

POLICY BRIEF

STRENGTHENING NET ZERO CLAIMS:

**The missing piece in the
EU legislative puzzle**

July 2023

Authors: **Eli Mitchell-Larson,**
Rodica Avornic and **Lucian Morié**

Strengthening Net Zero Claims

The missing piece in the EU legislative puzzle

Authors: Eli Mitchell-Larson, Rodica Avornic and Lucian Morié

The [European Climate Law](#) provides a foundation for future EU climate policy, by committing member states to the EU-wide 2050 climate neutrality objective and the pursuit of negative emissions thereafter. Although the Climate Law defines what climate neutrality is at the EU level, and the Land-Use, Land-Use Change and Forestry (LULUCF) Regulation highlights the role of land-based removals in achieving it, current EU law does not define what constitutes **"net zero" or "climate neutral" at an organisational or company level**, nor does it set out the role of novel or innovative carbon dioxide removal (CDR) methods (e.g., biochar, BECCS, DACCS, etc.) in achieving net zero.

Climate claims are one way for companies to communicate their climate mitigation efforts. If such claims are false and do not stand up to scientific scrutiny, they become a tool for greenwashing and divert important private funding from true climate action. Without proper regulation and transparency, companies can be rewarded for claiming to benefit the climate while continuing to emit more carbon, damaging the well-being of people and the planet. In contrast, **credible and scientifically sound climate claims** could allow companies to differentiate themselves from their competitors, enabling citizens to make educated purchase decisions, or giving governments and civil society a tool to incentivise environmental stewardship and enable the rigorous mobilisation of private funding to support climate action.

Since the publication of the [Carbon Removal Certification Framework](#) (CRCF) proposal in November 2022, there has been an expectation that the **Green Claims initiative** would fill in this legislative gap by regulating the substantiation of climate claims that can be made based on certified carbon removals (i.e., **climate neutrality or net zero claims**).

EU policy recommendations

- Ensure the **definition of net zero (claims)** is **aligned with scientific consensus**; carbon credits generated from emission reductions and avoidance cannot be used to substantiate net zero claims; these claims can only be substantiated by **credits generated from carbon removal**.
- Enshrine into EU law the **aim to pursue durable net zero** while refining climate targets and the substantiation of net-zero claims to ensure that the extraction of carbon from the geosphere and biosphere is balanced with removals of equivalent character, **like-for-like**.
- Define what **'hard-to-abate' emissions** are by setting an abatement cost threshold and establish a transparent process for classifying such emissions.

A recent investigation into one of the world-leading GHG crediting programs found that more than 90% of its carbon credits used by companies to make such claims were largely inadequate, leading to follow-ups calling on the EU to disambiguate net zero claims. Unfortunately, neither the Commission's Green Claims proposal nor any other EU law meets all these expectations, leaving a gap in the EU legislative puzzle.

Overview of existing EU legislation related to net zero claims

- **European Climate Law:** Sets (1) binding targets for the EU to reduce net greenhouse gas (GHG) emissions by 55% compared to 1990 by 2030; (2) climate neutrality target by 2050; (3) the aim to achieve net negative emissions thereafter. The Climate Law defines climate neutrality as balancing EU-wide GHG emissions with carbon dioxide removals, otherwise known as net zero.
- **Land-Use, Land-Use Change and Forestry (LULUCF):** Sets a target of 310 million tonnes of CO₂e per year by 2030 for conventional land-based carbon removals. Only 225 million of these tonnes per year can contribute to the Climate Law's net zero targets.
- **Carbon Removal Certification Framework (CRCF):** Criteria to certify high-quality carbon removals and the process to monitor, report and verify their authenticity. The Commission proposal does not provide guidance on the use of certificates to substantiate net zero claims and Commission representatives have repeatedly stated that the CRCF would not consider guardrails on the use of credits, as the Green Claims and the European Sustainability Reporting Standards were meant to do that. It is moreover alarming that at this stage, the CRCF does not even sufficiently exclude non-removals from its remit and therefore cannot be trusted on its own as the basis of any claim substantiation.
- **European Sustainability Reporting Standards (ESRS):** Developed under the Corporate Sustainability Reporting Directive (CSRD), this delegated act aims to set robust annual reporting requirements for transition plans, net zero plans, emissions, removals and accounting methodologies. However, there are not sufficient and strong enough requirements for net zero claims and the use of carbon credits.
- **Empowering Consumers:** Bans unsubstantiated and generic environmental claims. The European Parliament proposed a ban on carbon neutrality claims for products.
- **Green Claims:** Sets guidelines for developing methodologies to substantiate green claims and requires offsetting data to be reported separately from emissions. However, it allows climate claims based on offsetting with emissions reduction and avoidance; it does not define net zero claims or residual emissions; it allows fossil fuel emissions to be balanced with removals in biogenic sinks.

