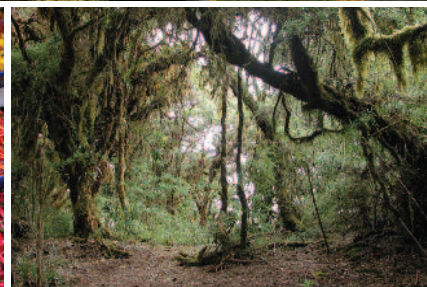


# The Global Strategy for Plant Conservation: 2011-2020



Convention on  
Biological Diversity



**BGCI**

Plants for the Planet

# The Global Strategy for Plant Conservation: 2011-2020

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Convention on  
Biological Diversity



# Foreword



The adoption of a Global Strategy for Plant Conservation (GSPC) by the Convention on Biological Diversity in 2002 marked an important advance in raising awareness of the threats faced by plants worldwide, as well as providing, for the first time, a coherent framework for policy and action needed to halt the loss of plant diversity. The first phase of the implementation of the GSPC was marked by significant achievements both at the international and national levels in addressing some of the problems and pressures faced by plants. These included the development of national plant conservation strategies in many countries and regions; the establishment of a Global Partnership for Plant Conservation (GPPC); the completion of a first ever preliminary checklist of the world's plants and many new programmes, projects and other initiatives undertaken by a multitude of individuals, institutions and organizations to support GSPC implementation.

Despite the progress made already we cannot afford to be complacent. What was achieved can only be regarded as a good beginning to this work, setting the foundations on which to build. The second phase of GSPC implementation for the period 2011 to 2020 is therefore crucial if we are to safeguard tens of thousands of plant species close to extinction and halt the loss of diversity of species and plant-based ecosystems that are threatened worldwide. The 16 updated targets of the GSPC also provide the basis for us to monitor progress towards the ultimate goal of halting the loss of plant species by 2020, and contribute towards the wider Strategic Plan for Biodiversity 2011-2020.

This brochure is a resource for those working in plant conservation, in particular to support awareness raising amongst conservation practitioners, policy makers, funding agencies and those who can help strengthen plant conservation capacity and efforts at all levels. We welcome the continued commitment of the members of the GPPC in supporting GSPC implementation worldwide and urge others to join in this effort too, helping to ensure that the plant diversity that sustains us today will continue to be available to future generations, as an essential renewable resource, cherished and nurtured as part of a sustainable world.

A handwritten signature in black ink, appearing to read 'Peter Wyse Jackson'.

**Peter Wyse Jackson**  
Chair,  
Global Partnership for Plant Conservation

A handwritten signature in black ink, appearing to read 'Braulio Ferreira de Souza Dias'.

**Braulio Ferreira de Souza Dias**  
Executive Secretary,  
Convention on Biological Diversity

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# Introduction

The Global Strategy for Plant Conservation (GSPC) was first adopted by the Conference of the Parties (COP) to the Convention on Biological Diversity (CBD) in 2002. The GSPC included 16 targets to be achieved by 2010. Following an in-depth review of progress towards the targets in 2007, the Parties to the CBD recognised that, while significant progress had been made at all levels, further work would be needed beyond 2010 to achieve the goals set out in the Strategy. It was therefore recommended that a consolidated update to the GSPC be developed, including updates to the 16 outcome-oriented targets.

The consolidated update to the GSPC, with targets for 2011-2020, was adopted in Decision X/17 of the 10th Conference of the Parties (COP) to the CBD on 29 October 2010.

This booklet includes the following elements:

1. Decision X/17: Consolidated update of the Global Strategy for Plant Conservation 2011-2020.
2. The Vision, mission, rationale and general principles of the GSPC (Annex to Decision X/17).
3. The objectives and targets 2011-2020 (Annex to Decision X/17).
4. The technical rationales for the targets of the GSPC (as presented at the 16th meeting of the CBD's Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA 16) in May 2012).
5. Implementation of the Strategy (Annex to Decision X/17).



*James Hitchmough*



# Decision X/17

## Of the Conference of Parties to the Convention on Biological Diversity on the consolidated update of the Global Strategy for Plant Conservation

### The Conference of the Parties

*Recognizing* the critical role of plants in supporting ecosystem resilience, provision of ecosystem services; adapting to and mitigating environmental challenges *inter alia*, climate change, and for supporting human well-being,

*Welcoming* the efforts made by some Parties in developing national responses and/or mainstreaming these targets, including the regional response from Europe to update the European Plant Conservation Strategy using the framework of this Strategy,



*Recalling* that the national implementation of the Strategy contributes to the Millennium Development Goals (MDGs), especially on poverty reduction (goal 1), the health crisis (goal 6) and environmental sustainability (goal 7),

*Acknowledging* the efforts that have been put in place by partners, international organizations and other stakeholders to contribute to the achievement of the targets and to build capacity for the implementation of the Strategy,

*Welcoming* the Plant Conservation Report, available in all the six United Nations languages, as a concise overview of the progress made in implementing the Strategy, and recognizing the contribution of the Government of Ireland to the preparation and dissemination of the Report,

*Aware* that while significant progress has been made in implementing the Strategy at all levels, further work will be necessary in the period beyond 2010 to achieve the goals set out in the Strategy,



1. *Decides* to adopt the consolidated update of the Global Strategy for Plant Conservation, including the outcome-oriented global targets for the period 2011-2020, and to pursue the implementation of the Strategy as part of the broader framework of the Strategic Plan for Biodiversity 2011-2020;
2. *Emphasizes* that the outcome-oriented global targets for 2011-2020 should be viewed as a flexible framework within which national and/or regional targets may be developed, according to national priorities and capacities, and taking into account differences in plant diversity between countries;
3. *Emphasizes* the need for capacity-building, particularly in developing country Parties, in particular the least developed countries and small island developing States, as well as Parties with economies in transition, to facilitate implementation of the Strategy;
4. *Stresses* the urgent need to mobilize, in line with the strategy for resource mobilization of the Convention, the necessary financial, technical and human resources and strengthen capacity and partnerships in order to achieve the targets of this Strategy;
5. *Invites* Parties, other Governments, the financial mechanism, and funding organizations to provide adequate, timely and sustainable support to the implementation of the Strategy, especially by developing country Parties, in particular the least developed countries and small island developing States, as well as Parties with economies in transition;
6. *Invites* Parties and other Governments to:
  - (a) Develop or update national and regional targets as appropriate, and, where appropriate, to incorporate them into relevant plans, programmes and initiatives, including national biodiversity strategies and action plans, and to align the further implementation of the Strategy with national and/or regional efforts to implement the Strategic Plan for Biodiversity 2011-2020; and

