



**Convention on
Biological Diversity**

Distr.: General
29 September 2023

English only

**Subsidiary Body on Scientific,
Technical and Technological Advice**

Twenty-fifth meeting

Nairobi, 15–19 October 2023

Item 3 (d) of the provisional agenda*

**Facilitating the implementation of the Kunming-Montreal Global
Biodiversity Framework and the monitoring of its progress**

**Technical rationales for the implementation of the set of
complementary actions related to plant conservation in support of
the Kunming-Montreal Global Biodiversity Framework**

Note by the Secretariat

1. In decisions [15/5](#) and [15/13](#), the Conference of the Parties to the Convention on Biological Diversity invited the Global Partnership for Plant Conservation to prepare, with the support of the Secretariat of the Convention, a set of complementary actions related to plant conservation to support the implementation of the Kunming-Montreal Global Biodiversity Framework¹ for consideration by the Subsidiary Body on Scientific, Technical and Technological Advice.
2. In compliance with the aforementioned decision, an update to the Global Strategy for Plant Conservation, in the form of the set of complementary actions, has been prepared by the Partnership with the support of the Secretariat, and is contained in document CBD/SBSTTA/25/5.
3. The annex to the present document, which has been prepared by the Global Partnership for Plant Conservation, contains information on technical rationales for each of the proposed complementary actions. The annex is presented in the form and language in which it was received by the Secretariat.

* CBD/SBSTTA/25/1/Rev.1.

¹ Decision 15/4, annex.

Annex

Technical rationales for the implementation of the set of complementary actions related to plant conservation in support of the Kunming-Montreal Global Biodiversity Framework

I. Introduction

This Information Document has been prepared by members of the Global Partnership for Plant Conservation. It outlines technical rationales, definitions of terms used and further information for the achievement of the complementary Actions (referred to as Actions) of the Global Strategy for Plant Conservation (GSPC). The document highlights particular needs for attaining the outcomes of the Actions and outlines some of the most critical activities needed to achieve effective plant conservation. It also points out priority areas where urgent initiatives may be required to implement Actions. It seeks to respond to the queries and suggestions made by the Parties to the Convention on Biological Diversity and others during the peer review of the draft GSPC in [August 2023](#).

Although many of the Actions appear to be very ambitious, it should be noted that plant conservation has already made significant advances over the last two decades ([Plant Conservation Report 2020](#)). Some of the Actions while starting from a low threshold of existing endeavour, will build on the advances already made. Similarly, an adaptive system will be used, with continuous feedback and as such the rationale may evolve over time as new information and knowledge is generated.

The importance of plants

There are more than 400,000 species of plants worldwide and they are universally recognised as a vital component of the world's biological diversity and critical to sustaining life on Earth. They form the basis of most terrestrial ecosystems and provide ecosystem services to support human wellbeing, including climate regulation and food security. Plants and their ecosystems have influenced our cultural and spiritual development and are woven into languages, place names, religion and folklore across the world. However, plants have not always been given sufficient attention in the development of national and international biodiversity conservation plans and strategies. In many countries, plants face a growing and urgent crisis, with as many as 100,000 species currently threatened in the wild, thus, undermining ecosystem resilience.

The loss of plant species is often a complex mixture of human-induced factors combining to result in the decline of plant species or their diversity and habitats. This decline is exacerbated by the growing impacts of climate change. Climate change has a direct effect on the biology of plants themselves, on other related organisms (such as pollinators), as well as socio-economic impacts. These effects increase when plants and their habitats are damaged or inadequately protected against growing human pressures. Furthermore, as plant population losses continue, there is continuing erosion of genetic diversity and of the essential ecosystem services that they provide.

Background to the Global Strategy for Plant Conservation

The Global Strategy for Plant Conservation (GSPC) has played an essential role in uniting the botanical community around a common commitment to the conservation and sustainable use of plant diversity. It has galvanised tens of thousands of individuals and hundreds of organisations from plant conservation communities to engage with the CBD and contributing to the achievement of the 2020 targets of the GSPC and through this, to the Strategic Plan for Biodiversity 2011-2020 as well as, contributing to the delivery of the Sustainable Development Goals.

Despite the continued threats to plant and habitat diversity, progress in plant conservation has been achieved, and the GSPC has played a pivotal role in this. It allowed plant conservation to focus on a set of easily understood, quantitative, outcome-orientated targets between 2002 and 2020. Through this approach, significant progress can be noted in a number of areas, including the achievement of a World Flora on-line by 2020 (Target1) and accelerated progress worldwide in plant red listing (Target

2). At the national level, a number of countries (including some of the most biodiverse-rich countries, e.g. South Africa, Indonesia, Brazil, Colombia, Mexico and China) developed national plant conservation strategies or responses to the GSPC that run in parallel with and support their NBSAPs.

In first adopting the GSPC in 2002, the Parties to the CBD recognized the need to have specific measures in place to safeguard threatened plant species worldwide and to ensure that these plants remain available to support future generations. This is no less important today and it is within this context that the new GSPC Actions have been prepared.

The significant difference between the previous phases of the GSPC up to 2020, has been its redevelopment to respond to and contribute towards the implementation of the targets of the Kunming-Montreal Global Biodiversity Framework (KMGBF).

The plant conservation community supports the 2050 vision of the CBD where biodiversity maintains ecosystem services, sustains a healthy planet and delivers benefits essential for all people.

Monitoring progress of the achievement of the Complementary Actions

The Actions have been closely aligned with the GBF Targets, and monitoring their progress will too be aligned with the indicators of the GBF monitoring framework, and the reporting lines. In this document we have listed a range of possible plant conservation indicators and sources of information that may provide some useful milestones that can be nested within the broader GBF indicator framework. These GSPC-specific indicators will help the plant conservation community to focus its efforts, monitoring progress and stimulating further efforts.

GSPC stakeholders

The GSPC is an initiative that is relevant to a wide range of stakeholders. In addition to the Parties to the Convention, the following sectors and actors are expected to play key roles in its implementation (given in no particular order):

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

The contribution of the botanical community will be central in the implementation of the Actions but will require involving other sectors, such as the agricultural and forestry sectors.

The GPPC commitment

The plant conservation community, organised through the Global Partnership for Plant Conservation, is a broad-based, multi-stakeholder, united community, committed to ensuring the conservation and sustainable use of plant diversity to support human livelihoods, now and in the future. The GPPC is committed to contribute to the broader process of implementing the KMGBF through its contributions to the complementary Actions of the GSPC. The GPPC is pleased to continue working closely with the Convention on Biological Diversity and individual Parties to the Convention and will continue to be a supportive part of the flexible coordination mechanism for the GSPC.

Acknowledgements

The GPPC would like to thank the CBD Parties and Observers who provided comments on the GSPC Actions during the peer review process. The collaboration and support of the Secretariat of the Convention on Biological Diversity has been essential in the successes of the GSPC, and we wish to

thank them. We would particularly like to thank the CBD Women's Caucus for their suggestions on gender equality for each of the Actions, which have been provided as presented by the Caucus in Annex 2 of this Information Document.

II. Technical Rationales for the Set of Complementary Actions

PLANT CONSERVATION IN SPATIAL PLANNING AND MANAGEMENT PROCESSES

1. Identify and map all plant species, areas and ecosystems important for plant diversity, using scientific, indigenous and local knowledge, and ensure their incorporation into spatial planning and land management processes.

A range of spatial planning systems in use worldwide refers to the methods and approaches used by the public and private sector to influence the distribution of people and activities in spaces of various scales. Spatial planning can be defined as the coordination of practices and policies affecting spatial organization and can include land use, urban, regional, transport and environmental planning and economic, social, cultural and community planning.

Documenting and mapping the distribution and abundance of all plant species, ideally to the population level is needed for spatial planning for biodiversity conservation. It is recognised that it is of strategic importance to significantly increase taxonomic and geographic knowledge about plant diversity. Of particular importance is increasing knowledge of data deficient and species at risk in order to implement this Action. Prioritising the identification and mapping of threatened species and their ecosystems is encouraged as it is a necessary step in understanding the pressures that impact them and in developing conservation interventions. This would also ensure alignment with Target 4 in the GBF to halt human induced extinction of known threatened species and for the recovery and conservation of species.

