

EDITORIAL

Kew declaration on reforestation for biodiversity, carbon capture and livelihoods

The conference on 'Reforestation for Biodiversity, Carbon Capture and Livelihoods' was held online on 24–26 February 2021, hosted by Royal Botanic Gardens, Kew, and Botanic Gardens Conservation International, and attended by over 2400 participants, representing a wide range of reforestation practitioners, policymakers, funders, businesses, NGOs and researchers from 113 countries. During the conference, delegates reviewed and discussed examples of the successes and challenges of large-scale reforestation and considered future approaches that incorporate biodiversity conservation concerns. The declaration below is based on a synthesis and conclusions of these discussions and on evidence presented in the published scientific literature, in particular the review, 'Ten golden rules for reforestation to optimize carbon sequestration, biodiversity recovery and livelihood benefits' (Di Sacco et al., 2021), <https://onlinelibrary.wiley.com/doi/10.1111/gcb.15498>.

The aim of this declaration is to protect biodiversity, mitigate carbon emissions and climate change, and improve livelihoods by promoting a framework and policies that ensure protection of intact forests and adoption of effective restoration strategies that further these three goals. We fully support the International Union for Conservation of Nature's 'Global Standard for Nature-based Solutions', the Global Partnership on Forest and Landscape Restoration's 'Principles of Forest and Landscape Restoration' and the Society for Ecological Restoration's 'International Principles and Standards' and offer the following statements to reinforce and augment the biodiversity safeguards already therein.

- We, the undersigned,¹ express our deep concern at the unremitting loss of natural forest habitat and its devastating impact on biodiversity, climate change, the livelihoods of indigenous people and the spread of zoonotic diseases.
- Within the **forest biomes of the world**, we consider that the **long-term protection and restoration of natural forest ecosystems** are the most effective forms of forest land use to meet the combined

goals of reducing atmospheric carbon, delivering other ecosystem services, and conserving and recovering biodiversity. We therefore call on all governments of countries undergoing past or current deforestation to impose a moratorium on deforestation of natural forests (prioritising old growth forests), one of the main drivers of global biodiversity loss, putting at risk a large proportion of the 60,000 tree species and the myriad of other species depending on them. We also urge these governments to pledge to mainstream restoration of natural forests in their national and sub-national development measures, plans and policies.

- We support global initiatives to restore forest cover but are alarmed at the predominance of large-scale planting of **monocultures of exotic tree species** (including potentially invasive species)—which have been shown to have detrimental impacts on native biodiversity and ecosystem services and often sequester less carbon than natural forest—compared with the relatively few concrete commitments to **forest restoration**, which seeks to restore the functions, species and diversity of natural forest.
- We acknowledge the need for **commercial plantations** to meet humanity's needs for fibre, fuel and timber and ask that, where possible, their structure, function and species be more closely guided by natural forest ecosystems to improve their resilience and deliver co-benefits for biodiversity, ecosystem services and local people.
- We propose that '**livelihood native forests**', which incorporate some of the functions and diversity of natural forests but prioritise native species of economic value (and the research to identify them), can provide many of the benefits of restored native forest (e.g., environmental resilience, carbon sequestration, ecosystem services and native biodiversity) while offering diverse, sustainable and resilient livelihood opportunities.
- We recognise the importance of ecological forestry approaches, such as **agroforestry**, as an alternative to intensive agriculture that brings benefits in terms of carbon sequestration, soil structure and fertility, shade, tree products and other ecosystem services.

Specifically, we request that:

1. **Policymakers, financiers and practitioners in countries that have made reforestation pledges** relating to Nationally Determined Contributions under the United Nations Framework Convention

¹Following the 'Reforestation for Biodiversity, Carbon Capture and Livelihoods' conference, the declaration text was made available online at <https://www.kew.org/science/engage/get-involved/reforestation-declaration> with an open call for signatures. Between 16 June and 28 July 2021, 2612 individuals from 114 counties or territories and 423 organisations signed the declaration. The full list of signatures and associated summary statistics is available in the Supporting Information.

