

INTRODUCTION & SUMMARY

Natural Climate Solutions (NCS) are an essential tool to keep the global temperature rise below 2°C and to prevent the most catastrophic impacts of climate change. NCS encompass a variety of actions that conserve, restore or improve the use or management of natural ecosystems to limit greenhouse gas (GHG) emissions to the atmosphere. Examples include reducing emissions from deforestation and land use change; improving forest management and reducing forest degradation; restoring natural ecosystems such as wet-, grass- and peatlands; and restoring forest lands to enhance natural carbon storage and removals. Not all NCS are equal in terms of their mitigation potential and biodiversity, economic and ecosystem service benefits, nor are they necessarily appropriate in all local contexts.

Global efforts by governments, NGOs and the private sector towards financing NCS, and in particular, afforestation, reforestation and revegetation activities have grown in recent years, which is an achievement to be championed and expanded. However, despite this positive momentum, it raises concerns that it is detracting from investments that are needed to reduce emissions from deforestation and forest degradation. Investments in these activities remain inadequate despite their disproportionately high contribution to limiting anthropogenic climate change. For the global land use sector to transition to a net greenhouse gas sink as opposed to a source, as is required to meet the Paris Agreement goals, emissions from deforestation and forest degradation must be dramatically curbed, alongside the simultaneous scaling-up of natural climate solutions broadly.

The role that standing forests play in current GHG emission reductions is imperative to consider in the broader context of NCS. The preservation of standing natural forests, in particular tropical forests, is essential from both an emissions abatement and removals perspective, while simultaneously protecting against negative climate change impacts, preserving the planet's biodiversity and supporting the livelihoods and well-being of 1.6 billion forest-dependent peoples globally.¹ It is vitally important that financing towards reducing emissions from deforestation and forest degradation be immediately scaled. The role that the private sector can play in scaling up investment in NCS must be recognised and leveraged given the limited window of opportunity in which to prevent catastrophic climate change.

WHY WE MUST PROTECT STANDING FORESTS TO MEET THE PARIS AGREEMENT GOALS

Many nationally determined contributions (NDCs) under the Paris Agreement and modelling scenarios that limit the temperature increase to 1.5°C above pre-industrial levels rely on dramatic reductions in deforestation by 2030.^{2,3} A concerted effort is urgently needed to channel carbon finance towards reducing emissions from deforestation and forest degradation. It is essential in order for the land sector to fulfil its role as a net sink as required in the years ahead. However, tropical forests are being destroyed at a rate of about 8 million hectares (31,000 square miles) each year, or ~36 football fields worth of forest lost every minute.⁴ A study of tropical forest loss from 2000-13 found that the net carbon impact of this deforestation was six times greater than initial assumptions, factoring in not just the loss of stored carbon but also the loss of potential future sequestration.⁵ Furthermore, around 28% of anthropogenic carbon emissions from all sources during the 2007-16 period were absorbed by intact (untouched) forests, markedly reducing the net rate of CO₂ accumulation in the atmosphere⁶ and thus highlighting the real value that natural ecosystems play in mitigating climate change. **Mature forests sequester more carbon than restored forests, yet this currently appears to be under appreciated and not reflected in investments and policy decisions.**

¹ Food and Agriculture Organization of the United Nations, *Forests and Poverty Reduction* (2015).

² Grassi, G., House, J., Dentener, F. et al. The key role of forests in meeting climate targets requires science for credible mitigation. *Nature Clim Change* 7, 220-226 (2017). <https://doi.org/10.1038/nclimate3227>

³ Krug, J.H.A. Accounting of GHG emissions and removals from forest management: a long road from Kyoto to Paris. *Carbon Balance Manage* 13, 1 (2018). <https://doi.org/10.1186/s13021-017-0089-6>

⁴ Conservation International. *Deforestation Facts*. Conservation International (2020).

⁵ Maxwell, S.L. Degradation and forgone removals increase the carbon impact of intact forest loss by 626%. *Science Mag* (2019). <https://advances.sciencemag.org/content/5/10/eaax2546>

⁶ G.D. Farquhar, M.J.R. Fasham, M.L. Goulden, M. Heimann, V.J. Jaramillo, H.S. Khashgi, C. Le Quéré, R.J. Scholes, D.W.R. Wallace. The carbon Cycle and Atmospheric Carbon Dioxide. *IPCC* (2018).