The worldwide efforts to define Important Plant Areas (IPA) and Key Biodiversity Areas (KBA) can provide a valuable measure of baselines and progress towards the implementation of this Action and achievement of Target 4. An IPA is defined as a natural or semi-natural site exhibiting exceptional botanical richness and/or supporting an outstanding assemblage of rare, threatened and/or endemic plant species and/or vegetation of high botanic value. In describing IPAs, the word 'plant' encompasses algae, fungi, lichens, liverworts, mosses, and wild vascular plants. IPAs are a site-based approach for the conservation of plants at a national level and forms a subset of KBAs around the world. In addition to IPAs and KBAs, a range of different methodologies and systems are in use in different countries worldwide to identify and help define the important areas for plant diversity at national, regional and local levels. Such systems can be used to help achieve this Action.

Use of scientific, indigenous and local knowledge is required to achieve this Action and should follow participatory and inclusive processes, to ensure that the perspectives, knowledge, and rights of various stakeholders are considered and integrated into the spatial planning and land management processes. Additionally, it may be beneficial to establish *in situ* demonstration sites of biodiversity conservation for the purpose of developing cases studies, practices and for learning purposes for those in spatial planning and land management. These can be used to 'bench-mark' actions.

ECOLOGICAL RESTORATION

2. Implement or participate in programmes for the restoration of degraded ecosystems and habitats, prioritizing the use of genetically appropriate material of native species, considering ecological criteria, associated fungal symbionts, pollinators and dispersers, and including species of conservation concern, ensuring that the programmes enhance biodiversity and are informed, where possible, by indigenous and local knowledge, with the free, prior and informed consent of the indigenous peoples concerned.

This plant conservation Action places native species and biodiversity at the centre of ecological restoration efforts. Planting schemes that are solely or primarily developed to achieve carbon sequestration and for commercial forestry can have detrimental impacts on biodiversity, especially where they involve non-native monocultures that displace native species and create low-value landscapes for biodiversity. A definition of a degraded ecosystem that is applicable to the GSPC is one with a persistent reduction in its capacity to provide nature's contribution to people and ecosystem services.

The provenance of material used in ecological restoration is vitally important to ensure that the appropriate genetic diversity is used. Ecological restoration initiatives should follow best practice and not use plant material of non-local provenance, or local provenance from a limited number of genotypes.

Achieving and supporting extensive ecological restoration initiatives will require the mobilisation or refinement of conservation horticulture resources and skills, and developing or expanding existing wild plant propagation units, including nurseries and seed banks, where necessary. The availability of suitable planting material must be considered when planning restoration actions (e.g. seeds, seedlings, cuttings, whole plants, etc). These must be sustainably sourced, and it is important that sources of plant propagules are recorded. The principle of the 'right plant in the right place' underpins this Action.

The term "genetically appropriate material" that is used in this Action (as well as Actions 4c and 11) is defined here and in the other Actions as referring to material of native provenances. It is 'appropriate' because it serves to protect native intraspecific diversity. Genetically appropriate provenances (plants and seeds) are those that where possible have their genetic origin in the area where they are being planted or sown. In the context of the GSPC, 'genetically appropriate' material should not be interpreted to include material derived from alien plant species (i.e. plants that are not native to the planting site'), even if they are expected to grow well at a particular location. 'Genetically appropriate' also encapsulates an understanding that the material used should be from a diverse native provenance where possible, rather than just a selection of uniform clones of the species being established.

IMPORTANT AREAS FOR PLANT DIVERSITY

3a. Ensure that important areas for plant species and their conservation are identified, well connected and represented within protected areas and other effective area-based conservation measures.

3b. Develop integrated management plans for important areas for plant diversity and implement programmes to ensure that those areas are effectively documented, protected, monitored and sustainably managed, recognizing and respecting the rights of indigenous peoples and local communities, including over their traditional territories.

The identification of priority areas for large and continuous populations of threatened and high value species (notably trees) must also be factored into steps taken to implement Action 3a. The worldwide efforts to define Important Plant Areas (IPA) and Key Biodiversity Areas (KBA) can provide a valuable measure of baselines and progress in implementing this Action. An IPA includes the recognition of the importance of plants, algae, fungi, lichens, liverworts, mosses, and wild vascular plants. IPA projects are being implemented in over 70 countries. Other approaches in countries that identify important areas for plant diversity according to criteria other than IPAs or KBAs could also be applied to monitoring this Action.

'Effectively documented, protected and monitored' in Action 3b implies that the conservation of the ecosystems and species they contain, and their genetic diversity is being assured or being taken into account. As such, effective and sustainable management and conservation will be achieved by the integration of a variety of conservation approaches, applied at all relevant geographic scales. It is important to note that although information on genetic diversity is not often available, there should be a concentrated effort made to increase knowledge of the genetic diversity of plants (including of crop wild relatives and other socioeconomically important plants) and of finding ways to incorporate and conserve intraspecific genetic diversity in protected areas and other effective area-based conservation measures.

Other effective area-based conservation measures (OECMs) could also include agrobiodiversity-rich areas, that are part of internationally recognized areas where indigenous communities play a significant role in maintaining agrobiodiversity *in situ*. This may help to safeguard these agrobiodiversity-rich areas and their associated landscapes, knowledge systems, natural-heritage and culture.

PLANT SPECIES CONSERVATION

4a. Ensure that extinction risk and conservation status are known, understood and maintained, as far as possible, for all known plant species.

4b. Create recovery plans for known threatened plant species.

4c. Establish programmes to ensure that threatened plant species are effectively conserved, managed and restored using *in situ* and *ex situ* methodologies, aiming to achieve genetically diverse and viable populations and, where appropriate, involving indigenous peoples and local communities.

CONSERVATION OF GENETIC DIVERSITY

4d. Undertake *ex situ* and *in situ* conservation programmes for wild and domesticated plant species and populations, ensuring that the genetic diversity within and among populations is effectively documented, managed and monitored *in situ*, to maintain and restore genetic diversity and safeguard their adaptive potential.

4e. Establish programmes to ensure that domesticated, cultivated species and crop wild relatives are effectively protected, restored and managed using on farm and *in situ* methodologies and by applying sustainably management practices using agroecology and other sustainable production practices involving the traditional knowledge of indigenous peoples and local communities, with their free, prior and informed consent.

Implementing Action 4a is a priority at national and regional level as it forms the baseline of knowledge for identifying and assessing threatened species as a pre-requisite for their conservation. It is expected that assessments will be evidence-based, founded on verifiable data to ensure that the assessments are objective, repeatable and provide a strong basis for further investment and are suitable to guide conservation action. The Red List Categories and Criteria under the International Union for Conservation of Nature (IUCN) provide a robust framework for this endeavour. However, since the proportion of plants assessed globally is still low, this approach will need to be complemented by drawing upon new methodologies to rapidly identify unassessed species that are likely to be at risk or to conduct more national and/or global assessments for more reliable estimates of overall extinction risk. A variety of different conservation assessments are used by countries and other organisations around the world, and these can also contribute to achieving this Action.

Assessments should be regularly updated as many are years or decades out of date. Conservation actions will need to be aligned with the latest evaluation of threats to species. Consideration should also be given to the assessment of genetic diversity and resilience of species when possible. Parties, other Governments and relevant stakeholders may also consider undertaking assessments of the extinction risk and conservation status of species in other groups, such as algae and fungi (including lichen-forming species).

Recovery plans in Action 4b may include the incorporation of species and their habitats in national biodiversity conservation or action plans. It is recommended that evidence-based recovery plans are developed for known threatened plant species. Such plans could include the use of information on reproductive systems and genetic diversity which is critical for designing species-specific evidence-based conservation strategies. It is important to note that recovery plans can take many forms and are not necessarily restricted to species restoration plans but can cover the recovery of a wider and collective range of plant species (including crops and their wild relatives and other socio-economically valuable plant species). These can also include conservation or restoration of *in situ* habitat for reintroduction and/or recovery of species, and *ex situ* conservation practices, such as those described below.

In situ conservation is defined as the conservation of species in their natural habitat. This is the primary approach for conservation as it can allow evolutionary processes to continue. When the risk of extinction or genetic erosion of plant populations is high *in situ*, alternative conservation measures (e.g. *inter situ*, *near situ*, etc) may be adopted. More specifically, such approaches may address the loss of genetic diversity in a population by introducing new genotypes, where applicable, or would be required, in the case of the definitive destruction of the natural habitat. Similarly, when the habitat is not benefiting from an effective protection measure, or when changed environmental conditions, including climate change, this will no longer support the survival of plant species in their original natural habitats.

Ex situ conservation is defined as the conservation of plant diversity outside its natural habitat. It plays a valuable and often essential complementary role to *in situ* conservation by providing a safety “back up” and acts as an insurance policy against extinction in the wild. *Ex situ* conservation can be performed by a diversity of methods:

- seed conservation including storage at low temperatures and reduced moisture levels, freeze drying, cryopreservation, *in vitro* culture
- living collections (such as in botanic gardens and arboreta) and field gene banks.