Aligning with scientific consensus on what a net zero claim *should* and *should not* be

The Intergovernmental Panel on Climate Change (IPCC) [definition of net zero](#) and climate neutrality is clear: a **balancing of emissions with physical removals**. The scientific community has extended these definitions to the question of net zero claims set by countries and other entities, making it clear that emissions must be balanced with removals, not avoidances or emissions reduction, in order to calculate net GHG emissions for the purpose of demonstrating net zero or climate neutrality (see e.g., [Oxford Principles](#), [SBTi net-zero standard](#), [Nature](#)).

The current Green Claims proposal allows climate-claims based on emission reductions and avoidance. The ESRS¹ also allows net zero *claims* to be made with any carbon credit whether from emission avoidance, reductions, or external removal projects for which there is no obligation to be linked to the CRCF.

In keeping with clear scientific guidance, offsetting with carbon units that are not based on physically removing and storing carbon but are based on emission reductions and avoidance must be barred from use in substantiating claims about net climate impacts (such as carbon footprint, net emissions, progress toward net zero, etc.). If left unaddressed, net zero claims based on this kind of offsetting will proliferate, mislead carbon accounts, disrupt carbon prices and give the impression that progress is being made with little to no substantive climate benefits to show for it.

Projects which finance the avoidance or reduction of emissions are valuable in their own right. In many cases they generate positive social and environmental impacts. Companies which contribute to financing these projects should be welcome to claim to have contributed to those positive outcomes, but not to make claims based on a logic of compensation or neutralisation for emissions and climate impacts.

¹ Section 7 of ESRS E1 requires removals inside value chains to link to CRCF and be separated by removal activity and storage method (biogenic, technological, hybrid). Voluntary net zero plans must provide details on how residual emissions will be balanced only by these internal removals.

Policy recommendation:

- Ensure the **definition of net zero** is aligned with scientific consensus by disallowing the use of carbon credits generated from emission reductions and emission avoidance to balance emissions and thereby substantiate net zero claims. These forms of climate action are important but should be financed through other means. **Only carbon credits generated from carbon removal should be allowed to substantiate net zero claims.**

Pursuing durable net zero with geological balance

The policies we create must make sense on a physical scientific basis when dealing with the earth's carbon fluxes. The European Commission has recognised this principle with its [Sustainable Carbon Cycles communication](#). A sustainable state of net zero should stay true to this principle.

Figure 2: Unsustainable Net Zero

UNSUSTAINABLE NET ZERO

- The biosphere cannot continuously compensate for emissions from the geosphere
- The concentration of atmospheric carbon is balanced, but only temporarily until the biosphere becomes saturated.