(b) Recalling paragraph 6 of decision VII/10, to appoint national focal points for the Strategy where they have not been appointed, with a view to enhancing national implementation;

7. *Also invites* relevant international and regional organizations to:

(a) Endorse the updated Strategy and to contribute to its implementation, including by promoting common efforts towards halting the loss of plant diversity;

(b) Support national and regional efforts to achieve the targets of the Strategy through facilitation of capacity-building, technology transfer, information sharing and resource mobilization;

(c) Support the development of specific toolkits for local protected area managers and compilation of case studies to illustrate best management practices in halting decline in traditional knowledge associated with plant resources;

8. *Invites* Parties, other Governments and relevant organizations to promote the implementation of the Strategy by all relevant sectors at national level in harmony with the updated Strategic Plan for Biodiversity 2011-2020 and other instruments, protocols and initiatives of the Convention, including the Strategic Plan of the Cartagena Protocol on Biosafety;

9. *Decides* to undertake a mid-term review of the implementation of the consolidated update of the Strategy and its targets in 2015, in tandem with the mid-term review of the Strategic Plan for Biodiversity 2011-2020 and the review of the achievement of the Millennium Development Goals;

10. *Further requests* the Executive Secretary, in collaboration with the Global Partnership for Plant Conservation and other partners and relevant organizations, and subject to the availability of the necessary resources to:

(a) Further develop, with the flexible coordination mechanism, the technical rationales, milestones and indicators for the updated Strategy, consistent with the Strategic Plan for Biodiversity 2011-2020, for review by the Subsidiary Body on the Scientific, Technical and Technological Matters at its fifteenth meeting;





(b) Develop, by 2012, an online version of the toolkit for the Global Strategy for Plant Conservation in all United Nations official languages, including by convening a workshop to define the purpose, context, producers, users and evaluation of implementation of the toolkit, taking into account also the outline developed by the third meeting of the Liaison Group to facilitate and promote the development and updating of national and regional responses and to enhance national/regional implementation;

(c) Organize regional capacity building and training workshops on national, subregional and regional implementation of the Strategy, as much as possible, in conjunction with other relevant workshops; and

(d) Raise awareness about the contribution of the activities carried out as part of the implementation of the Strategy beyond 2010 in achieving the Millennium Development Goals, and contributing to human well-being and sustainable development;



11. *Invites* the Executive Secretary to recommend measures for enhanced national implementation of the Strategy and integrate the implementation of the Strategy with other programmes, instruments, protocols, and initiatives of the Convention, including harmonization with the Strategic Plan for Biodiversity 2011-2020 and its implementation measures;

12. *Expresses* its appreciation to the Government of Ireland, the Government of Spain, the Global Partnership for Plant Conservation, Botanic Gardens Conservation International (BGCI), the Royal Botanic Gardens Kew, Chicago Botanic Gardens, and Durban Botanic Gardens, for supporting activities related to the development of the updated Strategy as well as the Boeing company for supporting regional meetings;

13. *Expresses* its gratitude to Botanic Gardens Conservation International for the secondment of a Programme Officer to the Secretariat to support the implementation of the Strategy up to 2010.

# The Global Strategy for Plant Conservation: 2011-2020

## Vision

*Without plants, there is no life. The functioning of the planet, and our survival, depends upon plants. The Strategy seeks to halt the continuing loss of plant diversity.*

Our vision is of a positive, sustainable future where human activities support the diversity of plant life (including the endurance of plant genetic diversity, survival of plant species and communities and their associated habitats and ecological associations), and where in turn the diversity of plants support and improve our livelihoods and well-being.



Alan Hamilton

The Strategy considers plants in the terrestrial, inland water and marine environments. Further, the Strategy applies to the three primary levels of biological diversity as recognized by the Convention, hence plant genetic diversity, plant species and communities and their associated habitats and ecosystems.

While the Strategy addresses the plant kingdom with main focus on higher plants, and other well-described groups such as bryophytes and pteridophytes; Parties, other Governments and other relevant stakeholders may consider developing conservation strategies for other groups such as algae and fungi (including lichen-forming species).

## Mission statement

The Global Strategy for Plant Conservation is a catalyst for working together at all levels - local, national, regional and global - to understand, conserve and use sustainably the world's immense wealth of plant diversity whilst promoting awareness and building the necessary capacities for its implementation.

## Objectives

The Global Strategy for Plant Conservation addresses the challenges posed by threats to plant diversity.

The overall purpose of the Strategy is to achieve the three objectives of the Convention, particularly for plant diversity, taking into consideration Article 8(j) of the Convention, the Cartagena Protocol on Biosafety and the Nagoya Protocol on Access and Benefit Sharing.



The implementation of the Strategy should be considered within the broader framework of the Strategic Plan for Biodiversity 2011-2020. Similarly, the mechanisms required to enable Parties, partners and other stakeholders to effectively implement the Convention and to monitor progress in implementation under this new Strategic Plan will be also relevant for this Strategy.

The Strategy consists of the following five objectives:

- (a) Objective I: Plant diversity is well understood, documented and recognized;
- (b) Objective II: Plant diversity is urgently and effectively conserved;
- (c) Objective III: Plant diversity is used in a sustainable and equitable manner;
- (d) Objective IV: Education and awareness about plant diversity, its role in sustainable livelihoods and importance to all life on Earth is promoted;
- (e) Objective V: The capacities and public engagement necessary to implement the Strategy have been developed.

## Rationale for the strategy

Plants are universally recognized as a vital component of the world's biological diversity and an essential resource for the planet. In addition to the cultivated plant species used for food, timber and fibres, many wild plants have great economic and cultural importance and potential, as future crops and commodities more so as humanity grapples with the emerging challenges of environmental and climate change. Plants play a key role in maintaining the planet's basic environmental balance and ecosystem stability and provide an irreplaceable component of the habitats for the world's animal life. At present, a complete inventory of the plants of the world has not been assembled, but it is estimated that the total number of vascular plant species may be of the order of 400,000<sup>1</sup>.