Despite strong political will to end deforestation, as evidenced by the Aichi Biodiversity Targets (with 196 countries party to the agreement) and the New York Declaration on Forests (with 190 endorsers, including more than 50 of the world's biggest companies, governments, and influential civil society and Indigenous organisations), which aimed to reduce deforestation by 50% by 2020 and entirely halt it by 2030, deforestation of primary tropical forests has in fact increased. A major threat to standing forests are the increasingly devastating wildfires occurring across the world.⁷ Australia recently battled its largest bushfires on record, while parts of the Arctic, Amazon and the US have also faced devastating fires. This coupled with the continuation of large-scale deforestation driven by agriculture, mining and commodity exploitation is jeopardising the land sectors' critical role in climate mitigation. Limited progress has been made in developing policies at a national or jurisdictional level and incentivising rural, marginalised communities to keep their forests standing.

A FORWARD LOOKING APPROACH

Activities to support financing can be actioned through a variety of channels:

For governments, supporting the development of carbon pricing systems and enabling environments for public and private climate finance and investments to be channelled towards avoided and reduced emissions from deforestation and forest degradation should be explored and actioned in forest countries and subnational jurisdictions. Accounting systems that can capture all levels of action in a manner that ensure environmental integrity and prevents double counting are a critical piece of the enabling environment for private action. Furthermore, emissions trading systems that allow for the inclusion of NCS, in particular reduced emissions from deforestation, should be scaled up. This will generate critical financing to curb deforestation and convert the land use sector into a carbon sink.

Many of the drivers of deforestation are coming from consumer goods and services in the private sector, yet there is limited policy and investment to address this gap.

The private sector can play a key role in financing NCS. It is a matter of urgency that corporations should examine and disclose their forest footprint and work to eliminate deforestation. Climate finance can be channelled through voluntary carbon markets for reduced emissions from deforestation and degradation, alongside investment in adequately safeguarded afforestation, reforestation and restoration activities to support corporate climate strategies.

MITIGATION HIERARCHY FOR REDUCING EMISSIONS FROM DEFORESTATION

Reducing deforestation and the conversion of natural habitats clearly has significantly more climate change mitigation potential than afforestation, reforestation and restoration efforts in the short to medium term.⁸ Mature standing forests, among other natural ecosystems, contain 'irrecoverable carbon', meaning that once emitted, it will not be possible to recapture and store it on timeframes meaningful to keep to the trajectory of climate warming in accordance with 1.5°C temperature stabilisation goals.⁹ **Keeping forests intact, avoiding degradation and preserving standing forests can provide significant climate benefits by avoiding emissions of stored carbon and maintaining major active carbon sinks.** Current carbon market methodologies for reduced deforestation rarely quantify the removals achieved by mature forests and new growth in accounting practices. However, on a global scale, the contribution of protecting natural landscapes is at least 260 gigatonnes (Gt) of irrecoverable carbon. This carbon is currently at risk of being released into the atmosphere and if lost will set on us a dangerous course to drastic warming.¹⁰

⁷ Dunne, D. How climate change is affecting wildfires around the world, Carbon Brief (2020).

⁸ K. Andrasko, P. Benitez-Ponce, R. Boer, M. Dutschke, E. Elsidig, J. Ford-Robertson, P. Frumhoff, T. Karjalainen, O. Krankina, W.A. Kurz, M. Matsumoto, W. Oyantcabal, N.H. Ravindranath, M.S. Sanchez, X. Zhang. Forestry. In *Climate Change: Mitigation. Contribution of Working Group III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* (2018).

⁹ Goldstein, A., Turner, W.R., Spawn, S.A. et al. Protecting irrecoverable carbon in Earth's ecosystems. *Nat. Clim. Chang.* 10, 287-295 (2020).

<https://doi.org/10.1038/s41558-020-0738-8>

¹⁰ Ibid.

Forest degradation has a significant impact on the climate and potential to mitigate climate change. The opportunities for mitigation by preventing forest degradation are not being sufficiently realised, largely because international emission reduction programmes have focused on deforestation, which is easier to detect and monitor.¹¹ Improvements to emissions reduction policy and technology have been significant over the past few decades, and it is critical that they further evolve to accurately reflect the important role of avoided degradation of forests.

NEGATIVE ENVIRONMENTAL AND SOCIAL IMPACTS OF INTACT FOREST LOSS

Intact forests have exceptional value beyond climate benefits – to biodiversity, human wellbeing and human health – compared to degraded and managed systems¹², and there is a body of evidence that the impacts of deforestation are directly contributing to local (and global) climatic changes.¹³ When forest cover is lost, rainwater runoff flows into streams more rapidly, elevating river levels and subjecting downstream villages, cities, and agricultural fields to flooding, especially during the rainy season. During the dry season, land downstream from deforested areas can be prone to long droughts which creates local economic and environmental disruptions.^{14,15} Continued conversion of natural forests will further alter local and regional climates, making them drier and warmer. In turn, global markets will be negatively impacted as crop yields and agriculture become more vulnerable to climate change.