One key element is identifying the most efficient and effective (including cost-effective) methods for each species. The assumption is that effective conservation of threatened species *ex situ* will include their availability to support *in situ* conservation, restoration and recovery programmes and to ensure that their genetic variability is included in *ex situ* holdings.

Ex situ conservation in the country of origin will be crucial in the case of field gene banks and should include the participation of local stakeholders and indigenous and local communities. The lack of resources in some countries or regions may limit opportunities to undertake *ex situ* conservation of wild species, crop wild relatives and domesticated socioeconomically valuable plant species. It is suggested to use data from existing conservation and threat status assessments, to prioritise species for *ex situ* conservation. Thus, the development of networks, infrastructure and/or facilities to share germplasm, data, expertise and common protocols is crucial for the success of conservation and to maximise resources. For instance, *ex situ* projects that artificially propagate threatened plant species should be encouraged to seek complementary and cooperative measures that would support *in situ* conservation too. For example by providing (*inter alia*) technical support, mobilising financial resources, provisions of material to support reintroduction into the wild, capacity building and training, technology transfer, investment, and infrastructural development. This would also contribute to achieving the CITES Resolution Conf. 13.9 on ‘Encouraging cooperation between Parties with *ex situ* breeding operations and those with *in situ* conservation programmes’. Furthermore, conservation actions on wild, domesticated and other socioeconomically important plant species and crop wild relatives should take into consideration the framework of and actions under the International Treaty on Plant Genetic Resources for Food and Agriculture and the FAO Commission on Genetic Resources.

As the impacts of climate change and other aspects of global change grow, understanding the most efficient and effective means for *ex situ* conservation and the needs for *in situ* recovery and management plans, will require conservation biology research, including the development of innovative approaches, such as assisted migration, to face the changes expected. Studies on genetic variability across and within populations should be considered, as not all species genetic variation at population level is the same. It is important to note that biological factors can also influence a species survival in the long-term. These can include inbreeding depression, dioecy, slow growth, low seed germination rates, and plant species with exceptional or recalcitrant seeds. It is therefore vital that these factors are identified and research undertaken to understand and mitigate these biological factors where possible. External biological factors impacting the viability of wild plant populations should also be considered and researched, such as the loss of pollinators and seed-dispersers, competition from invasive species, pests and diseases, and climate change induced alterations in ecosystem conditions.

Action 4e acknowledges the need for conservation and sustainable use of both wild plants and crop genetic resources, this includes the conservation of cultivated plant diversity in food systems, and especially traditional and heritage cultivars many of which continue to be at a risk of loss.

SUSTAINABLE HARVESTING

5a. Develop and implement strategies to ensure the sustainable and legal harvesting and use of wild plants, including for artificial propagation or assisted production, respecting customary sustainable use by indigenous peoples and local communities.

TRADE IN PLANTS

5b Identify wild plants threatened by unsustainable or illegal trade and support the implementation or development and adoption of national or international guidelines and other measures to ensure that the harvesting of and trade in plants are sustainable, safe and legal.

These Actions can be interpreted to include measures to ensure the sustainability of wild harvested plants and the products derived from them. Plant-based products harvested from wild sources include food products, timber and other wood-based products, fibre products, plants with ornamental, medicinal and cosmetics use and other uses. Sustainable management and harvesting aims to ensure that practices do not result in a decline in the diversity, availability, or supply of wild harvested plants. It is also assumed that the achievement of these Actions includes the integration of social and environmental considerations, such as the fair and equitable sharing of benefits and the participation of indigenous and local communities along the supply chain.

When implementing actions related to sustainable harvesting and meeting people's needs, these should be collaborative initiatives with relevant stakeholders that not only aim to conserve plant biodiversity, but also enhance social, economic, cultural and environmental benefits for people, especially those in vulnerable situations and those dependent on biodiversity.

Local, national and international trade is relevant as part of these Actions and must be considered as one of the potential drivers of unsustainable harvesting. The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) provides an international framework for the protection of wild flora threatened by international trade. Action 5b is consistent with the main purpose of the CITES Strategic Plan: "No species of wild flora subject to unsustainable exploitation because of international trade".

Action 5b primarily focuses on plant species threatened by trade but it is recognised that the development and adoption of measures applies to all plant species in trade and not only those which are currently threatened by unsustainable and/or illegal trade. The development of relevant guidelines would be helpful to complement the strategies developed in Action 5a. These could include the development of baselines on plant use and sustainable harvesting, in addition to continued focus on the volumes of wild plants in trade. Monitoring of the use of plant species that are not currently threatened and the identification of unsustainable harvesting or illegal trade should be undertaken as this will provide valuable data to support conservation status assessments and recovery plans (Actions 4a and 4b, as well as prioritising implementation of Action 5a).

Implementation of Actions 5a and 5b could include the development of regeneration plans of wild species threatened by trade, including cultivation of some species to minimize forest degradation resulting from sustainable harvesting. Working with the agricultural sector as integral partners in plant conservation programmes may result in the promotion of small-scale farming practices and domestication of wild species that promote legal and safe trade, while at the same time ensuring the survival of species in the wild.

Additionally, implementation of Action 5b would contribute to the achievement of the One Health initiative, as it will help prevent pathogen spillover (which, in the context of plant health, is defined as the spread of plant diseases from illegally harvested and traded wild species to domesticated and commercial crop species).

MONITORING INVASIVE SPECIES

6a. Develop or strengthen early warning and monitoring and tracking systems, including public awareness programmes, at the national and international levels, to prevent, manage and eliminate new potentially invasive alien species, including pests and pathogens, that affect or may affect native plants and their ecosystems, and put in place measures to manage pathways of introduction.

CONTROLLING INVASIVE SPECIES

6b. Address the detrimental impact of invasive alien species and biological invasions on plant diversity and ecosystems by undertaking control or elimination measures, with a focus on areas important for plant diversity.

These Actions seek to address biological invasions as a phenomenon and not just focus on the individual invasive alien species (IAS). It must be noted that many pests and pathogens impacting plants are often IAS. It therefore combines both the invasion of the alien species (of plants, animals or micro-organisms) and the reactions of ecosystems or habitats into which they are introduced. The species often dubbed “alien” may not always become invasive when introduced to new localities, ecosystems or habitats. Sometimes they develop invasive traits subsequently or following climate change.

Management plans therefore need to be designed (using the ecosystem approach) to address the damage done by IAS to plant species and/or their communities and to restore ecosystem functions, benefits and services. This requires that target ecosystems or habitats be defined and the risks to them from IAS be understood. It is also crucial that prior to undertaking control measures and monitoring of IAS, baselines and status documents of current IAS affecting plants are established or updated. Greater impact can also be achieved by evaluating susceptibility and forecasting or predicting impacts of current and new IAS and acting early. In the process of identifying and monitoring IAS the added risk of the introduction of new pests and pathogens should be considered where possible. By doing so, this may enable the mitigation of impacts caused directly and indirectly by IAS.

Considering that climate change is enhancing the spread and impact of many invasive alien species, future research and monitoring work should ensure that there is adequate preparedness to effectively address biological invasions and that management plans should include options for adaptation to climate change. A particular focus should be given to identifying the most serious potential or actual invasive species, and setting priorities to prevent their introduction, establishment and spread.

It is clear that significant public awareness campaigns, citizen science and public involvement in control and management measures need to be developed and disseminated to enhance implementation. Awareness of pathways of introduction and messages on preventing introductions and spread should be developed and included in all IAS control or eradication measures undertaken.

THE IMPACT OF POLLUTION ON PLANTS

7. Gather information, research, assess and provide evidence of pollution risks and their negative impacts, and take action to minimize pollution pressures on plant species and their ecosystems.

Pollution comes in many forms, which can negatively affect plant diversity and its survival. Recognising the type of pollution impacting plant species and their ecosystems is a first step in implementing this Action. Undertaking studies to gather information, assess and make or implement prevention and mitigation actions will be the next steps. For instance, plastic pollution can have devastating impacts on ecosystems and plant life, it can affect soil water content and may interact with the effects of drought on soil and plants and needs to be addressed accordingly. Impacts of pollution and biocides on plant pollination and pollinators are major threats to plant diversity and must be addressed.