Of urgent concern is the fact that many plant species, communities, and their ecological interactions, including the many relationships between plant species and human communities and cultures, are in danger of extinction, threatened by such human-induced factors as, *inter alia*, climate change, habitat loss and transformation, over-exploitation, alien invasive species, pollution, clearing for agriculture and other development. If this loss is not stemmed, countless opportunities to develop new solutions to pressing economic, social, health and industrial problems will also be lost. Furthermore, plant diversity is of special concern to indigenous and local communities, and these communities have a vital role to play in addressing the loss of plant diversity.

If efforts are made at all levels to fully implement this updated Strategy:

- (i) societies around the world will be able to continue to rely upon plants for ecosystem goods and services, including food, medicines, clean water, climate amelioration, rich, productive landscapes, energy sources, and a healthy atmosphere;
- (ii) humanity will secure the ability to fully utilize the potential of plants to mitigate and adapt to climate change recognizing the role of plant diversity in maintaining the resilience of ecosystems;
- (iii) the risk of plant extinctions because of human activities will be greatly diminished, and the genetic diversity of plants safeguarded;



<sup>1</sup> Paton, Alan J.; Brummitt, Neil; Govaerts, Rafaël; Harman, Kehan; Hinchcliffe, Sally; Allkin, Bob; Lughadha, Eimear Nic. 2008. Target 1 of the Global Strategy for Plant Conservation: a working list of all known plant species—progress and prospects. *Taxon*, Volume 57, Number 2, May 2008, pp. 602-611(10).





- (iv) the rich evolutionary legacy of plant diversity will be used sustainably and benefits arising are shared equitably to solve pressing problems, support livelihoods and improve human well-being;
- (v) the knowledge, innovations and practices of indigenous and local human communities that depend on plant diversity will be recognized, respected, preserved and maintained; and
- (vi) people everywhere will be aware of the urgency of plant conservation and will understand that plants support their lives and that everyone has a role to play in plant conservation.

#### General principles of the Global Strategy for Plant Conservation

- The sixteen outcome-oriented, clear, stable, long-term targets adopted at the global level provide guidance for setting national plant targets. These targets are to be understood in a pragmatic rather than a literal way. They aim to be strategic, rather than comprehensive.
- Regional components of the Strategy might be developed, perhaps using a biogeographical approach.
- The implementation of the Strategy should be considered within the broader framework of the Strategic Plan for Biodiversity 2011-2020. The pressures on biodiversity and the underlying causes of biodiversity loss affect plants as much as other components of biodiversity. The elements covered in the Strategic Plan for Biodiversity 2011-2020 are therefore not detailed for the updated Global Strategy for Plant Conservation but should be seen as complementary components that are essential for the effective implementation of the Strategy.



# The GSPC targets: 2011-2020

## Objective 1:

Plant diversity is well understood, documented and recognized

### Target 1:

An online flora of all known plants.

### Target 2:

An assessment of the conservation status of all known plant species, as far as possible, to guide conservation action.

### Target 3:

Information, research and associated outputs, and methods necessary to implement the Strategy developed and shared.



## Objective II:

Plant diversity is urgently and effectively conserved

### Target 4:

At least 15 per cent of each ecological region or vegetation type secured through effective management and/or restoration.

### Target 5:

At least 75 per cent of the most important areas for plant diversity of each ecological region protected with effective management in place for conserving plants and their genetic diversity.

### Target 6:

At least 75 per cent of production lands in each sector managed sustainably, consistent with the conservation of plant diversity.

### Target 7:

At least 75 per cent of known threatened plant species conserved *in situ*.

### Target 8:

At least 75 per cent of threatened plant species in *ex situ* collections, preferably in the country of origin, and at least 20 per cent available for recovery and restoration programmes.

### Target 9:

70 per cent of the genetic diversity of crops including their wild relatives and other socio-economically valuable plant species conserved, while respecting, preserving and maintaining associated indigenous and local knowledge.

### Target 10:

Effective management plans in place to prevent new biological invasions and to manage important areas for plant diversity that are invaded.



Mecit Vural

## Objective III:

Plant diversity is used in a sustainable and equitable manner

### Target 11:

No species of wild flora endangered by international trade.

### Target 12:

All wild harvested plant-based products sourced sustainably.

### Target 13:

Indigenous and local knowledge innovations and practices associated with plant resources maintained or increased, as appropriate, to support customary use, sustainable livelihoods, local food security and health care.



Moray McLeish / The Nature Conservancy



## Objective IV:

Education and awareness about plant diversity, its role in sustainable livelihoods and importance to all life on earth is promoted

### Target 14:

The importance of plant diversity and the need for its conservation incorporated into communication, education and public awareness programmes.



*Bian Tan*

## Objective V:

The capacities and public engagement necessary to implement the Strategy have been developed

### Target 15:

The number of trained people working with appropriate facilities sufficient according to national needs, to achieve the targets of this Strategy.

### Target 16:

Institutions, networks and partnerships for plant conservation established or strengthened at national, regional and international levels to achieve the targets of this Strategy.



Bian Tan



# Technical rationales for the targets of the GSPC: 2011-2020

The technical rationales presented below were developed through a consultative process involving CBD Parties, members of the Global Partnership for Plant Conservation and other key stakeholders. These were considered by the Parties to the CBD in 2012 at SBSTTA 16, where their provisional nature was recognised. Parties and other Governments and relevant organizations are encouraged to make use of the technical rationales, for example by adapting them to guide the development/updating and promotion of national plant conservation strategies and their integration into national biodiversity strategies and action plans, taking into account specific national circumstances.

