate the new varieties and sustainable practices that underpin their development.

55. Used in the context of crop improvement and the sustainable use of PGRFA, a toolbox -- with the appropriate set of tools -- therefore provides a way to plan and conceptualize a programme for sustainable use (develop the *blueprint*), and then move to the practical application of methods and approaches that will bring defined benefits to end-users (the *construction*).

56. Clearly not everyone will need to use every available tool -- i.e. any given organization or individual will typically cover some limited aspect of sustainable use and therefore need only the tools relevant to that domain. In this sense, we can view the toolbox for any given entity as a process of selecting the tools needed to best accomplish the range of tasks within that organization's portfolio.

(b) Elements of a toolbox

57. The *tools* for fashioning and implementing the strategies for sustainable use of PGRFA are diverse, and need to be fashioned to meet the needs of the entity or individual using them. The tools may fit into several categories in terms of the function they perform.

58. A toolbox should offer the full range of tools that any entity requires accomplishing their given goals with regard to sustainable use of PGRFA. If there are gaps, i.e. goals for which tools do not appear adequate or do not exist, then there needs to be a *feedback* mechanism to facilitate the modification or development of the appropriate tool.

59. For purposes of better organizing and accessing tools for sustainable use, it is helpful to have a system for categorizing them. A useful system for doing so is defined by the principal areas of focus across the comprehensive range of sustainable use activities: genetic resources, policy, education and training, technology, and information. These are not precisely discrete categories; they necessarily overlap and intersect considerably. Descriptions and examples are provided below.

60. As an umbrella covering all these categories, there is a need for a methodology that will provide guidance on which tools are needed and how to select the best ones for specific situations.

(c) A methodology for defining the best tools to develop solutions

61. The set of tools that constitute best practices on sustainable use activities is very broad and very complex. The design and successful functioning of a programme that aims at sustainable use of PGRFA needs to be able to *access*, *understand* and *use* the best tools from the wide array of potential ones. To be able to accomplish this, there is the need for a methodology for defining the best available tools across all the categories of potential tasks. FAO demonstrably has a comparative advantage in matching the best of tools with tasks. For example, such a methodology is currently under development by the Global Partnership Initiative for Plant Breeding Capacity Building (GIPB), and is known as a “*plant breeding system capacity assessment tool*”.

62. The assessment tool is designed to provide a step-by-step appraisal of the capacity of a breeding programme, including its interaction with farmers, and to identify its strengths and weaknesses. It allows scientists, research administrators and donor organizations to prioritize investments to optimize a programme’s performance. This should be the beginning point for planning of a sustainable use programme, and as such is a *tool for defining the best tools*.

(d) Genetic resources tools

63. Genetic resources are the building blocks from which successful new varieties are built. There are a number of tools for:

- collecting, conserving and characterizing genetic resources (the interface with breeding);
- identifying the best genetic resources to build the parental base for different forms of breeding already mentioned;
- accessing those resources;

- distributing the results of breeding to client populations (e.g. distributing new varieties to farmers).

(e) Policy tools

64. Policy regarding sustainable use of PGRFA is the driving force for successfully bringing together all the elements of the system. Policy tools are those that will help government decision-makers become aware of the issues in sustainable use of PGRFA and guide them toward effective solutions. Typically these tools will be supported by information from the scientific community, presented in ways that are clear and compelling for non-specialists who have to balance priorities among many competing political ideas and initiatives, and where funding is almost always less than optimum. In most political systems, public support for policy is an important element of successful policy development and implementation, and the tools to garner that support are critical.

(f) Education and training tools

65. Education and training in sustainable use of PGRFA, considered in the broad sense, can cover a wide range of client groups, including:

- students of plant breeding in universities;
- university professors;
- practicing plant breeders in public and private sectors;
- policy makers;
- the general public;

Education tools will include both formal training (e.g. universities; research centres) and informal education (e.g. media). The tools for these different client groups will need to be specifically tailored.

(g) Technology tools

66. Technology tools will be used mainly by the scientists involved in developing new varieties. These tools are typically a core part of sustainable use of PGRFA. Technology tools have evolved rapidly in the past 25 years, especially in the areas of instrumentation for evaluating genetic variability (e.g. drought response, photosynthetic rates), and molecular tools for gene and gene function analysis and transfer. At the same time, there are many traditional tools of plant breeding that are still an invaluable part of any successful programme. It is therefore imperative that a sustainable use toolbox provide up-to-date access to information about technology tools, both modern and traditional.