By addressing pollution pressures on plants and their habitats rapid positive changes can be achieved. Implementing Action 7 contributes to the One Health Initiative and would include activities such as reducing pollution, and overexploitation and harvesting practices which have negative consequences on ecosystems and wild plant populations. Additionally, given the ecological inertias in adapting to climate change and ocean acidification, it is important to urgently reduce other anthropogenic pressures on vulnerable ecosystems to give those ecosystems and the plant species they contain the best possible chance of adaptation and survival.

NATIVE PLANT USE IN CLIMATE MITIGATION AND ADAPTATION

8a. Consider current and projected impacts of climate change on species, species distribution and ecosystems when implementing plant conservation activities, including those undertaken under Targets 2, 3 and 4.

8b. Use genetically, biologically or ecologically appropriate native plant species, including species of conservation concern, in areas planted for carbon sequestration and in nature-based solutions or ecosystem-based approaches for climate mitigation and adaptation, ensuring that such areas are selected appropriately to avoid negative effects and foster positive impacts on biodiversity.

These Actions place native species and biodiversity at the centre of planting and ecological restoration efforts directed towards climate change mitigation, adaptation and carbon sequestration. They promote the need for specific plant conservation efforts to be put in place to address the threats to plants from climate change. Such efforts may address whole ecosystems or focus on individual species; they may utilise *in situ* and *ex situ* conservation measures, including species recovery programmes, species translocations and ecological restoration. Nature-based climate solutions, which promote climate change adaptation and mitigation by means of ecological manipulation or management may also be considered, such as in peatland restoration, which often includes the removal of trees, or in other ecosystems manipulating their management by means of fire, changes in plant water relations, grazing by animals and many other practices. It is crucial to consider the conservation status and ecological requirements of plant species when selecting them for potential carbon sequestration and for nature-based solutions.

Planting schemes that are solely or primarily to achieve carbon sequestration and/or for commercial forestry can have detrimental impacts on biodiversity, especially when they involve non-native monocultures which displace native species and ecosystems and/or create low-value landscapes for biodiversity. It is important to consider the potential impacts of introducing non-native species or invasive plants that can negatively affect native plant communities. Careful site selection and ecological assessments are essential to minimize any adverse effects on plant biodiversity. The plant conservation community should work to raise awareness amongst relevant authorities of the potential impact of the use of non-native or invasive alien species in reforestation and carbon sequestration that seeks to mitigate climate change.

Where monocultures are planted, it is important to increase connectivity between the remaining or surrounding important natural vegetation areas. This can enable species movement and migration, and act as local sources for wild plants and habitats and refuges for native biodiversity. Examples of the importance of such natural or semi-natural areas in an otherwise modified landscape include the hedgerows surrounding agricultural and plantation forestry lands in Europe and the preserved river reserves in some tropical countries.

In implementing these Actions there may be a requirement to instigate ecosystem migration and undertake adaptation experiments, particularly for keystone species, to improve knowledge on the vulnerability or resilience of plant species to climate change. Work on addressing the impacts of climate change on plant diversity and identifying the species that are most vulnerable to climate change is also covered in Actions 3 and 4.

PLANTS FOR PEOPLES' NEEDS

9. Co-develop and implement programmes with indigenous peoples, local communities and relevant stakeholders to sustainably maintain and manage wild plants and their ecosystems that are of socioeconomic and cultural importance and to enhance benefits for people.

Socioeconomically important wild plants are interpreted to include, but are not limited to, crop wild relatives, plant genetic resources for food and agriculture, forest genetic resources and plant species that are used directly for economic, social and cultural purposes. Action 9 aims to ensure that crop varieties, farmers' varieties, plants of horticultural merit, landraces and other domesticated socioeconomically and culturally valuable plant species are available to support use in agriculture, forestry, horticulture, and other sustainable developmental and societal needs, as well as natural systems that provide ecosystem services.

This Action also focuses on respecting and securing the plant species and knowledge base of plant resources used to secure livelihoods, food security and health care, especially for indigenous peoples and local communities (IPLCs) and contributes to the One Health approach. Action 9 may, in the long run, help IPLCs to adapt to emerging environmental challenges such as climate change and to ensure that future generations, accessing these resources, can continue to benefit from their sustainable use. This Action should be implemented consistent with the Convention's programme of work on Article 8(j) and related provisions.

SUSTAINABLE MANAGEMENT OF PRODUCTION LAND

10. Support and put in place sustainable management programmes for existing areas under agriculture, aquaculture, fisheries and forestry and increase the proportion that is managed sustainably to ensure the conservation and restoration of associated wild plant diversity, including crop wild relatives.

Ultimately, all production lands should be managed sustainably, without detrimental impacts on plant diversity. In the context of this Action, agricultural land may be defined as "production lands" where the primary purpose is agriculture, also encompassing land for horticulture, grazing, or wood production. The sectors to be considered under this Action include, inter alia, croplands, pasture, forestry, including harvesting of non-timber forest products, and aquaculture. Sustainable management for plant diversity implies that several objectives are integrated into the management of such production lands: (i) the conservation of plant diversity including its genetic diversity; (ii) protection of other plant species in the production landscape that are unique, threatened, or of particular socioeconomic value; and (iii) use of management practices that avoid significant adverse impacts on plant diversity in surrounding ecosystems. Action 10 includes adopting agro-ecological, close-to-nature practices, other innovative approaches and monitoring of the agrobiodiversity within areas under agriculture, aquaculture, fisheries and forestry. The GSPC defines close-to-nature as a management approach treating production lands as an ecological system performing multiple functions.

NATIVE PLANTS AND ECOSYSTEM FUNCTIONS AND SERVICES

11. Ensure that genetically, biologically or ecologically appropriate native plant species, including species of conservation concern, are used in ecosystem restoration for nature-based or ecosystem-based solution projects.

In the achievement of Action 11, nature-based or ecosystem-based approaches focus on ecosystem restoration and hazard mitigation to protect society through sustained action taken to reduce or eliminate the long-term risk to life and property from the negative impacts on human wellbeing of the loss of plant diversity and from climate change. It is an on-going process that occurs before, during, and after disasters and serves to break a cycle of damage and repair in hazardous areas. This work may be enhanced by promoting effective land use that takes the natural occurrence and use of native plants and ecosystems into consideration. Such conservation efforts should include ongoing monitoring of restored ecosystems and adaptive management strategies to address any challenges or changes in ecosystems over time.

For example, native plants are often the best adapted species suitable for projects such as watershed protection. They may have robust root systems that allow them to filter and infiltrate water. This helps recharge important groundwater systems and reduce runoff and flooding. They can also improve air quality by absorbing and storing carbon dioxide while producing oxygen. Using native plants in ecosystem restoration projects will involve the collection, provision, and conservation of locally adapted and genetically appropriate plant material. Capacity for plant collection, propagation and restoration actions needs to be built to implement this Action and contribute to Target 11.

URBAN GREEN INFRASTRUCTURE

12a. Establish green infrastructure projects focused on plant diversity, encouraging the use of native species or other appropriate plant species, in plant diversity conservation programmes in urban areas, and developing and implementing new strategies for promoting the mainstreaming of biodiversity and ecosystem services into urban and territorial planning and management.

URBAN PLANT DIVERSITY

12b. Develop, designate and protect biodiversity-rich accessible green spaces in urban areas by establishing or strengthening parks, greenways, botanical gardens and arboretums in urban areas, and ensure connectivity among those spaces, in order to support biodiversity conservation, environmental education and awareness, and human health and well-being effectively.

There is a growing need for the development of accessible biodiversity-rich green (and blue) spaces in cities and other urban areas with the increased urbanisation of the world's population. For the purpose of these Actions, blue spaces may be defined as riverine, wetlands, coastal and freshwater habitats. Biodiversity-rich urban green spaces can promote or support many aspects of sustainable urban life, including environmental education and awareness, native plant gardening, invasive species control and awareness, ecological restoration, storm water management, as well as general physical and mental health and wellbeing of the human population.

There are 81 cities in the world with a population over 5 million people, according to the United Nations 2018 estimates. The UN figures are a mixture of cities proper, metropolitan areas, and urban areas. This may be used as a definition of 'major cities'. Botanic gardens, arboreta and protected areas provide green and public spaces for residents in many of the world's major cities, providing them with biodiversity-rich spaces and nature experiences. Many municipal parks, gardens and green streetscapes are primarily managed for recreational activities without including biodiversity or plant conservation as important roles or priorities. These areas should be the focus of activities that can

include more plant diversity into their landscapes and thus increase biodiversity as a whole. Urban farming, such as roof top gardens and community kitchens are also places for urban greening and should be encouraged to use native plant, crops and local varieties where possible.