## Objective I: Plant diversity is well understood, documented and recognized

### Target 1: An online Flora of all known plants.

**Technical rationale:** A widely accessible Flora of all known plant species is a fundamental requirement for plant conservation and provides a baseline for the achievement and monitoring of other targets of the Strategy. The previous (2010) Target 1 aimed to develop “a widely accessible working list of known plant species as a step towards a complete world flora,” and this target was achieved at the end of 2010, as The Plant List ([www.theplantlist.org](http://www.theplantlist.org)). Drawing from the knowledge gained in producing The Plant List, an online World Flora of all known plant species is now projected for 2020. The structure of the Flora is yet to be determined, but it should be a framework capable of accommodating regional floristic information (at national or lower level) that can provide answers in both regional and global contexts. Enhancements should include more complete synonymy; geographic distributions to at least country level, drawing on national floras, checklists, and monographs; habitat data; identification tools, principally interactive keys, images, and descriptions; conservation status (with links to assessments being carried out under Target 2); and other enhancements as practicable, e.g., vernacular names. Much of these data already exist in digital or printed format, and they can be used to populate the Flora. This is much more than an information technology project, though, and plant taxonomists will play a crucial role in resolving taxonomy that differs between geographic regions and in generating new floristic and monographic work to update old information and fill in the considerable



gaps that exist. Capacity-building in taxonomy, as outlined in the Global Taxonomy Initiative (GTI), and linkage between national, regional and global initiatives, will also be critically important to maintaining, improving, and updating the Online World Flora.

## Target 2:

**An assessment of the conservation status of all known plant species, as far as possible, to guide conservation action.**



**Technical rationale:** The IUCN Red List Categories and Criteria provide a robust framework for this target enabling comparison of threat across a variety of spatial and temporal scales. Although it is not realistic to assess all species by this method by 2020, assessments for a representative sample of plant species (the IUCN Sampled Red List Index for plants - SRLI) will provide a global overview and a baseline against which trends can be tracked. IUCN Red Lists of globally assessed groups and national Red Lists will also provide useful policy relevant information. The assessment of species of socio-economic importance could be prioritized to help guide activities under Targets 9, 12 and 13. The conservation status of many plant species has

been assessed either through country-level processes and/or through international initiatives using a variety of processes. Compilation of these evidence-based assessments could provide a vital overview of existing conservation status information, and a starting point to guide conservation action. Such a working list of conservation assessments is a necessary and feasible approach commensurate with the urgency of assessing species in order to facilitate progress towards Targets 7 and 8. Dissemination could be through an internet portal allowing access to all existing assessments for each species and linked to the Online World Flora (Target 1). A full assessment of all known plant species to a consistent international standard is the longer term aim to facilitate conservation action.

### **Target 3:** **Information, research and associated outputs, and methods necessary to implement the Strategy developed and shared.**



#### **Technical rationale:**

Conservation biology research, methodologies and practical techniques for conservation are fundamental to the conservation of plant diversity and the sustainable use of its components. Conservation initiatives will benefit through the development and effective dissemination of information, tools and case-studies based on the results of existing and new research and practical management experiences. Key areas where the development of guidance and advice is required include: the integration of *in situ* and *ex situ* conservation into relevant plans, programmes and strategies; maintenance of

threatened plants within ecosystems; information on plant species' responses to climate change and mitigation measures; applying the ecosystem approach; balancing sustainable use with conservation; methodologies for setting conservation priorities; guidance on ecological restoration; and methodologies for monitoring conservation and sustainable use activities. However, needs may vary from country to country. The development of a toolkit is a useful contribution to achieving this target.

## Objective 2: Plant diversity is urgently and effectively conserved

### Target 4:

**At least 15 per cent of each ecological region or vegetation type secured through effective management and/or restoration.**

**Technical rationale:** The aim of this target is to maintain the provision of ecosystem services through the conservation of ecological regions or vegetation types at national and/or regional levels, generating benefits at global level. Ecological regions are understood as areas of land or water that contain a geographically distinct assemblage of natural communities that share species composition, ecological dynamics and environmental conditions, and interact ecologically in ways that are critical for their long-term persistence. Various approaches are available for their identification, but under the scope of this strategy, those based on major vegetation types (e.g. tundra, mangrove, temperate coastal forest) are more adequate. These ecological regions or vegetation types must be secured through effective management, which means to manage the area in order to ensure the persistence of the vegetation, and associated biotic and abiotic components. The target includes undertaking restoration work in degraded ecosystems to enhance their conservation status and improve delivery of ecosystem services in tandem with securing plant diversity.

In general, forests and mountain areas are well represented in protected areas networks, while natural grasslands (such as prairies) and coastal and estuarine ecosystems, including mangroves, are poorly represented. The target implies: (i) increasing the representation of unsecured ecological regions in protected areas networks, and (ii) increasing the integrity of geographically distinct assemblages of natural communities through effective management and ecological restoration.



George Yatskiyevych



In order to allow progress to be measured, classification schemes must be available for ecological regions at national and/or regional level, and be equivalent to major classifications schemes recognized at a global level. Mechanisms contributing to this target include ecological networks, protected areas, sites subject to REDD+ initiatives (Reducing emissions from deforestation and forest degradation), corridors, peace parks, Indigenous and community conserved areas (ICCAs) including sacred forests, wetlands and landscapes, village lakes, catchment forests, river and coastal stretches and marine areas. Actions taking place under the CBD programme of work on protected areas and under Target 5 will contribute to this target.

## Target 5:

### **At least 75 per cent of the most important areas for plant diversity of each ecological region protected with effective management in place for conserving plants and their genetic diversity.**

**Technical rationale:** This target has two components – identifying the areas important for plant diversity and then ensuring effective protection of at least 75 per cent of these areas. The longer-term goal is the protection of 100 per cent of all important areas for plant diversity; including enlarging or connecting the areas, as appropriate, to combat threats, especially those associated with climate change.

The most important areas for plant diversity can be identified according to criteria including endemism, vulnerability of species and habitats, species richness, genetic variability patterns and/or uniqueness of habitats, including relict ecosystems, also



taking into account the provision of ecosystem services. These areas should be identified at national and local levels. Protection (safeguard) can be assured through effective land management, including, but not limited to, protected areas.

The key challenge will be to ensure that appropriate management measures are supported that maintain and enhance plant diversity. Threats to consider when designing effective management will vary in different regions/on different sites but should include the threats posed by climate change. The implementation



of this target will also help implement Target 4: conserving ecological regions, and the management of invasive alien species under Target 10. To date, more than 66 countries have taken steps to identify important areas for plant diversity and at least 17 have ongoing programmes that are addressing conservation issues as well as documenting sites. Some important areas for plant diversity fall within officially protected areas though this figure varies considerably between countries.