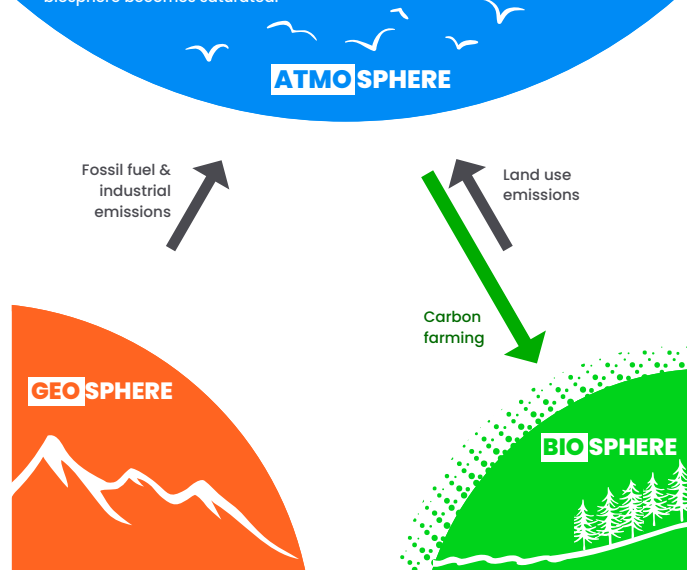


Figure 1: Carbon Cycle

CARBON CYCLE

- The natural carbon cycles stabilise the concentration of atmospheric carbon
- The short and long carbon cycles function on different timescales

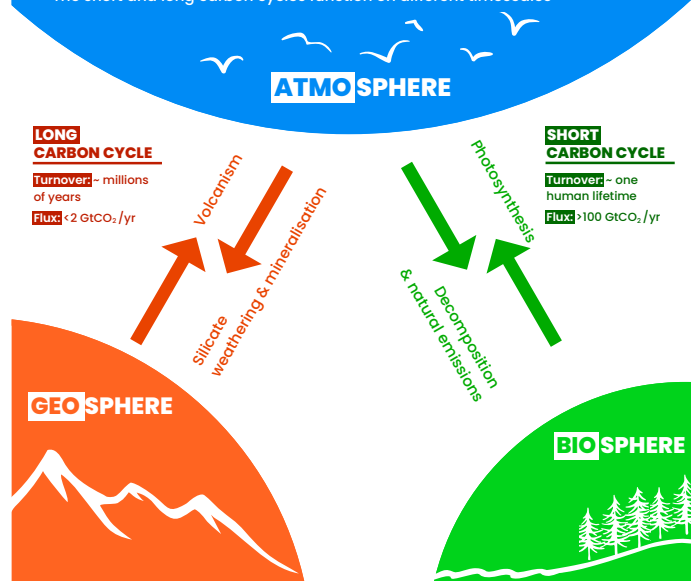
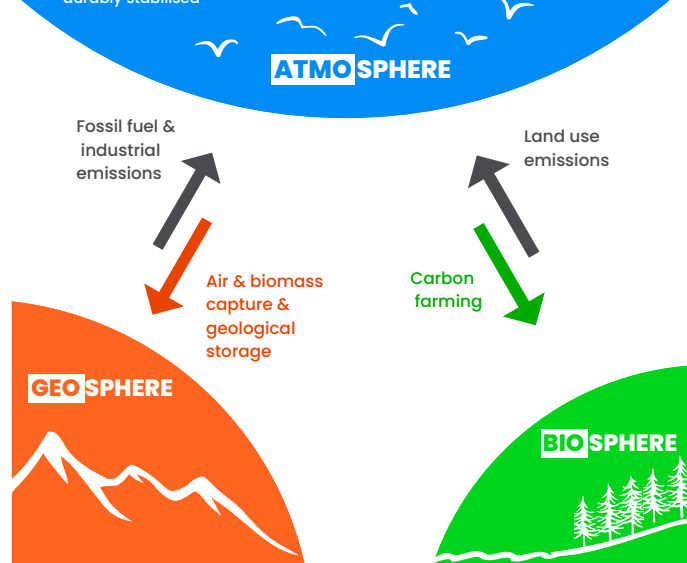


Figure 3: Durable Net Zero

DURABLE NET ZERO

- The biosphere and geosphere compensate for their respective emissions
- Each sphere is balanced and the concentration of atmospheric carbon is durably stabilised



Figures 1–3: Adapted from Fankhauser, S., Smith, S.M., Allen, M. *et al.* 2022. the meaning of net zero and how to get it right.

For the purpose of tracking anthropogenic carbon flows and determining if they are out of balance, we can simplify the carbon cycle to three key “spheres”: the atmosphere, the biosphere (marine and terrestrial vegetation and biomass, biologically active soils, etc.) and the geosphere (rocks, sediments, fossil fuels, etc.). To halt global warming, we need to reduce net emissions to the atmosphere to zero. However, most current net zero plans intend on balancing carbon dioxide and fossil fuel emissions with removals in the biosphere: e.g., through afforestation or restoring ecosystems. However, even with dramatic emission reductions and the scale up of removals, if residual carbon emissions are only or mainly to be taken up by the biosphere, it would lead to an **unsustainable net zero state**.