ACCESS AND BENEFIT SHARING FOR PLANT CONSERVATION

13. Support and encourage measures to ensure the fair and equitable sharing of benefits that arise from the utilization of genetic resources of plant and associated traditional knowledge, in accordance with applicable international access and benefit-sharing instruments.

The development and adoption of appropriate policies and actions to facilitate efficient and effective exchange and transfer of plant materials, expertise and knowledge is urgently needed in many countries to support conservation, research, benefit sharing and sustainable use of plant diversity. Constraints in facilitating access, exchanges and collaboration between institutions to support cooperative programmes, particularly at international levels, has slowed progress considerably in achieving plant conservation priorities in many countries. It is understood and expected these elements will be achieved in full compliance (legal, policy, and administrative measures) with the principles and terms of the Nagoya Protocol and its associated codes and guidelines, as well as national legislation and regulations adopted in accordance with the Nagoya Protocol at national levels. Similarly, the achievement of this Action will also be undertaken in accordance with the agreed processes under CITES for trade for scientific exchange and research purposes. Knowledge sharing and capacity building should take place within this Action to ensure the development of knowledge, skills, and resources necessary for implementing effective conservation strategies.

TOOLS FOR MAINSTREAMING PLANT CONSERVATION

14. Provide data and develop tools to help to measure and integrate the importance and value of plant diversity into policies, regulations, environmental assessments and planning processes, including rural and urban development, poverty reduction strategies and national accounting and reporting mechanisms.

The values of plant diversity are not always well reflected in decision-making and the objective of this Action is to ensure that the multiple values of plants and opportunities derived from their conservation and sustainable use are recognized and reflected in all relevant public and private decision-making. Numerous studies, at various scales, have illustrated the economic value of plant diversity and the ecosystem services it underpins. Including the values of plant diversity in national and local development and poverty reduction strategies and planning processes and into national accounting will place plants into the same decision framework as other goods and services. This would help give plant diversity greater visibility amongst policymakers and contribute to the “mainstreaming” of plant diversity issues in decision-making processes.

SUSTAINABLE PRACTICES IN PLANT USE

15a. Encourage and support the adoption by businesses and other sectors that focus on plants of sustainable practices along supply chains for trade in wild plant species, and promote those practices in such sectors as finance, transport, e-commerce and tourism.

15b. Promote and support the development of best practices for the monitoring and evaluation of plant use in sustainable production, to support plant conservation and benefits to local communities.

In order to implement change in the sustainable use of plant species these Actions aim to provide businesses and other sectors, using plants, with implementable actions and robust, accurate and up-to-date information to adopt sustainable practices along supply chains for trade in wild plant (timber and non-timber) species and thus minimise negative impacts on plant diversity. Transparency along supply chains and engagement with all stakeholders is essential for compliance with Target 15.

SUSTAINABLE CONSUMPTION

16a. Provide information and guidance, including in the form of trade statistics and data, and capacity-building to inform the development of policies and legislative and regulatory frameworks that recognize the importance of wild plants as sources of food, fibres, medicines, pharmaceuticals and construction material and as a resource for other sectors.

16b. Develop and support education programmes on the importance of plants and the impacts of the global footprint of consumption, global food waste and overconsumption on plant diversity.

Conserving and securing wild plant diversity will ensure that resources continue to be available for numerous sectors that utilise wild plants. Recognition is needed that plant species survival is under threat and that they are not guaranteed to be a resource for continued use if not looked after and used sustainably. This can take the form of information awareness campaigns and providing guidance to users on the conservation, harvesting and use of wild plant species. Numerous trade databases exist on the trade of plant species. Nevertheless, these are not yet widely used to guide policy and legislation development. The relevant information should be provided more effectively to provide guidance to decision-makers.

Responsible consumerism regarding plants should be incorporated into education programmes at all levels, from primary, secondary, and tertiary education to adult consumers and drivers of economies.

FINANCIAL RESOURCES FOR PLANT CONSERVATION

19. Support and mobilize resources from a wide range of appropriate sources to carry out plant conservation actions.

Resources required for plant conservation include sustainable funding to implement projects and initiatives outlined throughout the Actions. Other non-financial resources are also needed to help mobilize action amongst the diverse sectors involved in plant conservation, including for infrastructural development, training and capacity building and to further develop research and technologies. The availability of non-financial resources can sometimes reduce the need for financial resources in some situations.

The importance of cooperation and collaborations being undertaken at international levels, to support national actions is recognised, (including global, south-south, north-south & triangular actions). Such cooperation and collaboration is often supported through the provision of international funding from a variety of sources, including governments, foundations, the private sector and individual philanthropy, as well as in-kind support given by the cooperating institutions, agencies and organisations themselves. The vital role of multistakeholder partnerships in implementation of the Actions of the GSPC has been recognised, including the support given by the Global Partnership for Plant Conservation (GPPC) and its members. Such support represents significant mobilisation of financial and non-financial resources for plant conservation.

CAPACITY-BUILDING

20a. Establish or strengthen professional training and capacity-building initiatives related to plant conservation, scientific research and monitoring, taxonomy and information management, horticulture, botany, plant conservation biology research, biotechnology and ecological restoration.

20b. Establish mechanisms, partnerships and networks to support the accessibility of data, knowledge, technology and South-South, North-South and triangular cooperation for collaborative plant conservation.

In the context of these Actions, 'capacity' is defined as the process by which individuals and organizations will have obtained, improved, and retained the skills, knowledge, tools, equipment, and other resources needed to achieve the objectives of their national plant conservation strategies and goals and the Actions presented in the GSPC. Capacity building can also include a conceptual approach toward social and behavioural change (which is also linked to Action 16). Significant capacity building can also be supported, encouraged and facilitated through the development of training networks. It has been recognised by the botanical community that horticultural skills and techniques for propagating and producing native plants need to be strengthened to implement Actions 2, 4, 8, 10, 11 and 12. Financial resources (Action 19) to support capacity building and for partnership projects and networking will also be required.

A key element of the achievement of 20b will be building capacity for all aspects of plant conservation. It will be important to undertake needs assessments in many countries and regions to identify gaps and opportunities to strengthen capacity in areas such as scientific research, taxonomy, conservation assessments, plant inventories and in aspects of applied plant conservation methodologies such as conservation horticulture and ecological restoration.

PUBLIC AWARENESS PROGRAMMES

21a. Develop or implement programmes to raise public awareness of the value of plant diversity and the ecosystem services that they provide.

PLANT INFORMATION SYSTEMS

21b. Support the development and use of comprehensive, authoritative and accessible expertise, online information systems, documentation and inventories, as well as access to biological collections (e.g. through digitization) at the local, national and international levels, making accessible to all countries information on their floras and the status of known plant species and associated ecosystems.

CITIZEN SCIENCE

21c. Develop or support citizen science programmes for identifying, documenting, monitoring, conserving and sustainably using plant diversity.

To achieve Action 21a, there is an urgent need to effectively communicate the value of plant diversity to all relevant sectors and to refocus communication strategies to address and highlight the importance of plants in livelihoods, ecosystem products and services.

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 of 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.

Implementation of this the Action will require the engagement of both the informal and formal education sectors at all levels, including primary, secondary and tertiary education. In some cases, this might take the form of using iconic threatened plant species to develop awareness programmes about the value of plant diversity. Information from indigenous and local communities must be included and accessing the traditional knowledge, innovations, practices, and technologies should be in accordance with national legislation and with their free, prior, and informed consent.

Defining target audiences and their requirements must be understood before developing awareness programmes and embarking on behaviour change campaigns. It is also vital that key messages for communication on conservation of plant diversity be incorporated into national climate change communication strategies, and into other relevant resource management documents or strategies. This will aid in the achievement of several Targets of the KMGBF.

Action 21b aims to support the development of accessible information systems that continue to gather, systematize, integrate and present plant data that are needed to support conservation programs, restoration and sustainable use of the world's plant species, including relevant aspects of their ecology, habitats and conservation biology.

It is expected that this Action will include new focus on making such data more relevant for users, enhance and build the capacity of the community of plant experts supporting such information systems and providing new tools for identification (keys, pictures and descriptions) and include local and vernacular names where possible and ensuring that data are provided in the most relevant languages.

Consideration of different knowledge systems and incorporating these into information systems will provide a holistic view of species knowledge.