The percentage of important areas for plant diversity protected does not necessarily mean the site is maintained in good condition. Well-managed important areas for plant diversity will contain the largest, most resilient populations of species and numerous microhabitats; they provide staging posts for migration and a reservoir of genes for evolution; they will therefore be the core of any landscape-scale conservation schemes to mitigate the impacts of climate change.

## Target 6:

### **At least 75 per cent of production lands in each sector managed sustainably, consistent with the conservation of plant diversity.**

**Technical rationale:** The ultimate goal is for all production lands to be managed sustainably, without negative impacts on plant diversity. For the purpose of the target, “production lands” refer to lands (including wetlands) where the primary purpose is agriculture, including horticulture, grazing, aquaculture, mariculture or forestry. The sectors to be considered under this target include, *inter alia*, croplands, pasture, forestry, including harvesting of non-timber forest products, and aquaculture. “Consistent with conservation of plant diversity” calls for a



responsible management of resources use, while improving long-term conservation and restoration of plant diversity, communities and associated habitats. This implies that a number of objectives are integrated into the management of such production lands: (i) the conservation of plant diversity including genetic diversity; (ii) protection of other plant species in the production landscape that are unique, threatened, or of particular socio-economic value; and (iii) use of management practices that avoid significant adverse impacts on plant diversity in surrounding ecosystems. The target therefore encourages the use of good agricultural, horticultural and forestry practices.

Increasingly, integrated production methods are being applied in agriculture, including integrated pest management, conservation agriculture, integrated crop-livestock production, and on-farm management of plant genetic resources. Similarly, agroforestry and other sustainable forest management practices are being more broadly applied. Against this background, and with the above understanding of the terms used, the target is considered feasible. Higher targets are appropriate for natural or semi-natural forests and grasslands. Sustainable management of production lands is key, as this will lead to actions that have as a consequence the conservation of plant diversity. Biofuel production is an issue of particular concern, and management of production areas used for this purpose should take measures to avoid exerting pressure on the conservation of plant diversity. Further work may be needed to develop sector specific sub-targets as a basis for monitoring progress in achieving this target.

In order to measure progress, clear baselines, performance indicators and definitions for terms are important. A new paradigm of “Sustainable crop production intensification (SCPI)” has recently been developed by FAO<sup>2</sup>. It presents approaches on how to produce more from the same area of land while conserving resources, reducing negative impacts on the environment and enhancing natural capital and the flow of ecosystem services.



## Target 7: At least 75 per cent of known threatened plant species conserved *in situ*.

**Technical rationale:** The achievement of this target should be seen as a step towards the effective *in situ* conservation of all threatened species. “Conserved *in situ*” is understood to mean that biologically viable populations of these species occur in at least one protected area or the species is

effectively managed outside the protected area network, through other *in situ* management measures. Effective conservation needs to consider (i) the genetic diversity of the species and (ii) ecosystem function and resilience to such threats as climate change, for example, by determining whether the protected area network includes corridors, altitudinal gradients, or the presence of multiple habitats to facilitate species movement. The target should also be interpreted to allow for significant habitat and ecological restoration to enable its achievement. Many endemic species are by definition vulnerable, and should be treated as a priority, a sub-target of ensuring all endemics are found in at least one conservation area, or are covered by species plans may be useful. In this regard, guidelines in the toolkit should provide adequate guidance on restoration and species recovery. The development of internationally agreed guidelines for assisted migration of species impacted by climate change will be an urgent requirement of the toolkit.

Many protected areas, especially in developing countries, do not have well-articulated management objectives of any kind – let alone specific ones relating to protecting species. The progress on this target has been limited by a lack of baseline information. It will be important to move from conserving 75 per cent *in situ* to the conservation of 100 per cent. Therefore, the actions underpinning this target will remain essential beyond 2020, as the current target is only a milestone towards the objective of halting the loss of plant diversity.

## Target 8:

**At least 75 per cent of threatened plant species in *ex situ* collections, preferably in the country of origin, and at least 20% available for recovery and restoration programmes.**

**Technical rationale:** This target moves towards achieving a comprehensive programme of *ex situ* conservation that complements *in situ* conservation, through the development of genetically representative collections and measures which strengthen responses to the impacts of climate change, unsustainable land use and overharvesting of plant resources. Common objectives for *ex situ* and *in situ* approaches should be identified and activities coordinated between the two to ensure an integrated approach at a national level.

Currently, over 10,000 threatened species are maintained in living collections (botanic gardens, seed banks and tissue culture collections). Progress has been made towards the 2010 target to conserve 60% of all threatened plant species, through the development of greater capacity, resources, expertise and extended standard operating procedures. These achievements will be built on to realize the 2020 target. Significant progress has been made by some countries, but those with high biodiversity still face great challenges. In the absence of updated global, regional and national lists of threatened species, and

with different lists in use, it has been difficult to measure the achievement of this target.

*Ex situ* collections should be both accessible and duplicated and should preferably be in the country of origin. Purpose-oriented and transparent regulations for accessing *ex situ* collections should be developed and made publicly available in order to facilitate and increase the use of *ex situ* collections, e.g. for recovery and restoration and other uses of plant genetic resources.



Priority should be given to developing genetically representative collections (considering population sizes, distribution and ecological traits) of the most critically threatened species, for which a target of 90 per cent should be attained. Further definition of priority taxa is needed, such as narrow endemics, sub-specific taxa, critically endangered species, taxa with known or potential future use and wild relatives of useful plants (see Target 9). The mere presence of species in *ex situ* collections should not be seen as the outcome, but rather collections should be genetically representative of species. With only an estimated 5 per cent of threatened species currently included in recovery and restoration programmes, there is a need to increase the percentage of species available for such programmes, to allow for evolution and adaptation, especially in the face of growing environmental change. Toolkits under this target need to include protocols for genetically representative sampling, documentation of sampling and *ex situ* collections, genetic management of *ex situ* collections, and reintroductions.