(h) Information gathering and management tools

67. The Governing Body, at its Second Session, urged an improved process for information gathering on the sustainable use activities, including means such as surveys, conceptual frameworks, inter-sessional meetings and workshops. Information management has advanced at lightning speed over the past few decades and has provided critical new and more efficient tools for sustainable use of PGRFA. The elements of important information management may include: basic breeding programme management aided by computer power, the use and deployment of molecular tools requiring massive data analysis, communication tools through electronic and other media and especially the internet, and others.

68. Thousands of websites, multi-media presentations, reports, books, journal articles, and other literature, dating from present to more than 100 years ago, deal with sustainable use of PGRFA. This entire body of information contributes to the goals of Article 6. A toolbox should provide systematic access to this information.

(i) The users

69. The users of the toolbox will include a large proportion of those involved in sustainable use of PGRFA, along with many involved in conservation. This includes farmers, policy-makers, research administrators, conservation specialists (such as genebank curators), plant breeders, seed specialists, and social scientists.

70. Farmers are the foundation of sustainable use of PGRFA, and many of the elements (or tools) of the toolbox will need to be relevant to their needs and activities. While the toolbox is designed primarily for technical personnel, its ultimate goal is often to reach farmers with new technology or new options for sustainable use of PGRFA. Farmers should participate in the development of the relevant tools that will be employed for developing and defining technologies for their ultimate use.

71. The level and effectiveness of sustainable use activities often hinges on policy and the resulting capacity of institutions and organizations. Hence, policy-makers should be a fundamental user of the toolbox.

72. Primary users of the toolbox will be technical and education professionals in public, private and civil society organizations such as NGOs. Most of the tools are developed at this level.

73. There are many existing technical activities within FAO that assist in the sustainable use of PGRFA. In the development and application of the toolbox, synergies with on-going initiatives can be pursued, for instance with regard to:

- development and consolidation of the Knowledge Resource Centre (KRC) of GIPB;
- support for training;
- global capacity assessment for sustainable use;
- policy assessment and advocacy;
- assistance with inter-institutional collaboration for sustainable use at the country level.

For the purpose of illustration, *Appendix 1* to this document contains an example of the components that are proposed for the toolbox. Some of those components were or are being developed by GIPB.

V. DEVELOPING A WORK PROGRAMME ON SUSTAINABLE USE OF PGRFA

74. The International Treaty constituency may guide the development and dissemination of the toolbox prepared with the support of relevant FAO technical units, multiple partners in public, private and civil society. It is advisable to envision the toolbox as an instrument to assist Contracting Parties in the development of measures to promote sustainable use. It may

also be advisable to consider the articulation of the toolbox as the trigger to a precursor to developing a possible work programme on sustainable use of PGRFA. In substance, starting from the development of the toolbox, a well-designed work programme on sustainable use of PGRFA could be devised so that the Governing Body defines a number of activities and results it wishes to achieve. The possible work programme would take into account that sustainable use has already been adopted by the Governing Body as funding priority of the Benefit-sharing Fund in Annex 1 of the Funding Strategy.

75. The opportunity for a comprehensive work programme comes from the need to:
- a. identify a series of supporting measures for Contracting Parties;
 - b. position the Treaty adequately vis-à-vis other relevant international processes and mechanisms in terms of governance and technical implementation;
 - c. provide a perspective for stakeholders that are interested in investing on sustainable use of PGRFA.

76. A key element of the work programme could be to link the work on Article 6 with international relevant processes. As agreed by the Governing Body, sustainable use is one of the three priorities of the Benefit-sharing Fund and lessons learned and knowledge arising from its operation and implementation of funded project could feed into the work programme. The on-going cooperation with the Commission on Genetic Resources for Food and Agriculture will ensure that relevant information arising from its Multi-Year Programme of Work is made available to the Governing Body. FAO's technical work on sustainable use, including GIPB and GFAR is of relevance. The CGIAR Centres are major users of plant genetic resources for food and agriculture.