Action 19b also builds on the GSPC 2020 Target 1, to have available 'An online Flora of all known plants' which was achieved by the end of 2020. GSPC 2020 Target 1 was undertaken by a voluntary international consortium of leading botanical institutions, the World Flora Online (WFO) Consortium, as well as by individual Parties preparing and making available electronic Floras at national and other levels. Further work in developing digital and accessible data to guide plant conservation at national and other levels will need to be a priority for the GSPC over the coming period. The WFO Consortium work continues to make the WFO even more comprehensive and authoritative, and to provide an actively curated consensus taxonomic 'backbone' of knowledge on the world's plants. Nevertheless, increasingly comprehensive data continue to be needed to guide the plant conservation actions of the GSPC over the coming period.

While the WFO already provides a valuable and comprehensive baseline on the world's plants, further work is required to ensure that accessibility is enhanced, improved to meet the needs of users, including further verification of the correct names and synonymy, up-to-date geographic distributional information, comprehensive descriptions, verified images and conservation assessments. The digitisation of natural history collections, particularly herbarium specimens, is an important mechanism for enhancing the sharing of data for global accessibility. Ongoing support for the WFO will be required not only to increase and refine its data content but also to ensure that new data are incorporated and that it is able to support the needs of users to provide data for plant conservation purposes.

Digital platforms such as WFO and others, with exhaustive information on the flora of each region developed, through and with South-South, North-South and triangular cooperation and including the data from research programmes for plant conservation would be of great help to guide plant conservation action plans. Information on plant conservation should be provided to policy makers in a form that is easily usable, understood by this sector and straightforwardly implemented, whilst respecting the rights of communities.

Action 21c highlights the value of citizen science programmes, not only to build public awareness of the importance and need for plant conservation action but also to engage the public directly in contributing to research and supporting plant conservation. Citizen science programmes must be used to monitor actions and maintain knowledge systems for wild and crop species as well as alien invasive species. Highlighting the value of plant species in biodiversity conservation and climate change strategies must continually be made in order to avoid what has been called 'plant blindness' and ensure that plant conservation is resourced as comprehensively as other biodiversity conservation sectors.

PLANT CONSERVATION AND TRADITIONAL KNOWLEDGE

22. Ensure the full consideration and effective participation of indigenous peoples and local communities at all relevant levels, with their free, prior and informed consent, in accordance with national legislation, to build respect for, and safeguard traditional knowledge, innovations and practices related to the conservation and sustainable use of plant diversity.

This Action focuses on respecting and securing the knowledge base of plant resources used to secure livelihoods, food security and health care, especially for indigenous peoples and local communities (IPLCs). This measure is incorporated to ensure that future generations accessing these resources can continue to benefit from their sustainable use. Implementation of Action 22 could include a variety of approaches, such as formal or informal workshops managed and directed by IPLCs and providing their input to guarantee plant conservation actions include their views, knowledge and address their concerns and needs. The Action should be implemented consistent with the Nagoya Protocol and related provisions. This element may, in the long run, help local and indigenous communities to adapt to emerging environmental challenges such as climate change.

GENDER EQUALITY

23. Promote gender equality across the plant conservation actions, by proactively implementing a responsive approach, encompassing the recognition of women's rights, equitable access to plant resources and inclusive participation at all levels in decision-making processes.

Action 23 is a cross-cutting action that will help to ensure that gender equality in the implementation of the Actions is achieved and runs throughout the GSPC. Annex 2 includes aspects of implementation for gender equality for each of the Actions, contributed by the CBD Women's Caucus and included here in the form provided as part of the GSPC peer review process.

Annex 1. Potential indicators to measure the progress in the implementation of the set of complementary actions related to plant conservation in support of the implementation of the Global Biodiversity Framework and the achievement of its targets.

GSPC Action	GSPC: some possible indicators	Some suggested sources of information for the measurement of the achievement of plant conservation actions and indicators
1	<p>Number of Important Plant Areas (IPAs) or Key Biodiversity Areas (KBAs) with adequate plant data included in spatial planning for conservation and restoration.</p> <p>Proportion of critically endangered plant species that have been included in conservation-focused spatial planning.</p>	<p>BGCI ThreatSearch</p> <p>IUCN Red List</p> <p>IUCN ROAM assessments for the Bonn Challenge</p> <p>Plantlife database of Important Plant Areas (IPAs)</p> <p>RBG Kew TIPA data</p> <p>KBA database</p> <p>World Flora Online</p>
2	<p>Proportion of degraded ecosystems being restored using appropriate native plant species including species of conservation concern.</p> <p>Accessible lists of appropriate native plant species available to support ecosystem restoration projects for each eco-region.</p>	<p>Bonn Challenge Barometer</p> <p>Restor platform</p> <p>BGCI Global Tree Portal (<i>ex situ</i> tree collections and <i>in situ</i> planting)</p> <p>BGCI PlantSearch Propagation module,</p> <p>BGCI ThreatSearch</p> <p>ConservePlant, TranslocPlant, Végétal local</p> <p>GBIF</p>
3	<p>Inventories of Important Plant Areas (IPAs), and / or KBAs identified for plants, the plant species they contain and their protection status.</p>	<p>Plantlife database of IPAs</p> <p>KBA database</p>

		Protected Planet database of management plans
4	<p>Number of plants no longer threatened with extinction.</p> <p>Proportion of threatened wild plant species managed within Protected Areas or OECMs.</p> <p>Proportion of CR plant species for which recovery plans or equivalent tools have been developed or are being implemented.</p> <p>Proportion of known threatened wild plant species that are effectively conserved, through integrated (<i>in situ</i> and <i>ex situ</i>) conservation management, including genetically diverse populations.</p> <p>Proportion of known threatened wild plant species conservation in <i>ex situ</i> via seed banking, <i>in vitro</i> and/or cryopreservation with different sampled locations over its distribution area.</p> <p>Number of species in meta-collections.</p> <p>Proportion of known plant species have been assessed for their extinction risk and conservation status.</p> <p>Number of national and global threat assessments as a proportion of listed taxa.</p> <p>Proportion of assessments that are recent assessments.</p>	<p>National analyses of representation of threatened species within protected areas</p> <p>IUCN Red List and IUCN Green Species List</p> <p>BGCI Global Tree Portal</p> <p>BGCI PlantSearch</p> <p>BGCI ThreatSearch</p> <p>Genesys PGR, EURISCO</p> <p>Article 17 assessment of Natura 2000 network</p> <p>National lists of threatened plant species</p>
5	<p>Number of plant species known to be threatened by use and trade.</p> <p>The proportion of plants threatened by trade with management interventions in place to promote sustainable practices.</p> <p>Proportion of wild-harvested plants and plant-based products sold under sustainable management regimes.</p>	<p>CITES Appendices, CITES trade database and CITES CoP proposals and 'species under review'</p> <p>National legislation regarding trade in plants</p> <p>IUCN Red List</p> <p>Information from certification schemes: FairWild certification; UEBT certification; Organic wild certification; FSC certification</p>
6	<p>Proportional change in the number of measures in place to manage pathways to prevent new invasive species introductions and/or establishment.</p>	<p>National invasive alien plant databases tracking early detection and eradication management interventions.</p>

	<p>Number of invasive alien plant species identified that have been eradicated.</p> <p>The proportion of areas important for plant diversity where invasive aliens are present and where control measures have been put in place or eradication programmes have taken place.</p> <p>Proportion of IPA sites / islands where the occurrence of invasive species has declined.</p>	<p>BGCI PlantShare</p> <p>BGCI Global Biodiversity Standard certification</p> <p>BGCI International Plant Sentinel Network</p> <p>International Plant Protection Convention</p> <p>NOBANIS, Daisie National plant conservation and/or IAS reports Global Register for Introduced and Invasive Species (GRIIS) GBIF Global Invasive Species database, EPPO list of invasive plants</p>
7	<p>Proportion of areas important for plant diversity threatened by pollution and where mitigation measures have been implemented.</p> <p>The number of studies and mitigation measures implemented on impacts on plants and their habitats by pollution and other anthropogenic pressures.</p>	<p>IUCN Green List</p> <p>University of Exeter (LEEP) – Natural Environment Valuation Online tool (NEVO)</p> <p>RBG Kew-Landscape Ecology Programme</p>
8	<p>Proportion of areas planted for carbon sequestration using appropriate native plant species including species of conservation concern.</p> <p>Number of carbon sequestration projects using known invasive species reduced.</p>	<p>Bonn Challenge Barometer</p> <p>BGCI Global Biodiversity Standard certification</p> <p>Records of tree planting portfolios</p> <p>Projects implementing SER Standards for Ecological Restoration</p>
9	<p>Proportion of management plans (or equivalent) that have been developed for socio-economically important wild plant species, including crop wild relatives.</p> <p>Number of genetically diverse viable populations of socioeconomically important wild plant species, including crop wild relatives, that are effectively conserved and managed <i>in situ</i> and <i>ex situ</i>.</p> <p>Proportion of development programmes which provide support to indigenous people and local communities for wild plant protection and restoration.</p>	<p>BGCI Global Tree Portal including species conservation tracker BGCI PlantSearch</p> <p>GENESYS, EURISCO</p> <p>Millennium Seed Bank-MSB Seed Database</p> <p>Checklists of useful plants</p>