Each storage method for carbon removal has a different risk of being reversed, with the carbon re-emitted to the atmosphere. This reversal risk exists on a spectrum which maps onto the spheres described above. Higher-durability storage with very low reversal risks usually corresponds to the geosphere. **Geological storage** capacity is an order of magnitude higher than storage potential in the biosphere, estimated at 482 gigatonnes in Europe². Geological storage integrates into the long-term carbon cycle which has a turnover of millions of years. Geological storage is also simpler to monitor and quantify.

Lower-durability storage on the other hand corresponds to the **biosphere**. The biosphere has a finite capacity to store additional carbon (maximum estimates in the order of 5–10 GtCO₂/yr^{3,4},) and is exposed to the short-term carbon cycle’s reversal risks (e.g., fire, drought, disease) – made all the more vulnerable by climate change. Land use, conversion and resource extraction also limit its carbon storage potential. Moreover, accounting for carbon dioxide in the biosphere can be very complex. We must aim to restore soil and vegetation carbon levels as close as possible to the levels they once supported before human intervention, but ecosystems can only sustainably hold a finite amount of carbon before they “saturate” and are unable to sequester more carbon⁵. We will also need the maximum carbon absorbing capacity of the biosphere to counteract the increased release of carbon from the biosphere caused by climate change and the earth’s system feedbacks^{6,7}. There is no additional “headroom” for use in offsetting industrial emissions.

Policy recommendations:

- Enshrine into EU law **the aim to pursue durable net zero**, which could be applied at the global, EU, sectoral and company levels.
- Refine **climate targets** to ensure that the extraction of carbon from the geosphere and biosphere is balanced with removal and storage of carbon back into the geosphere and biosphere respectively, like-for-like.
- For net zero claims, require that **carbon extracted from the geosphere or biosphere is balanced with equivalent removals, like-for-like, as above**.

Both of these types of storage are important, but because of the difference in reversal risk and expected timescales, they are non-fungible and need to be treated separately. Depending on their source, CO₂ emissions stem from either the short- or long-term carbon cycle. Any carbon storage which is used to compensate for emissions and claim net-zero needs to be commensurate in timescale with the nature of the emission.

The current Green Claims proposal allows the use of any and all carbon credits, including from improved forest management and renewable energy projects, which purport to avoid emissions, without any clear criteria for which emissions these can compensate nor which climate claims they can substantiate. Removal and storage of carbon into the biosphere must be accelerated for its own sake to halt and reverse the loss of ecosystems and natural carbon stocks, but it must be ineligible as a means of claiming to balance fossil fuel emissions.

Failing to enshrine this non-fungibility or like-for-like principle between the biosphere and geosphere in EU law would allow companies using fossil fuels to continue offsetting their long-lived emissions through projects with shorter-term carbon storage and a higher risk of reversal thus creating unsustainable carbon fluxes and additional risks for future generations.

² EU Geological CO₂ storage summary, K. L. Anthonsen & N. P. Christensen, 2021, https://cdn.catf.us/wp-content/uploads/2021/10/20183953/EU-CO2-storage-summary_GEUS-report-2021-34_Oct2021.pdf

³ Griscom, B. W. et al., 2017, Natural climate solutions. Proc. Natl. Acad. Sci. 114, 11645–11650.

⁴ Girardin, C.A.J. et al. 2021, Nature-based solutions can help cool the planet – if we act now. Nature 593, 191–194.

⁵ EU Geological CO₂ storage summary, K. L. Anthonsen & N. P. Christensen, 2021.

⁶ Brienen RJW et al. 2015, Long-term decline of the Amazon carbon sink. Nature 519:344–348

⁷ Lowe JA, Bernie D. 2018, The impact of Earth system feedbacks on carbon budgets and climate response. Philos Trans r Soc Math Phys Eng Sci 376:20170263.