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on Climate Change (UNFCCC), Land Degradation Neutrality targets under the United Nations Convention to Combat Desertification (UNCCD), National Biodiversity Strategies and Action Plans under the Convention on Biological Diversity (CBD) and other forest landscape restoration, nature-based solutions and Voluntary Emission Reduction schemes, including the New York Declaration on Forests, the Bonn Challenge, the World Economic Forum's 1t.org initiative, the Great Green Wall for Africa and the UN Decade on Ecosystem Restoration:

- i. Pledge to adhere to principles that safeguard biodiversity as laid out in the above-mentioned '10 Golden Rules' paper, including to conserve and protect remaining natural forests for the long term; restore degraded natural forest ecosystems, avoiding naturally non-forested habitats and prioritising areas that improve existing forest size and connectivity; promote the natural regeneration of forests in suitable areas; where tree planting and maintenance is required, select a diverse mix of native tree and understory species and use planting materials that are site-appropriate and have sufficient genetic diversity to be resilient to climate change, pests and diseases; and never plant invasive species;
 - ii. Work with local and indigenous people to ensure that their interests are paramount, including their development and economic needs, that their human and land tenure and access rights are fully respected, and to develop communication mechanisms as part of governance systems to facilitate the mutual sharing of information and views;
 - iii. Where trade-offs are not realistically avoidable, ensure that, where natural habitats are lost and are replaceable, there is always a 'net gain' biodiversity offset to support ecosystem functions and prevent further biodiversity loss under a landscape approach process; where habitats are irreplaceable, they should be protected from loss in perpetuity;
 - iv. Take specific steps to safeguard and restore the populations of threatened plant species;
 - v. Steward forest that is restored, ensuring tree establishment, monitoring results and adapting methods as necessary; and
 - vi. Learn from past mistakes.
2. Reforestation that is considered as an activity for climate change mitigation should never be to the detriment of biodiversity and must always be in addition to direct **reductions in greenhouse gas emissions**; it should not replace the imperative to transition away from fossil fuels and wood-based energy production and to decarbonise supply chains. This additionality principle should guide donors to fund projects that may not have been feasible if funded only by carbon credits.
 3. Policymakers involved in restoration at global and national levels, but especially the UNFCCC, UNCCD and CBD, work together to

ensure that **incentives and subsidies** that promote practices that lead to clearing or degradation of natural ecosystems or that support forest landscape restoration or plant-based carbon sequestration without proper protections for native biodiversity are eliminated. In turn, we call for the development and application of **positive financial incentives** that promote the protection of existing forest and the conservation and sustainable use of native biodiversity within reforestation and forest landscape restoration programmes and, in particular, for the scaling up of the voluntary carbon market in a way that is commensurate with mitigating the current biodiversity crisis.

4. Policymakers and practitioners of large-scale reforestation programmes adopt a cross-sectoral approach and, in particular, **partner with the botanical, ecological, (agro)forestry, and wider conservation and scientific communities and holders of traditional knowledge**, to develop and increase access to resources for protecting and restoring natural biodiversity, including guidelines, planning tools (including prioritising areas for reforestation, minimising and mitigating negative impacts on existing biodiversity and developing and using appropriate restoration approaches), monitoring tools (especially to monitor biodiversity), methodologies, directories of expertise, training and other resources to facilitate natural regeneration of forests, and/or the selection, planting and establishment of diverse native tree species, where tree planting is desired or required.

KEYWORDS

biodiversity conservation, carbon sequestration, ecological restoration, reforestation, Sustainable Development Goals, tree planting

ACKNOWLEDGEMENTS

The Declaration Drafting Committee, Botanic Gardens Conservation International and the Royal Botanic Gardens, Kew, would like to extend our thanks to the many people who contributed to drafting the declaration and also to Mimi Tanimoto, who collated the responses. In addition, we would like to gratefully acknowledge the sponsors of the Reforestation Conference, Sky Zero and Fondation Franklinia.

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SUPPORTING INFORMATION

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