77. It is also noted that the Tenth Conference of the Parties to the Convention of Biological Diversity, in decisions X/32 (sustainable use of biodiversity), requested collaboration with the Secretariat of the International Treaty to compile information on how to improve sustainable use of biodiversity in a landscape perspective, including on sectoral policies, international guidelines, and best practices for sustainable agriculture, including a review of relevant criteria and indicators, and report on the results to the Subsidiary Body on Scientific, Technical and Technological Advice at a meeting prior to the eleventh meeting of the Conference of the Parties. This request could be met by collecting and adequately compiling such information from Contracting Parties with a view not only to feeding such information into the CBD process but also to building a component of the work programme of the Governing Body that relies on such information.

78. As it is advisable to develop the work programme through a participatory approach and international collaboration, a wide range of stakeholders are to be consulted extensively in order to assure relevance and accuracy of the programme developed. To that effect, a stakeholders' consultation could be organized to: (i) identify challenges and opportunities for promoting sustainable use; (ii) discuss innovative partnerships and mechanisms to support implementation of Article 6; and (iii) suggest and elaborate practical elements of the work programme.

79. For the purpose of the stakeholders' consultation, collaboration might be sought with, among others, the following international organizations: the Secretariat of the Convention of Biological Diversity (SCBD); the CGIAR; the Secretariat of the CGRFA; the United Nations Development Programme (UNDP); the International Fund for Agriculture Development (IFAD); the Global Forum on Agricultural Research (GFAR) and the Global Crop Diversity Trust (GCDDT).

80. It is also desirable that a Treaty body monitors and advises the Secretary on all these activities, and in particular considers the elements generated by the stakeholders' consultation

validates them based on agreed priorities and objectives, with a view to developing the draft work programme. Such a mechanism could be in the form of an *Ad Hoc* Technical Committee on Sustainable Use of PGRFA, to be established by the Governing Body and convened by the Secretary subject to the availability of funds.

81. The draft work programme would be presented for the consideration of the Governing Body at its Fifth Session.

VI. GUIDANCE SOUGHT

82. The Contracting Parties are invited to:

- Review the concept of the toolbox and its elements as outlined in this document and request the Secretary, in collaboration with FAO and other relevant stakeholders to develop the toolbox.
- Recognize that the development of a toolbox is instrumental to the elaboration of a comprehensive work programme on sustainable use of PGRFA,
- Mindful of the need to devise such a work programme in a participatory manner, agree on the organization of a stakeholders' consultation which can suggest elements of the work programme;
- Consider establishing an *Ad Hoc* Technical Committee on Sustainable Use of PGRFA in order to:
 - Advise the Secretary on the development of the toolbox;
 - Appraise and elaborate as necessary the elements of the work programme that are generated by the stakeholders' consultation;
 - Advise the Secretary on cooperation with the CBD and other international processes and institutions in the field of sustainable use.

83. An enabling draft Resolution is in *Appendix 2* to this document, for the consideration of the Governing Body.

APPENDIX 1

Examples of tools in a toolbox for sustainable use

- A Genetic resources tools
- Access to major genetic resources databases and organizations through the GIPB portal
- B Policy tools
- Country case studies on investing strategies for plant breeding system capacity
 - A model and checklist for development of national strategies for sustainable use of PGRFA
 - Advocacy materials
 - Media awareness materials and activities
 - A web-based policy decision tool for PGRFA
- C Education and training tools
- E-learning course on pre-breeding
 - E-learning course on the ITPGRFA
 - Mentoring programme to match young plant breeders with veterans and farmers experiences
- D Technology Tools
- Plant breeding system capacity assessment tool for analyzing and strengthening plant breeding systems (under development by GIPB)
 - Access to information about major plant breeding and related technologies through the GIPB portal
- E Information gathering and management tools
- A uniform set of questions or issues to assess contributions of contracting parties to Article 6
 - A comprehensive database on national plant breeding systems
 - Newsletters and forums
 - GIPB comprehensive portal and knowledge resource centre (website)
 - Database on *Plant Breeding by Example*
 - Directory of Plant Breeders