The ESRS will already require companies to report much, if not all, of the data required to rigorously substantiate climate claims following the non-fungibility principle. Emissions will be disaggregated from carbon credits. Carbon removals will be quantified separately from emission reduction credits, and all of these will be differentiated by type of carbon storage (geological or biological). Pursuing durable net zero through the Green Claims Directive would therefore not be an additional burden for companies. It would only entail a repackaging of available information to substantiate a specific climate claim.

Defining hard-to-abate emissions

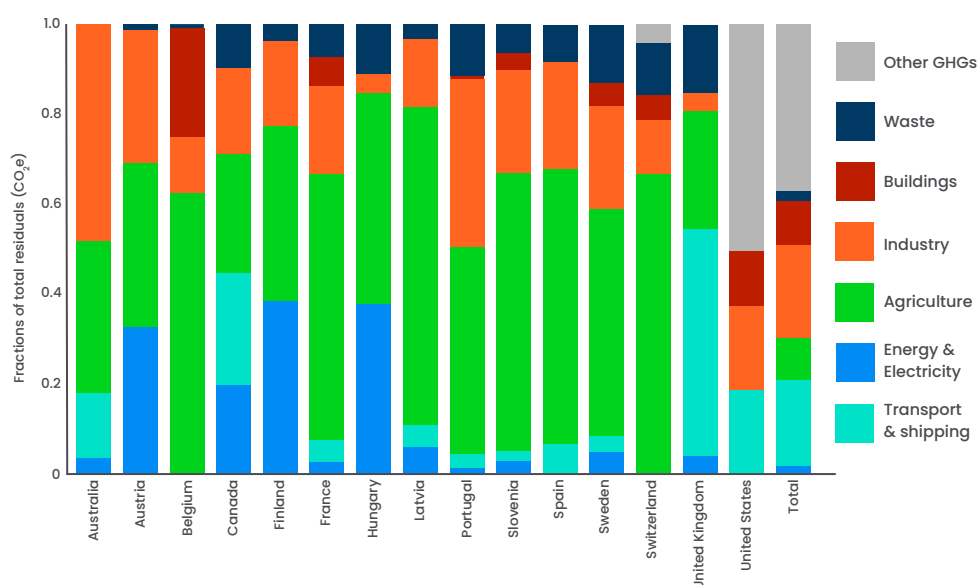
While there is clear consensus that we must achieve net zero (and climate neutrality), first by eliminating emissions and then continuing toward absolute zero emissions, some emissions are more difficult or expensive to eliminate than others. The question of which emissions should or must be **reduced immediately**, and which emissions will continue during the journey to climate neutrality is critical. The ESRS indicates that residual emissions are what remains after 90–95% emission reductions with slight variations by sector, but this indication does not lead to any reporting obligations for making net-zero claims. In the Green Claims proposal, the Commission recognises that only residual emissions should be addressed through carbon removals but fails to explain what constitutes residual emissions or at least provide a plan for how such a definition would be developed.

Policy recommendations:

- Set an **abatement cost threshold** above which emissions are defined as hard-to-abate and which also takes into account behavioural barriers.
- Establish a **transparent process for classifying emissions** on a regular basis by empowering an agency to review and categorise emissions based on impact assessments and multi-stakeholder consultations. As technology evolves, costs reduce and circumstances change, so emissions will need to be re-classified.

Only the most difficult to decarbonise processes and their emissions should be eligible to balance with carbon removals to ensure that this boundary is not manipulated to deter from reduction efforts. Carbon removals should only be used to balance hard-to-abate emissions. Without a clear attempt to hold actors accountable to standardised sector-specific definitions of what constitute residual emissions, net zero claims cannot be substantiated in a robust and trustworthy manner. The definition should be revised on a regular basis to account for technological innovations.

Figure 4: Sectoral breakdowns of residual emissions at mid-century in the most ambitious scenarios



From: Why residual emissions matter, 2023, H.J. Buck, W. Carton, J.F. Lund & N. Markusson, Nature: www.nature.com/articles/s41558-022-01592-2

Data are for countries that featured projections with quantified sectoral breakdowns. Year depicted is 2050 for all countries besides Sweden, which has projections for 2045 when it reaches net zero. Finland has a target of net zero at 2035 but includes projections for 2050. Note that some countries group electricity and transport into energy, and the United States does not report agriculture but rather CO₂ and other GHGs.