		<p>National genebank registers</p> <p>National spatial biodiversity plans and land use schemes</p> <p>Plantlife IPA database</p> <p>Biodiversity for Food and Medicine indicator (TRAFFIC)</p> <p>Information from certification schemes: FairWild certification; UEBT certification; Organic wild certification; FSC certification</p> <p>CITES Trade database and Appendix listings</p>
10	<p>Number of areas under agriculture, aquaculture and forestry that ensure the conservation of associated wild plant diversity and traditional practices.</p> <p>Proportion of the 8 standards linked to Sustainable Farming Incentive scheme used.</p> <p>Proportion of diverse native and landrace species, subspecies and varieties used in plant-based foods included in agricultural systems increased.</p> <p>Proportion of plant genetic resources for food and agriculture secured in medium- or long-term conservation facilities.</p>	<p>Information from certification schemes: FairWild certification; UEBT certification; Organic wild certification; FSC certification</p> <p>Global Farm metric – Sustainable Food Trust</p> <p>Agrobiodiversity Index</p> <p>GENESYS, EURISCO</p>
11	<p>Proportion of hazard mitigation restoration projects (e.g. watershed, coastal, wetlands, cities etc.) that incorporate diverse native plant use.</p>	<p>Bonn Challenge Barometer</p> <p>National restoration reporting</p> <p>Projects implementing SER Standards for Ecological Restoration</p> <p>Ten Golden Rules publication</p>
12	<p>Number of green infrastructure projects focused on plant diversity, and using native species or other appropriate plant species.</p> <p>Proportion of biodiversity-rich urban areas that are designated as green spaces.</p> <p>Number of parks and botanic gardens or arboreta in major urban centres.</p>	<p>NBSAPs</p> <p>BGCI GardenSearch database</p> <p>National databases of biodiversity- rich urban green spaces</p> <p>Bloomberg Philanthropies Mayors challenge</p> <p>FAO Initiative- Green Oases, Green Cities</p>

		Exeter University - Outdoor Recreation Valuation Tool (ORVal)
13	Proportion of countries with policies and actions to facilitate the fair and equitable sharing of benefits that arise from the utilization of genetic resources of plant and associated traditional knowledge which has increased.	CBD ABS Clearing House data BGCI PlantShare
14	Proportional increase in the integration of plant diversity values into rural and urban development and poverty reduction. Proportion of national targets which have integrated plant biodiversity values into policies, regulations, planning, and natural capital accounting and reporting mechanisms.	National natural capital accounts National development plans and NBSAPs University of Sussex - Landscape Modelling tool (social and ecological indicators of biodiverse landscapes)
15	Number of businesses (and other sectors) that focus on plants, implementing sustainable practices along supply chains. Number of best practices implemented for the monitoring and evaluation of plant use in sustainable production.	Information from certification schemes: FairWild certification ; UEBT certification ; Organic wild certification; FSC certification
16	Proportion of trade statistics and data on wild plants used to inform the development of policies and legislative and regulatory frameworks in various sectors. Number of capacity-building information and guidance provided to inform the development of policies and legislative and regulatory frameworks in various sectors. Proportion of education programmes that focus on the sustainable use and importance of plants and the impacts of the global footprint of consumption, global food waste and overconsumption on plant diversity. Number of professional training and capacity building initiatives related to plant conservation, including number of people trained.	TRAFFIC wild at home data CITES Trade database
19	Proportional increase in the total financial and other resources available to implement identified priority plant conservation actions	Grant and project databases
20	Number of specific training and education programmes in plant taxonomy and related information technology.	The World Flora Online

	<p>The proportion of described plants included in a scientifically verified and up-to-date online flora and national plant information systems, including number of new plant species discovered and described.</p> <p>Number of countries with access to comprehensive and authoritative global and national expertise, and online information systems, documentation and inventories of their floras and natural habitats.</p>	<p>National online floras, ecosystem (vegetation/ habitat) type maps and associated descriptions.</p> <p>National red lists for plant species.</p> <p>National red list assessments of ecosystem types.</p> <p>Plantlife IPA database and other national flora databases</p>
21	<p>Proportion of people taking part in citizen science programmes monitoring, identifying, conserving or sustainably using plant diversity.</p>	<p>Public surveys of citizens, consumers and sectoral participants on plant awareness and understanding issues (such as botanic garden visitors)</p> <p>Citizen science platforms</p> <p>GBIF (as aggregator of major citizen science platforms including iNaturalist, plant@net, Observation.org and many national volunteer recording/observation networks)</p>
22	<p>Proportional increase in the extent of full and effective participation of indigenous and local communities, at all relevant levels related to the conservation and sustainable use of plant diversity.</p> <p>Number of studies completed on plant traditional knowledge, innovations and practices of indigenous and local communities.</p>	<p>National initiatives that include the full and effective participation of indigenous and local communities.</p> <p>National programmes to document traditional knowledge.</p> <p>Peer reviewed papers, oral histories documented and archived.</p>
23	<p>Proportion of plant conservation actions that have proactively included all genders, at all relevant levels in decision-making and participation.</p>	

Annex 2: Actions to ensure gender equality in the implementation of the set of complementary actions, as suggested by the CBD Women’s Caucus

GSPC Action	Actions to ensure gender equality in the implementation
1	<ul style="list-style-type: none"> • Integrate a gender analysis into the process of identifying and mapping plant species and areas important for plant diversity. This analysis should assess how women and girls are differently affected by plant conservation efforts, and their roles and knowledge in biodiversity management. • Establish mechanisms for women and girls to contribute their traditional knowledge and practices related to plant diversity and conservation by ensuring meaningful participation of indigenous and local women in the identification and mapping process
2	<ul style="list-style-type: none"> • Acknowledge and value women and girl's traditional roles and knowledge related to ecosystem management and restoration. Recognize their contributions as stewards of natural resources and ensure their perspectives are integrated into restoration plans. • Recognize and involve indigenous and local women and girls as rights holders in restoration projects, respecting their traditional ecological knowledge and practices. • Provide capacity-building and training programs specifically designed for women and girls, enhancing their skills and knowledge in ecological restoration techniques, equipping them with the tools needed to actively participate in restoration activities.
3	<ul style="list-style-type: none"> • Develop management plans for important plant diversity areas that incorporate a gender-sensitive approach, including by recognizing and integrating the unique knowledge and perspectives of indigenous and local women and girls in these plans. • Ensure that the process of identifying important areas for plant diversity includes the active participation of women and women's groups, recognizing their unique knowledge and contributions to biodiversity conservation. • Encourage and support the development of management plans for important areas for plant diversity led by women and girls or women-led organizations, in order to ensure that the overall plans reflect the priorities and interests of indigenous and local women and girls and their communities. • Involve women and girls in the monitoring and management of important plant diversity areas, and provide training and capacity-building opportunities to enhance their skills and knowledge in plant monitoring and conservation.
4	<ul style="list-style-type: none"> • Recognize and support women and girl's contributions to <i>ex situ</i> conservation programs, especially for socioeconomically important plant species. • Create opportunities for women and girls to participate in seed banks, nurseries, and other <i>ex situ</i> conservation activities.

