

Disclaimer: This document does not present a draft of the Green Deal call to be part of the Horizon 2020 work programme update, nor any future position of the European Commission. It aims to support the development of the call and its content is subject to change.

Title: Restoring biodiversity and ecosystem services

Specific Challenge: This European Green Deal call should be pivotal in demonstrating and promoting systemic solutions on restoring biodiversity and ecosystem services, and deliver tangible benefits for biodiversity and climate change mitigation and adaptation. The European Green Deal and its Biodiversity Strategy request urgent up-scaling restoration efforts for damaged ecosystems at sea and on land to increase biodiversity and deliver a wide range of ecosystem services. Underpinned by knowledge in the latest IPCC and IPBES reports, large-scale ecosystem restoration is urgent – the window of opportunity is closing as we speak. It needs a systemic approach to deliver on the Green Deal actions for climate (mitigation and adaptation), biodiversity, zero pollution and sustainable food systems (from farm to fork). Whilst solutions are available now, they are neither up-scaled nor integrated enough in today's governance, investment or policy support landscapes. The environmental urgency highlights the limits of current management approaches and calls for investment in innovative restoration approaches that could trigger the necessary and urgent transformational changes. The global biodiversity post-2020 framework seeks voluntary commitments by business and stakeholders to invest in biodiversity. These topics need large financial support to test new approaches to speed up actions in the UN Decade on Ecosystem Restoration.

Resilient ecosystems are natural sinks for CO₂ from the atmosphere and can support adaptation to the locked-in climate change. Aside from being an essential carbon sink, oxygen source, and delivering a wide range of services (climate change adaptation, health and well-being, food, feed, fibre or fuel provision across the bioeconomy, recreation, water retention and purification, air quality, nutrient cycling), ecosystems are of relevance in a wide range of sectors, which impact the everyday life of Europe's citizens. Yet, biodiversity is being lost, and ecosystems are degrading at an alarming rate. Pressures on biodiversity increase at a faster rate than the efforts to protect it¹. The integrity of terrestrial and aquatic ecosystems and their capacity to deliver a wide range of essential services to people will be further undermined by the effects of

¹ See SOER 2020, IPBES (2018, 2019)

unavoidable climate change. There is therefore an urgent need to strengthen their resilience against environmental and climate stressors while integrating the local socio-economic specificities. This call seeks answers on how to frame transformational change, which supports a just transition – to show how investing in nature restoration can explicitly help vulnerable regions and communities to improve their resilience when rapid changes in climate and environment, economies and social conditions occur.

This call topic therefore responds to the urgent double challenge of (i) accelerating transformative change through (ii) upscaling restoration of ecosystems at sea and on land.

Specific objective of this topic is to provide large-scale demonstrators on how systemic upscaling and replication of best practice ecosystem restoration² can be deployed at regional, national and cross-border levels, focusing on heavily degraded and destroyed terrestrial, freshwater and marine ecosystems and responding to restoration goals enhancing biodiversity. Innovative methods on upscaling restoration need to be adapted, integrated and demonstrated in practice, for specific ecosystems and land/sea uses – recognising that conditions at sea can considerably differ from those on land, that speed of change and disturbance might differ, and that solutions to reverse biodiversity decline are context-specific. To demonstrate and test how restoration activities and socio-ecological management of ecosystems enable sustainable, climate-neutral and -resilient, inclusive, transformative approaches. To support the development of specific demand and supply chains in restoring ecosystems. To explore whether incentive-based mechanisms for restoration across the bioeconomy (agriculture, forestry, marine and innovative bio-based sectors) could trigger additional emission reductions, similar to how the EU's Emission Trading System (ETS) has incentivised the industrial and power sectors. To address barriers to implementation for systemic nature-based solutions focussing on restoration. This call should show how to upscale the restoration of ecosystems at the necessary large scale that will help human communities to adapt to changing conditions at their local level. It should also demonstrate in practice how to maximise synergies and avoid trade-offs between priorities for restoring biodiversity, and mitigating and adapting to climate change (such as those identified jointly by IPCC and IPBES). It should show how restoration activities enable a shift of social and behavioural patterns towards increased benefits for biodiversity. Demonstrating all of these benefits at a large scale requires a sound monitoring and assessment. This call shall generate knowledge on how restoration can accelerate transformative change beneficial for biodiversity and climate change, and bring this information to UN programmes, as well as to IPCC and IPBES³, processes.

