The Global Partnership for Plant Conservation

Wildflowers in a prairie restoration on an urban golf course. Courtesy of Denver Botanic Gardens.

Plant diversity - an essential tool for climate action: GPPC policy brief for UNFCCC COP 30

Plant diversity, plant-based ecosystems and biodiversity more broadly are intrinsically linked to climate regulation. However, 1 in 4 plant species are threatened with extinction. There is an essential need for plants to be at the forefront in considering synergies between the UNCBD and UNFCCC. Their integration into UNFCCC policy and action planning is vital to maintaining ecosystem services and functional diversity.

The Global Strategy for Plant Conservation (GSPC) and its complementary actions provide a roadmap to align our collective efforts. The GSPC is responsive to climate change in many ways. This includes ensuring that the impacts of climate change on plants and their habitats are understood, that genetic diversity is conserved in *ex situ* plant collections as a back-up to *in situ* conservation efforts (Action 4), that protected areas incorporate buffers for migration of species (Action 3), that the appropriate native species with sufficient genetic diversity are used for ecological restoration (Action 2) and as part of carbon sequestration mechanisms (Action 8) and for urban, climate-adaptive greening (Action 12).

At UNFCCC COP26 in Glasgow, biodiversity was more widely recognised in climate conversations than ever before. The Glasgow Leaders' Declaration on Forests and Land Use was signed by 145 countries, and stated 'the critical and interdependent roles of forests of all types, biodiversity and sustainable land use in enabling the world to meet its sustainable development goals; to help achieve a balance between anthropogenic greenhouse gas emissions and removal by sinks; to adapt to climate change; and to maintain other ecosystem services.' Momentum from this Declaration is needed in Belém, with plants, beyond just forests, now acknowledged for their importance as sinks and reservoirs of greenhouse gases and for securing biodiversity, while ensuring societal and environmental safeguards. They are fundamental to the Paris Agreement goals on adaptation, mitigation and people and livelihoods.

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Plants and the UNFCCC

Mitigation

Protecting existing plant habitats from clearing and degradation; keeping plants in the ground secures one of our most efficient carbon sinks. Ecological restoration – ensuring it is biodiverse, and planting the right plants in the right place, is essential to climate mitigation to ensure sufficient carbon storage. Trees must be deployed effectively where they won't have invasive or deleterious consequences such as if they are planted in areas not previously or naturally forested. Trees are not the only plants which contribute to climate change mitigation. Grasslands, wetlands, peatlands and seagrass meadow protection and restoration should all be bolstered and all have a vital role in mitigating climate change impacts.

Adaptation

Plant diversity needs to be centralised in urban nature-based solutions for flood mitigation, reducing pollution and the urban heat island effect. Large scale restoration outside urban areas can offer protection from our changing climate and increasing severe weather events, such as seagrass meadows for coastal protection and forests protecting against soil erosion from more extreme rainfall/wind events.

People and livelihoods

Worldwide, over half a billion people living in poverty depend on the availability of wild plant resources to sustain their daily subsistence needs, and in many rural communities, wild plants supply vital resources for fibres, fuel, medicines and many other purposes. Ecosystem stewardship and climate-friendly land use could reduce carbon dioxide emissions, increase carbon dioxide storage by up to a third of the world's requirements in the next decade, and build resilience to a changing climate.

About the GSPC

The Global Strategy for Plant Conservation (GSPC) was first adopted by the Conference of the Parties (COP) to the Convention on Biological Diversity (CBD) in 2002. Its aim was to halt the loss of plant species and their habitats worldwide and it now provides a valuable framework, recognition and rationales to support international national and subnational efforts in plant conservation.

The GSPC has been implemented since 2002, and updated on two occasions, in 2011 and 2024. This third phase of the GSPC includes 21 voluntary complementary actions in plant conservation aligned to the Targets of the Kunming Montreal Global Biodiversity Framework (KMGBF). These actions direct specific plant conservation activities to fulfil the KMGBF targets and provide a global framework to align our collective efforts. Implementation of the GSPC is a responsibility of national authorities, supported by the non-governmental sector at all levels - collectively a "whole of society" approach.

About the UNFCCC

The United Nations Framework Convention on Climate Change (UNFCCC) is the global treaty uniting efforts and response to the threat of climate change. Adopted in 1992 and now signed by 198 parties, it is the parent treaty of the 2015 Paris Agreement which aims to keep the global average temperature rise this century as close to 1.5 degrees Celsius as possible.

There is overlap between the UNFCCC and the UNCBD, most closely in the fields of 'nature based solutions' and sustainable development.

GSPC Actions for Climate Change

GSPC Action 8: Native Plant Use in Climate Adaptation and Mitigation

Aligned with KMGBF Target 8: Minimize the Impacts of Climate Change on Biodiversity and Build Resilience.

Action 8 specifically encourages the use of genetically, biologically and ecologically appropriate native plant species, including species of conservation concern, in areas planted for carbon sequestration and in nature-based solutions and/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 and climate.

The Global Partnership for Plant Conservation

Penstemon virens in a common garden experiment to inform appropriate seed sourcing for restoration. Courtesy of Denver Botanic Gardens. © Scott Dressel-Martin

Other relevant GSPC Actions:

Taking Action – GPPC members working for climate mitigation and adaptation

About the GPPC

The Global Partnership for Plant Conservation was launched in 2004 to support the delivery of the Global Strategy for Plant Conservation (GSPC). The partnership is pivotal to monitoring, reporting and building capacity and awareness for the GSPC complementary actions. It mobilises actions at multiple levels to achieve the objectives of the GSPC and has 70 members covering a wide range of botanical and conservation organisations, including botanic and university gardens, arboreta, plant conservation NGOs, networking bodies and other plant conservation stakeholders. The GPPC is a critical network for plants and people.