Sources

EU Policies and Communications

- [Carbon removal certification framework \(CRCF\) Regulation](#)
- [Empowering Consumers](#)
- [European Sustainability Reporting Standards \(ESRS\)](#)
- [European Climate Law](#)
- [Delegated Act Green Claims Directive](#)
- [Land-use, land-use change and forestry \(LULUCF\) Regulation](#)
- [Sustainable Carbon Cycles communication](#)

Other sources

- Arthur Neslin, 2023. EU to crack down on greenwashing with 'proportionate' penalties. The Guardian. www.theguardian.com/environment/2023/feb/28/eu-to-crack-down-on-greenwashing-with-proportionate-penalties
- Brien R JW et al. 2015, Long-term decline of the Amazon carbon sink. Nature 519:344–348
- Buck, H.J., Carton, W., Lund, J.F. et al. 2023. Why residual emissions matter right now. Nat. Clim. Chang. 13, 351–358 (2023). <https://doi.org/10.1038/s41558-022-01592-2>
- EU Geological CO2 storage summary, K. L. Anthonsen & N. P. Christensen, 2021, https://cdn.catf.us/wp-content/uploads/2021/10/20183953/EU-CO2-storage-summary_GEUS-report-2021-34_Oct2021.pdf
- Fankhauser, S., Smith, S.M., Allen, M. et al. 2022. The meaning of net zero and how to get it right. Nat. Clim. Chang. 12, 15–21 <https://doi.org/10.1038/s41558-021-01245-w>
- Griscom, B. W. et al., 2017. Natural climate solutions. Proc. Natl. Acad. Sci. 114, 11645–11650.
- Girardin, C.A.J et al. 2021. Nature-based solutions can help cool the planet – if we act now. Nature 593, 191–194.
- IPCC, 2018: Annex I: Glossary [Matthews, J.B.R. (ed.)]. In: Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty [Masson-Delmotte et al (eds.)]. Cambridge University Press, Cambridge, UK and New York, NY, USA, pp. 541–562. www.ipcc.ch/site/assets/uploads/sites/2/2022/06/SR15_AnnexI.pdf
- Lowe JA, Bernie D. 2018, The impact of Earth system feedbacks on carbon budgets and climate response. Philos Trans r Soc Math Phys Eng Sci 376:20170263.
- The Oxford Principles for Net Zero Aligned Carbon Offsetting 2020. University of Oxford.
- Patrick Greenfield, 2023. Revealed: more than 90% of rainforest carbon offsets by biggest certifier are worthless, analysis shows. The Guardian. www.theguardian.com/environment/2023/jan/18/revealed-forest-carbon-offsets-biggest-provider-worthless-verra-aoe
- SBTi Corporate Net-Zero Standard 2023. 1.1, <https://sciencebasedtargets.org/resources/files/Net-Zero-Standard.pdf>

Carbon Gap

Carbon Gap is a climate not-for-profit focused on eliminating the carbon dioxide that's already heating up the planet. We exist to drive essential climate action by helping Europe become a leader in carbon removal, working with scientists, NGOs, governments, and businesses to unlock the support for a full spectrum of safe and scalable carbon removal techniques, storing carbon safely in trees, soils, oceans, rocks, and the built environment.

We are **independent** – funded exclusively by climate philanthropy, **inclusive** – open to all safe methods for taking carbon from the air and storing it responsibly, and **planet-first** – advancing the carbon removal that the planet needs to restore our atmosphere.

Get in touch

 <https://www.linkedin.com/company/carbongap/>

 [@carbongap](https://twitter.com/carbongap)

 contact@carbongap.org

 www.carbongap.org

Carbon Gap is a registered charity (charity number 1200562) and a private company limited by guarantee (company number 13557860), registered in England and Wales. Registered office address: 71-75 Shelton Street, Covent Garden, London, WC2H 9JQ, United Kingdom. EU Transparency Register: 159208346089-06