APPENDIX 2**RESOLUTION **/2011****IMPLEMENTATION OF ARTICLE 6
SUSTAINABLE USE OF PLANT GENETIC RESOURCES**

- (i) **Recognizing** the pivotal role of sustainable use of plant genetic resources for food and agriculture (PGRFA) in addressing global challenges, including food security, biodiversity loss, climate change adaptation and poverty alleviation for small-holder farmers;
 - (ii) **Recalling** that, in accordance with Article 6 of the International Treaty, the Contracting Parties shall develop and maintain appropriate policy and legal measures that promote the sustainable use of PGRFA;
 - (iii) **Recalling** that the Governing Body, at its Third Session, noted that in many regions the implementation of Article 6 is lagging behind in comparison to other elements of the International Treaty, and that further financial resources, capacity building and technology transfer are required;
 - (iv) **Acknowledging** that there is uncertainty in many countries as to how sustainable use of PGRFA can effectively be achieved, and that an integrated approach to sustainable use needs to be facilitated;
 - (v) **Recalling** that the Governing Body, at its Third Session, requested the Secretary to clarify the notion of a toolbox to assist countries in the design of measures to promote sustainable use in order to come to a common understanding with regard to such an instrument and submit it to the Contracting Parties at this Fourth Session;
 - (vi) **Considering** that the development of the toolbox may be instrumental to the development of a work programme on sustainable use of PGRFA and that such a work programme should be developed in a participatory manner and in coordination with other relevant international processes and fora, such as the Convention on Biological Diversity, FAO Commission on Genetic Resources for Food and Agriculture, and the Global Forum on Agricultural Research (GFAR);
 - (vii) **Recalling** that the Conference of the Parties of the Convention on Biological Diversity deals with sustainable use of biodiversity as a cross-cutting issue and that at its Tenth meeting, the Conference, in decisions X/32 (sustainable use of biodiversity), has requested collaboration with the Secretariat of the International Treaty to compile information on how to improve sustainable use of biodiversity;
1. **Requests** the Secretary, in collaboration with FAO technical units and other stakeholders and subject to the availability of financial resources and the priorities of the Work Programme and Budget agreed by the Governing Body, to develop a toolbox on sustainable use of PGRFA in order to assist Contracting Parties in the implementation of Article 6 of the Treaty;

2. **Requests** the Secretary to elaborate a draft work programme on sustainable use of PGRFA for the consideration of the Governing Body at its Fifth Session and, mindful of the need to devise such a work programme in a participatory manner,
3. **Requests** the Secretary, subject to the availability of financial resources and the priorities of the Work Programme and Budget agreed by the Governing Body, to convene a stakeholders' consultation to devise and elaborate elements of a work programme, in collaboration with relevant international organizations and key actors engaged in sustainable use of PGRFA;
4. **Requests** the Secretary to invite submissions from Contracting Parties, other governments and relevant institutions and organizations on how to improve sustainable use of biodiversity in a landscape perspective, including on sectoral policies, international guidelines, and best practices for sustainable agriculture, including a review of relevant criteria and indicators;
5. **Requests** the Secretary to work with the networks and partners brought together in the Global Forum on Agricultural Research to promote the expanded use of local and locally adapted crops and underutilized crops in order to better meet sustainable development objectives;
6. **Establishes** an *Ad Hoc* Technical Committee on Sustainable Use of PGRFA, according to the terms of reference as contained in the *Annex* to this Resolution.

Annex

TERMS OF REFERENCE FOR THE *AD HOC* TECHNICAL COMMITTEE ON SUSTAINABLE USE OF PLANT GENETIC RESOURCES FOR FOOD AND AGRICULTURE

1. The *Ad Hoc* Technical Committee will advise the Secretary on:
 - The development of a toolbox on sustainable use of PGRFA in order to assist Contracting Parties in the implementation of Article 6 of the Treaty;
 - The elaboration a draft work programme on sustainable use of PGRFA, based on elements generated by stakeholder consultations;
 - Cooperation with the CBD and other international processes and institutions in the field of sustainable use of PGRFA.
2. The *Ad Hoc* Technical Committee will comprise up to two members designated by each Region and up to ten technical experts. In inviting these technical experts to the meetings of the *Ad Hoc* Technical Committee, the Secretary will have regard of the balance of knowledge and skills. There will be two Co-Chairs, one from a developing country and one from a developed country Contracting Party, who will be elected from the members of the *Ad Hoc* Technical Committee that are designated by the Regions.
3. The *Ad Hoc* Technical Committee will hold up to two meetings subject to the availability of financial resources.
4. The *Ad Hoc* Technical Committee will prepare reports at the end of its meetings, which will be made available as information documents to the Fifth Session of the Governing Body.
5. The Secretary will report on the results of the work of the *Ad Hoc* Technical Committee to the Governing Body at its Fifth Session.