Loss of intact forests also leads to a significant loss of life and biodiversity.¹⁶ The biodiversity, economic and ecosystem co-benefits of reducing deforestation are invaluable yet not applied systematically as a metric within the investment and trading capacity of carbon markets, thus substantially undervaluing the true contribution of forest ecosystems and their conservation.

Various pathways that aim to limit warming to 1.5°C rely on large scale deployment of carbon removal activities to ultimately reach net-zero. Applicable forestry based NCS approaches include the enhancement of terrestrial and coastal carbon stocks in plants and soils via afforestation and reforestation, soil carbon enhancement, and other conservation and restoration efforts for natural and managed land and coastal ecosystems. The Bonn Challenge goal is a global effort to bring 150 million hectares of the world's deforested and degraded land into restoration by 2020, and 350 million hectares by 2030. In recent years there has been a significant increase in investment in voluntary climate financing of afforestation and reforestation activities. This investment has come from governments as well as the private sector to meet their respective climate objectives. This necessary and urgent work needs to continue the drive to realise carbon removals in future years, particularly beyond 2050 in order to maintain a global warming pathway of 2°C or lower.

To meet the Bonn Challenge's 2030 forest restoration goal through active planting will require \$700 billion (at \$2,000 per hectare restored).¹⁷ Given these high costs and the challenges surrounding restoration, only limited success has been made so far. According to the latest Bonn Challenge Progress Report¹⁸, approximately 29% of the total 2020 target of 150 million hectares restored has been reached. This leaves over 90 million hectares remaining for the 2020 target and an additional 200 million hectares to meet 2030 target. Scaling up to meet these goals will prove challenging, especially as we are already significantly behind.

¹¹ Pearson, T.R.H., Brown, S., Murray, L. et al. Greenhouse gas emissions from tropical forest degradation: an underestimated source. *Carbon Balance Manage* 12, 3 (2017).

¹² Watson et al. 2018. <https://www.nature.com/articles/s41559-018-0490-x>

¹³ 11 deforestation facts you need to know. *Conservation International* (2020).

¹⁴ Lovejoy, T.E., Nobre, C., *Amazon Tipping Point*, Science Advances (2018).

¹⁵ Dreierstad, I. Brazil, Deforestation of the Amazon Rainforest Reduces "Flying Rivers." *Future Directions International* (2017).

¹⁶ Giam, Z. Global Biodiversity Loss from Tropical Deforestation. *PNAS* (2017).

¹⁷ Löf et al. Restoring forests: regeneration and ecosystem function for the future. *New Forests* 50, 139-151 (2019).

¹⁸ Dave, R., Saint-Laurent, C., Murray, L., Antunes Daldegan, G., Brouwer, R., de Mattos Scaramuzza, C.A., Raes, L., Simonit, S., Catapan, M., García Contreras, G., Ndoli, A., Karangwa, C., Perera, N., Hingorani, S. and Pearson, T. *Second Bonn Challenge progress report. Application of the Barometer in 2018* (2019).

This, coupled with the worrying lack of action and investment in preventing tropical deforestation in the near-term, is giving rise to the risk of losing current natural carbon removals and storage by tropical forests. If we lose this natural function of tropical forests, it will severely jeopardise the impact of other mitigation efforts.

While newly planted forests can bring land under management and sequester carbon once grown, they do not store as much carbon over the long term as naturally regenerating forests and can be more costly, both from a financial investment perspective and in terms of tonnes of carbon by limiting restored forest lands to lower long-term carbon stocks.¹⁹

CONCLUSIONS

Meeting the Paris Agreement climate targets requires large, near-term investment in reducing emissions from deforestation and forest degradation. This should be approached holistically, alongside investments in afforestation, reforestation and restoration activities within private sector and government climate strategies. **Financing via carbon markets should be scaled to all pathways that protect, restore and enhance ecosystems that can improve nature's ability to withdraw and store GHGs from the atmosphere.** Channelling climate finance to reducing deforestation can deliver substantial co-benefits and contribute to sustainable development goals in tropical regions. Tackling tropical deforestation will contribute to the reduction of negative local climate impacts that are already affecting marginalised communities. **If we lose the world's tropical forests, the rest of the climate battle is also lost.**

¹⁹ Sohngen, B, Daigneault, A, Favero, A, *Forests: Carbon Sequestration, biomass energy, or both? Science Advances* (2020).

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