## Target 9:

**70 per cent of the genetic diversity of crops including their wild relatives and other socio-economically valuable plant species conserved, while respecting, preserving and maintaining associated indigenous and local knowledge.**



**Technical rationale:** The genetic diversity of crops and their wild relatives provides the biological basis for humankind's food security, well-being and livelihoods, as well as ensuring the continuing evolution of these species in nature. The conservation of this diversity and associated indigenous and local knowledge is thus fundamental to ensure that the plant genetic resources needed by people are available for use now, and in the future. Theory and practice demonstrate that, with appropriate strategies, conserving 70 per cent of the genetic diversity of a crop is a reasonable target to achieve for most crop species in a relatively small sample (generally less than one thousand accessions), provided a scientifically sound sampling strategy is applied.

For some 200-300 major crops, it is likely that 70 per cent of genetic diversity is already conserved *ex situ* in gene banks. Genetic diversity is also conserved through on-farm management and active *in situ* conservation in natural ecosystems, but this is currently un-quantified. Maintenance of associated indigenous and local knowledge presents a particularly significant challenge and to date there is a lack of tested methodologies and limited assessments of indigenous and local knowledge associated with plant genetic diversity. The conservation of genetic diversity of minor crops and other socio-

economically important species, including those of local importance has received less attention. Priority species to be addressed under this target may include certain medicinal plants, non-timber forest products, local land races, wild relatives of crops, neglected and underutilized plant resources as well as major forage and tree species, which may become the crops of the future. These species may be prioritized at national and regional level on a case-by-case basis, according to national and/or regional priorities. Through the combined actions of countries, some 2,000 to 3,000 of these species could be covered under this target.

A Second Report on the State of the World's Plant Genetic Resources for Food and Agriculture (SOW2) has been published highlighting major changes which have occurred in the conservation and sustainable use of plant genetic resources globally. Also its associated Second Global Plan of Action for Plant Genetic Resources for Food and Agriculture (GPA-2) was adopted by the FAO Council on 29 November 2011. The GPA-2 contains a set of 18 inter-related priority activities prepared on the basis of regional consultations and the gaps and needs identified by the SOW2.

## **Target 10:** **Effective management plans in place to prevent new biological invasions and to manage important areas for plant diversity that are invaded.**

**Technical rationale:** This target addresses biological invasions that threaten plants, plant communities and associated habitats and ecosystems. It targets sites that are important for plants. The target combines both the invasion by the alien species (plant,

animals or micro-organisms) and the reactions of ecosystems or habitats into which they are introduced (i.e. there is not always a negative reaction by the ecosystem). This target would be considered as a first step towards developing management plans for all types of major biological invasions.



Management plans should be designed (using the ecosystem approach) to redress damage done to plants and/or their communities and to restore ecosystem functions, goods and services. This requires that target ecosystems/habitats be defined, in this case as “important areas for plant

diversity”. There is an urgent need to recognize that climate change will enhance the spread and impact of invasive alien species. Hence, future work on this target should ensure that there is adequate preparedness and that management plans should include options for adaptation to climate change.



### Objective 3: Plant diversity is used in a sustainable and equitable manner

#### Target 11:

#### No species of wild flora endangered by international trade.

**Technical rationale:** The collection of certain rare, endemic or commercially desirable plant species for trade poses a major threat to their survival in the wild. This is especially the case where their habitat itself might be threatened or where the species occur naturally in low numbers. This target focuses on those species of wild flora that are: (i) currently threatened by international trade, and (ii) may become threatened in the near future due to high levels of international trade. Species of wild flora endangered by international trade include but are not limited to species listed on the Appendices of the



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Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). The target is consistent with the main purpose of the CITES Strategic Vision<sup>3</sup>:

“No species of wild flora subject to unsustainable exploitation because of international trade”.

Traditionally the plants covered by CITES have been ornamentals (such as orchids and cacti) threatened by commercial collecting from the wild for gardens and greenhouses. However, more attention is now being focused on the major commercial groups of internationally traded species such as timbers and

medicinal plants. International monitoring and control of the trade in threatened plants through CITES is today the principal means of international cooperation and monitoring of plant trade. CITES allows trade in plant species that can withstand current rates of exploitation, but prevents trade in those that face extinction. International trade in species of wild flora, in addition to threatening survival of species, may be detrimental for the local use and fair sharing of benefits from utilization of species.

This target is unique in the context of GSPC, in that its implementation, monitoring and review is through synergy with the Plants Committee of CITES. This target is also considered to be complementary to Target 12.

## Target 12:

### All wild harvested plant-based products sourced sustainably.



**Technical rationale:** This target is consistent with the second objective of the Convention on Biological Diversity, and its long-term goal is to achieve sustainable sourcing of all naturally occurring plant resources. “Plant-based products” harvested from wild sources include food products, timber, paper and other wood-based products, other fibre products, rattans, gums, resins, plant dyes and ornamental, medicinal and other plants for direct use, including non-timber forest products, local land races, wild relatives of crops, and neglected and underutilized plant resources. “Sourced sustainably” ensures that

practices along at the supply chain integrate social, environmental and economic considerations, such as the fair and equitable sharing of benefits and the participation of indigenous and local communities. Value addition and processing should also aim to ensure that waste is reduced and does not damage the environment. Sources that are sustainably managed are understood to include natural or semi-natural ecosystems that are sustainably managed by avoiding overharvesting of plant products, or affecting other components of the ecosystem.

The target wording reflects the need to first inventory plant-based products (and identify the species from which they are derived) and to assess or certify their sustainability according to explicit and scientific criteria. Assessment of progress will be assisted by the adoption of criteria and indicators for the sustainability of harvesting of wild plants (for example, the FairWild Standard<sup>4</sup>) and the development of criteria and indicators for sustainable management of the broad range of habitats in which these species occur. It is understood that for some categories of products, it will be more difficult to reach the target and more difficult to monitor progress than others. Implementation requires a combination of product-specific and sector-wide approaches, consistent with the Convention’s programmes of work on agricultural biodiversity and sustainable use. There is a need for strengthened linkages with the private sector and consumers consistent with the Convention’s Business and Biodiversity Initiative.

<sup>4</sup> <http://www.fairwild.org/publication-downloads/fairwild-standard-ver-20/FairWild-Standard-V2.pdf>.