The Global Partnership for Plant Conservation (GPPC) members are acting both to safeguard plant species and habitats from a changing climate, and to research and identify the best ways plants can be used to combat and adapt to climate change. A few examples include:

Climate Change Alliance of Botanic Gardens

Founded in 2018, The Climate Change Alliance of Botanic Gardens is an international information-sharing network which brings together botanic organisations to take action to adapt our botanical landscapes to climate change. Together, members are addressing the impacts of climate change on plants and landscapes.

They have developed three tools:

1. The Climate Assessment Tool (CAT), provides tailored information to support decision-making regarding the protection and management of living collections.
2. The Landscape Succession Toolkit offers a framework by which to adapt living landscapes and plant collections to the climate crisis so that they will continue to thrive in the future climate.
3. The Menu of Adaptation Action for Botanic Gardens and Arboreta offers a selection of actions that can be tailored to individual needs or to spark innovation for those beginning of organisations journey take action on climate change

Burn, Munsary Peatlands by Michael Scott - Plantlife

Peat-free Partnership

Heavy use of peat in the horticultural industry is responsible for the destruction of large areas of lowland raised peat bog across the UK, northern Europe and Canada. The damage done by large-scale, commercial excavation of peat is wide-ranging, ruining uniquely biodiverse ecosystems and releasing hundreds of thousands of years' worth of carbon deposits, directly contributing to climate change.

In the UK, the Peat-free Partnership, hosted by Plantlife International and funded by the Esmée Fairbairn Foundation, is working towards securing legislation to bring a complete end to peat sales in England, Scotland, Northern Ireland and Wales. The Partnership has been instrumental in securing public pledges from all four governments to legislate to end the sale of peat and peat-containing products in horticulture. These now need to be converted into action, putting in place secure legislation which prevents exploitation of these unique habitats.

Governments in Europe are recognising the climate and biodiversity benefits of keeping peat in the ground and the Netherlands, Germany and Switzerland have stated their intention to phase out the use of peat in horticulture – though on very generous timescales.

Climate resilience and native species supply for restoration at Denver Botanic Gardens

Denver Botanic Gardens is developing best practices for nature-based solutions for climate resilience. Initiatives tackle diverse issues from conservation of rare alpine plants to restoration of agricultural fields in the North American plains.

To improve appropriate plant selections and availability for restoration that are resilient to climate change, the garden is researching adaptation among plant populations to improve seed sourcing, and has initiated a native plant materials production program to increase native seed supplies. They are also developing best practices for site preparation, seeding, and long-term maintenance for restoration projects to promote resilient ecosystems.

Diverse, native plants are also important for nature-based solutions to improve climate resilience in urban areas. They are engaged in several projects to improve urban wildlife habitat and green infrastructure. Work includes the installation of beaver dam analogs to reconnect floodplains and improve native plant communities and wildlife habitat; increasing wildlife habitat through grassland restoration on urban golf courses, and developing best practices for native plantings to support stormwater management and urban streetscape habitat.

Plants with Purpose at the Royal Botanic Garden Edinburgh

The Royal Botanic Garden Edinburgh, in collaboration with Scottish Water and others, runs an applied research programme developing an evidence base for the use of plants in urban climate adaptation. This integrated programme is investigating the functional traits of plant species in the context of flood attenuation and temperature regulation, using its Edinburgh site as a living laboratory to test, monitor and demonstrate nature-based solutions to climate risks. Incorporating a strong knowledge-exchange strand, it engages industry, policymakers and communities with the potential of plants to enhance and protect our urban infrastructure.

Denver Botanic Gardens staff assessing local adaptation to inform appropriate seed sourcing for restoration. Courtesy of Denver Botanic Gardens. © Scott Dressel-Martin

Restore and Renew – building genomic resources to guide climate resilient restoration practices

The Botanic Gardens of Sydney has developed a program "Restore and Renew" that responds to the need for ecological restoration practitioners to incorporate the latest science into their toolkit, helping them to restore diverse, resilient and adaptable ecosystems. Resilient ecosystems need to be made up of species that are not only adapted to the local geology, climate and soil, but to future climatic conditions as well. Restore and Renew acquires empirical knowledge on genomic diversity, habitat availability and distributional patterns across multiple species to deliver restoration guidance to practitioners in easy to use publicly available web tools. The webtool guides restoration on the selection of seed that is genetically diverse and climatically resilient enhancing the likelihood of successful restoration outcomes into the future.

Provision of Adequate Tree Seed Portfolios (PATSPO) project, Ethiopia

The Ethiopian government has big plans for reforestation and believes that planting 20 million hectares is best achieved with locally suited, versatile tree species. In 2017, with financial help from Norway, the government teamed up with ICRAF to launch the PATSPO project.

PATSPO aims to provide easy access to high-quality seeds of key tree species for forest restoration and planting in Ethiopia. It has set up 26 breeding orchards and registered over 100 existing sources of tree seeds, mainly from native trees, to ensure quality seeds are available for planting. ICRAF has also created a network of public and private partners to efficiently distribute tree seeds to growers, improved the seed processing facilities of national providers, and trained more than 500 seed collectors to enhance seed quality.

We want to hear from you!

Is your organisation taking action for plant diversity and climate?
We want to hear from you.

Please fill in this short form and be featured in our next GPPC climate update in 2026.

If you are a botanic garden educator interested in taking meaningful climate action, BGCI is preparing a Declaration of Intent on Climate Action Education for Botanic Gardens and Arboreta. You can find out more here.

To learn more about the GSPC, visit our website. To discover previous GSPC activities, follow this link to the Plants 2020 website.

If you are interested in becoming a GPPC member or have questions about our work on climate, email policy@bgci.org