	<ul style="list-style-type: none"> • Develop genetic diversity management plans that consider the needs and priorities of indigenous and local women and girls, ensuring they have access to diverse and adaptable plant varieties for sustainable agriculture. • Ensure equitable access to genetic resources and the fair distribution of benefits by implementing mechanisms that consider the contributions of indigenous and local women and girls in preserving and maintaining plant genetic diversity. • Involve women in monitoring genetic diversity within and among plant populations. • Use gender-disaggregated data to assess the impact of conservation efforts on women's agricultural practices and household food security.
5	<ul style="list-style-type: none"> • Ensure that strategies for sustainable harvesting and use of wild plants involve the active participation of women from indigenous and local communities. • Incorporate women's traditional knowledge and practices related to sustainable harvesting in the development and implementation of these strategies. • Develop national or international standards and measures for sustainable plant trade that consider gender-specific needs and challenges. Ensure that these standards address women and girl's participation and rights in plant trade and empower them to engage in legal and traceable plant trade. • Facilitate capacity-building and training programs for women in sustainable harvesting techniques and practices. Support women in gaining access to resources, such as tools and training, to enhance their role in sustainable plant harvesting.
6	<ul style="list-style-type: none"> • Conduct gender-responsive risk assessments to identify the differentiated impacts of invasive species on women and girls, including their livelihoods and access to natural resources. • Integrate gender considerations into policies and plans related to invasive species management. Ensure that women and girl's perspectives and needs are considered in decision-making processes. • Encourage the active participation of women in the development of early warning and monitoring/tracking systems for invasive species since their traditional knowledge and observations can be valuable in detecting invasive species in their early stages. • Facilitate the involvement of women in invasive species control measures or eradication campaigns. Recognize and support the important role of women in managing invasive species on agricultural lands and in local ecosystems.
7	<ul style="list-style-type: none"> • Ensure gender-inclusive research methodologies and data collection approaches when assessing the impact of anthropogenic pressures on plant species and ecosystems. Consider how women and girl's roles in agriculture, land management, and resource use may be different from men's and may have distinct impacts on biodiversity. • Collect and analyze gender-disaggregated data on the impact of anthropogenic pressures on plant species and ecosystems. Use this data to inform targeted interventions and policy measures that address the specific needs and priorities of women and girls.

8	<ul style="list-style-type: none"> • Recognize and incorporate traditional ecological knowledge, particularly that held by indigenous and local women and girls, into the design and implementation of nature-based solutions. • Conduct gender-sensitive impact assessments before implementing climate projects using native plant species. Consider potential social and economic implications on women and girls, ensuring that projects do not exacerbate existing gender inequalities.
9	<ul style="list-style-type: none"> • Design benefit-sharing mechanisms that prioritize gender equity and ensure that women and girls in indigenous and local communities have access to the benefits derived from socioeconomically and culturally important wild plants. Address any existing gender disparities in resource access and distribution.
10	<ul style="list-style-type: none"> • Recognize, value and account the significant contributions of women and girls in production land management, agriculture, aquaculture, fisheries, and forestry; including to highlight their roles in safeguarding and promoting plant diversity as key actors in sustainable land management. • Involve women and girls farmers, fishers, and foresters in the design and planning of sustainable management programmes. Consult with them to understand their perspectives, priorities, and traditional knowledge in relation to plant diversity conservation.
11	<ul style="list-style-type: none"> • Incorporate indigenous and local women's traditional knowledge and perspectives into project design to ensure the selection of plant species that align with local needs and priorities. • Conduct gender-sensitive training and capacity-building initiatives for women and girls, particularly those from Indigenous peoples and local communities involved in ecosystem restoration.
13	<ul style="list-style-type: none"> • Implement measures to ensure that women have equal access to benefits from plant conservation initiatives. This could involve creating mechanisms to ensure that women receive fair compensation for their contributions to biodiversity conservation. • Establish mechanisms to protect and preserve traditional and local knowledge held by women and girls, and ensure its rightful inclusion in benefit-sharing agreements.
14	<ul style="list-style-type: none"> • Ensuring gender-responsive data collection and analysis can provide a comprehensive understanding of the value of plant diversity to women's livelihoods, well-being, and sustainable development. • Collect gender-disaggregated data on the importance and value of plant diversity, including its contribution to women's livelihoods, income generation, and cultural practices. This data can be used to inform policies and planning processes that prioritize women's needs and interests. • Develop gender-sensitive indicators to assess the impact of plant conservation policies and strategies on women's lives and well-being. Integrate these indicators into environmental assessments and planning processes to ensure that the needs of women and other marginalized groups are adequately addressed.

	<ul style="list-style-type: none"> • Conduct gender-sensitive environmental impact assessments that consider the differential impacts of plant conservation measures on women and men. Mitigate potential negative impacts on women and promote positive outcomes for gender equality.
15	<ul style="list-style-type: none"> • Recognize and value the roles of women in various plant-related sectors, such as agriculture, horticulture, and traditional medicine. Ensure that women's contributions are acknowledged, and their rights are protected within supply chains and business practices. • Engage with women entrepreneurs, workers, and representatives from local communities in the development and implementation of sustainable practices in businesses along plant supply chains. Ensure their active participation in decision-making and planning processes. • Conduct gender analysis as part of impact assessments related to the adoption of sustainable practices in plant-related businesses. Identify potential gender-specific impacts and ensure that the benefits of sustainable practices are shared equitably among women and men.
16	<ul style="list-style-type: none"> • Collect and analyze gender-disaggregated data on the contribution of wild plant resources to food, medicine, construction sectors, and other relevant areas. Understand women's roles in these sectors and consider their perspectives and needs in policy and regulatory development. • Encourage women's participation in the development of policy, legislative, and regulatory frameworks related to wild plant resources. Ensure that their voices and expertise are taken into account in decision-making processes. • Support and fund women-led initiatives aimed at combating the illegal trade of wild plant species. These initiatives can include women's participation in monitoring and reporting illegal activities and raising awareness among local communities. • Provide training and capacity-building programs to empower women as managers of wild plant resources. Encourage the adoption of sustainable harvesting practices that consider the ecological impact and ensure equitable benefits for communities, including women. • Promote gender-equitable value chains that recognize the roles of women in the production, processing, and marketing of plant resources. Ensure that women receive fair wages and benefits from their involvement in these value chain.
18	<ul style="list-style-type: none"> • Ensure that capacity-building initiatives related to plant conservation, taxonomy, horticulture, botany, and ecological restoration are designed to be gender-inclusive. Offer opportunities for women to participate and advance in these fields, including scholarships, mentorship programs, and targeted outreach. • Review and update the training curriculum to include gender-sensitive content that highlights the contributions of women to plant conservation and addresses gender-specific challenges in the sector. • Develop mechanisms, partnerships, and networks that actively promote the exchange of knowledge, technology, and resources between the global north and the global south in a gender-responsive manner. Ensure that women and girls from the global south have equal opportunities to access and contribute to these exchanges. • Develop gender-sensitive monitoring and evaluation frameworks to assess the effectiveness and impact of capacity-building initiatives in promoting gender equality and women's participation in plant conservation.

19	<ul style="list-style-type: none"> • Design public awareness programs that use gender-inclusive language and images, and emphasize the role of women and local communities in plant conservation. Showcase the contributions of women scientists, researchers, and conservationists in the materials and campaigns. • Ensure that women are equally represented and actively involved in the development and implementation of public awareness programs and citizen science initiatives. Encourage diverse gender representation in leadership and decision-making roles. • Ensure that online information systems and documentation on plant diversity consider gender-sensitive perspectives. Include gender-related data, such as the involvement of women in plant knowledge and conservation efforts, in the information systems. • Collect data on gender and diversity in citizen science programs to monitor and assess the participation and impact of women and diverse gender identities. Use this information to continuously improve the inclusivity of the programs.
20	<ul style="list-style-type: none"> • Engage with indigenous and local women and men as equal partners in plant conservation initiatives. Prioritize the meaningful participation of women in decision-making processes related to the conservation and sustainable use of plant diversity. • Support the documentation and preservation of traditional knowledge, innovations, and practices related to plant diversity. Encourage the active involvement of women in sharing their traditional knowledge, always ensuring FPIC and their intellectual property rights are protected. • Develop culturally appropriate communication strategies and materials that respect the cultural values and languages of Indigenous peoples and local communities. Ensure that these materials are accessible to women and men within the communities. • Establish fair and equitable benefit-sharing mechanisms that recognize and reward the contributions of indigenous and local communities, particularly women, to plant conservation and sustainable use. • Recognize and respect customary governance systems of indigenous and local communities in managing and conserving plant diversity. Ensure that these systems are gender-inclusive and promote the rights of women.
21	<ul style="list-style-type: none"> • Conduct a gender analysis to identify the specific gender-related barriers and challenges faced by women and girls in plant conservation and biodiversity-related activities. Use the findings to inform targeted actions. • Collect and analyze gender-disaggregated data related to plant conservation efforts to better understand the participation, contributions, and challenges faced by women in biodiversity conservation. • Ensure that funding mechanisms for plant conservation projects prioritize projects that incorporate gender-responsive approaches and promote gender equality. • Collaborate with women's networks, organizations, and gender-focused stakeholders to leverage their expertise and contributions in plant conservation efforts.

	<ul style="list-style-type: none">• Establish specific leadership development programs for women in plant conservation to empower and support them in assuming leadership roles within the field.
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