## Target 13:

### Indigenous and local knowledge innovations and practices associated with plant resources, maintained or increased, as appropriate, to support customary use, sustainable livelihoods, local food security and health care.



**Technical rationale:** Plant diversity underpins livelihoods, food security and health care of traditional communities. The preservation, protection and promotion of the traditional knowledge, innovations and practices of local and indigenous communities (TK) that relate to the use of plant diversity is of key importance, particularly for developing countries. Relevant knowledge, innovations and practices are largely site specific and thus preservation of this must be locally driven. However, as many

of the products are traded worldwide, the consumer also has a responsibility for maintenance of traditional knowledge. Target 13 ties the GSPC to Article 8(j) and 10(c) of the Convention on Biological Diversity, and relates it to the principles of the ecosystem approach<sup>5</sup> and the Addis Ababa Principles and Guidelines for the Sustainable Use of Biodiversity<sup>6</sup>. The principles for the ecosystem approach, adopted in 2000, advocate an ecosystem-wide approach and recommend the decentralization of management to the lowest appropriate levels, including by communities. The Addis Ababa Principles and Guidelines, adopted in 2004, advocate recognition that use and knowledge of resources leads to sustainable management, particularly by local people. This target is also a strategic link to the MDG framework and links well to sustainable livelihood initiatives.

As a complement to Target 9, implementation of this target may, in the long run, help local and indigenous communities to adapt to emerging environmental challenges such as climate change and the associated biodiversity loss, as well as to adapt to new technologies. As it stands, this is an enabling target, but indicators measurable in the mid- and long-term should be identified and participation of stakeholders, especially indigenous and local communities should be improved and broadened. There is a need for guidance for practical implementation at the national level and definition of sub-targets for different priorities.

Although this target is difficult to assess in a quantitative manner, initial steps require an increase in the understanding of the diversity of traditional communities in the world and the identification of the most common activities related to plant use and management of resources per community. Robust tools to conserve traditional knowledge are also required.

**Objective 4: Education and awareness about plant diversity, its role in sustainable livelihoods and importance to all life on Earth is promoted**

**Target 14:**

**The importance of plant diversity and the need for its conservation incorporated into communication, education and public awareness programmes.**

**Technical rationale:** Broad-based understanding of the role of plants in our daily lives will greatly facilitate appropriate conservation behaviour. Communication, education and awareness about the importance of plant diversity and its sustainable use are critical for the achievement of all the targets of the Strategy. Key concepts to communicate include:

- Plants are essential to all life on Earth;
- Plants are central to ecosystem products and services;
- Plants play an important role in the mitigation of climate change;
- Plants are critical to the functioning of and well-being for our everyday lives and livelihoods;
- As responsible stewards of the environment, we need to take action to conserve and sustainably use plants both wild and cultivated.

These concepts need to be widely understood by all sectors of society, including indigenous and local communities, the business sector, media and policy-makers as well as those in all levels of formal and informal education. Consideration should be given to developing specific indicators to monitor progress towards achievement of the overall target. For example, given the strategic importance of education about plant conservation, this issue should be included not only in environmental and scientific curricula, but should also be

included in broader areas of mainstream education policy such as history, politics and economics. Issues to be addressed include the over-emphasis on animals and neglect of plants in environmental education programmes, a need for increased teacher-training relative to plant diversity, a lack of opportunity to experience nature first-hand and messages being lost under an overwhelming level of advertising in all media.





**Objective 5: The capacities and public engagement necessary to implement the Strategy have been developed**

**Target 15:**

**The number of trained people working with appropriate facilities sufficient according to national needs, to achieve the targets of this Strategy.**



**Technical rationale:** The updated Strategy emphasizes national and regional implementation and its scope goes beyond traditional plant conservation activities to include sustainable use, as well as working with local and indigenous communities. The achievement of the targets included in the Strategy will require considerable capacity-building, particularly to address the need for conservation practitioners trained in a range of disciplines, with

access to adequate facilities. In addition to training programmes, both domestic and international, the achievement of this target will require long-term commitment to maintaining infrastructure. “Appropriate facilities” are understood to include adequate technological, institutional and financial resources. Capacity-building should be based on national needs assessments. It is likely that the number of trained people working in plant conservation worldwide will need to double. Given the current geographical disparity between biodiversity and expertise, this is likely to involve considerably more than a doubling of capacity in some countries. Increased capacity should be understood to include in-service training, as well as the training of additional staff and other stakeholders and decision-makers, particularly at the community level.

This target remains fundamental for the achievement of the Strategy; however, overall there has been limited commitment and leadership from all sectors. While there is no global baseline from which progress can be measured, and despite relatively few countries having conducted needs assessments, several global programmes have made considerable progress in increasing the number of trained people in plant conservation, particularly in developing countries. The target needs to be made more measurable, baselines defined and a coordination and monitoring framework recommended. The focus should not only be on numbers, but also quality. National needs assessments may be an initial priority. Plant science needs to be bolstered in all related disciplines, especially at tertiary level education, so that all sectors value the importance of plant conservation. Where capacity and facilities already exist, knowledge transfer should be encouraged. Internationally, this can be achieved by strengthening the transfer of technologies and technical knowledge. Accelerated and increased investment in Target 15 is critical for the overall achievement of all the targets by 2020.

## Target 16:

### **Institutions, networks and partnerships for plant conservation established or strengthened at national, regional and international levels to achieve the targets of this Strategy.**

**Technical rationale:** Networks of practitioners can, if effective, enhance communication and provide a mechanism to exchange information, know-how and technology and provide an important component in the coordination of effort among many stakeholders for the achievement of all the targets of the strategy. Networks provide an essential link between on-the-ground conservation action and coordination, monitoring and policy development at all levels.

National implementation of the Strategy is constrained by limited institutional capacity and capabilities in many countries. There is therefore a need to strengthen institutional frameworks. This target includes broadening participation in existing networks, as well as the establishment, where necessary, of new institutions and networks. Partnerships are needed to strengthen links between different sectors relevant to conservation, e.g., the botanical, environmental, agricultural, forest and educational sectors as well linking to local and indigenous communities.

At the global level the establishment of the Global Partnership for Plant Conservation (GPPC) has made a good start at bringing together the plant conservation community, however there is still a lack of cross-sectoral networks, with limited institutional integration and a lack of mainstreaming. Where national responses to the Strategy have been prepared, this has helped provide a focus for networking amongst the stakeholders.



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# Implementing the GSPC

Measures to implement the Strategy will need to be put in place at international, regional, national and sub-national levels. This includes the development of national targets and their incorporation into relevant plans, programmes and initiatives, including national biodiversity strategies and action plans. National targets will vary from country to country according to differences in levels of plant diversity and national priorities. Multilateral and bilateral funding agencies should consider putting in place policies and procedures to ensure that their funding activities are supportive of and do not run counter to the strategy and its targets.

The Strategy should be implemented in harmony with the Strategic Plan for Biodiversity 2011-2020 and with other programmes of work, instruments and protocols, and initiatives of the Convention. In addition, it will be necessary to develop a monitoring framework for the Strategy for the period 2011-2020 including a review and harmonization of the indicators and milestones consistent with the processes under the biodiversity indicators framework of the Convention.

In order to ensure that progress in implementation is not constrained by limited funding and lack of training workshops there will be a need to backstop the updated strategy with sufficient human, technical and financial resources in order to achieve the targets by 2020. Therefore, in addition to the Parties to the Convention, further development and implementation of the strategy should involve a range of actors, including:

- (i) International initiatives (e.g., international conventions, intergovernmental organizations, United Nations agencies, multilateral aid agencies);
- (ii) Members of the Global Partnership for Plant Conservation;
- (iii) Conservation and research organizations (including protected-area management boards, botanic gardens, gene banks, universities, research institutes, non-governmental organizations and networks of non-governmental organizations);
- (iv) Communities and major groups (including indigenous and local communities, farmers, women, youth);
- (v) Governments (central, regional, local authorities); and
- (vi) The private sector.

Further information about the GSPC is available on the GSPC toolkit website: [www.plants2020.net](http://www.plants2020.net)

# Annex 1

## The Aichi Biodiversity Targets of the CBD's Strategic Plan for Biodiversity 2011-2020

### **Strategic Goal A: Address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society**

**Target 1** By 2020, at the latest, people are aware of the values of biodiversity and the steps they can take to conserve and use it sustainably.

**Target 2** By 2020, at the latest, biodiversity values have been integrated into national and local development and poverty reduction strategies and planning processes and are being incorporated into national accounting, as appropriate, and reporting systems.

**Target 3** By 2020, at the latest, incentives, including subsidies, harmful to biodiversity are eliminated, phased out or reformed in order to minimize or avoid negative impacts, and positive incentives for the conservation and sustainable use of biodiversity are developed and applied, consistent and in harmony with the Convention and other relevant international obligations, taking into account national socio economic conditions.

**Target 4** By 2020, at the latest, Governments, business and stakeholders at all levels have taken steps to achieve or have implemented plans for sustainable production and consumption and have kept the impacts of use of natural resources well within safe ecological limits.

### **Strategic Goal B: Reduce the direct pressures on biodiversity and promote sustainable use**

**Target 5** By 2020, the rate of loss of all natural habitats, including forests, is at least halved and where feasible brought close to zero, and degradation and fragmentation is significantly reduced.

**Target 6** By 2020 all fish and invertebrate stocks and aquatic plants are managed and harvested sustainably, legally and applying ecosystem based approaches, so that overfishing is avoided, recovery plans and measures are in place for all depleted species, fisheries have no significant adverse impacts on threatened species and vulnerable ecosystems and the impacts of fisheries on stocks, species and ecosystems are within safe ecological limits.

**Target 7** By 2020 areas under agriculture, aquaculture and forestry are managed sustainably, ensuring conservation of biodiversity.

**Target 8** By 2020, pollution, including from excess nutrients, has been brought to levels that are not detrimental to ecosystem function and biodiversity.

**Target 9** By 2020, invasive alien species and pathways are identified and prioritized, priority species are controlled or eradicated, and measures are in place to manage pathways to prevent their introduction and establishment.

**Target 10** By 2015, the multiple anthropogenic pressures on coral reefs, and other vulnerable ecosystems impacted by climate change or ocean acidification are minimized, so as to maintain their integrity and functioning.



### **Strategic Goal C: To improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity**

**Target 11** By 2020, at least 17 per cent of terrestrial and inland water, and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscapes and seascapes.

**Target 12** By 2020 the extinction of known threatened species has been prevented and their conservation status, particularly of those most in decline, has been improved and sustained.

**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 their genetic diversity.

### **Strategic Goal D: Enhance the benefits to all from biodiversity and ecosystem services**

**Target 14** By 2020, ecosystems that provide essential services, including services related to water, and contribute to health, livelihoods and well-being, are restored and safeguarded, taking into account the needs of women, indigenous and local communities, and the poor and vulnerable.

**Target 15** By 2020, ecosystem resilience and the contribution of biodiversity to carbon stocks has been enhanced, through conservation and restoration, including restoration of at least 15 per cent of degraded ecosystems, thereby contributing to climate change mitigation and adaptation and to combating desertification.

**Target 16** By 2015, the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization is in force and operational, consistent with national legislation.

### **Strategic Goal E: Enhance implementation through participatory planning, knowledge management and capacity building**

**Target 17** By 2015 each Party has developed, adopted as a policy instrument, and has commenced implementing an effective, participatory and updated national biodiversity strategy and action plan.

**Target 18** By 2020, the traditional knowledge, innovations and practices of indigenous and local communities relevant for the conservation and sustainable use of biodiversity, and their customary use of biological resources, are respected, subject to national legislation and relevant international obligations, and fully integrated and reflected in the implementation of the Convention with the full and effective participation of indigenous and local communities, at all relevant levels.

**Target 19** By 2020, knowledge, the science base and technologies relating to biodiversity, its values, functioning, status and trends, and the consequences of its loss, are improved, widely shared and transferred, and applied.

**Target 20** By 2020, at the latest, the mobilization of financial resources for effectively implementing the Strategic Plan for Biodiversity 2011-2020 from all sources, and in accordance with the consolidated and agreed process in the Strategy for Resource Mobilization, should increase substantially from the current levels. This target will be subject to changes contingent to resource needs assessments to be developed and reported by Parties.



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