² Based on CBD guidance on restoration <https://www.cbd.int/doc/decisions/cop-14/cop-14-dec-05-en.pdf>

³ In particular assessments in preparation, policy tools and capacity building.

Scope: This topic will demonstrate how restoration (in structure, function and connectivity) of biodiversity and ecosystem services can be scaled up⁴ in regions with severe biodiversity loss, so that opportunities for substantial biodiversity and ecosystem services gains will be realised, which in turn deliver social and economic benefits. This could pilot the integration of nature-based solutions focussed on restoration across economic sectors. This pilot is a Green Deal enabler and can be used as a testbed for further infrastructure investment by the European Climate Bank (EIB), for LIFE SNAPs, and relevant further budget lines in the next Multiannual Financing Framework. Appropriate budget for cooperation with previous projects on restoration and nature-based solutions⁵, and with Horizon Europe activities such as the Partnerships should be envisaged. This topic aims at integrating systemic transformations through restoration in governance, policy making, financing, public procurement, economic development, infrastructure and regional strategic planning. It will test and evaluate approaches to create value with the human communities affected by transformative change, in innovative ways and by avoiding negative externalities through improving their living conditions by restoring their terrestrial and/or marine environment.

The projects will develop a scalability plan, diffusion of solutions, and a process for commitments in adopting large-scale restoration within existing governance and financing systems, so relevant communities can replicate the upscaling across the EU and internationally. It should seek guarantees for the non-reversibility of restoration activities after the end of the projects.

Activities of this topic related to improving ecosystem condition must be integrated into best practice or innovative monitoring activities within relevant monitoring governance schemes (no new restoration monitoring approaches should be developed within the projects). The projects must explicitly foresee deliverables which allow monitoring schemes to apply (or test, if necessary) efficiency and output indicators related to restoration, its benefits and trade-offs⁶.

This topic should respond to the urgency for addressing upscaling restoration challenges, restoration potential of degraded ecosystems, significance of research for supporting EU policy needs and contribution to the international biodiversity agenda, technical and economic feasibility of proposed actions, EU added value, co-benefits across multiple sectors, addressing identified knowledge gaps, and synergies/complementarity with R&I Partnerships and Missions, and with MFF programmes.

⁴ “Up-scaling” means here substantial increase in area of restored ecosystem, whether in size or number of measures per area.

⁵ See SC5-27-2020, CLA-11-2020, SC5-13-2018-2019, SCC-02-2016-2017, Oppla, NetworkNature.

⁶ Such as monitoring developed in SC5-33-2020; relevant frameworks and services, such as Copernicus, GEOSS and ESA; and approaches used in EU and national legislation and the EU Biodiversity Strategy.

International cooperation in adapting restoration upscaling approaches when demonstrating their use for European conditions, and to apply the developed upscaling approaches internationally, is encouraged.

Expected Impact: This action shows how transformational change through restoration delivers at large scale, delivering first visible results and examples on land and sea cases by 2024, with benefits increasing in the long-term. The project results are expected to:

- enhance natural carbon sinks and reduce greenhouse gas emissions, locally reverse the degradation of ecosystems, increase connectivity, and improve the delivery of a range of ecosystem services⁷;
- provide testing at large scale of support actions to the EU commitment to reduce emissions by 50-55% by 2030 and become climate-neutral by 2050 (European Green Deal), the EU Biodiversity Strategy and the EU Nature Directives, the Farm-to-Fork Strategy, the Climate Law, the Bioeconomy Strategy and Action Plan, the EU Covenant of Mayors, EU Adaptation Strategy (2013), the UN Decade on Ecosystem Restoration and the UN Sustainable Development Goals;
- pilot and identify urgent, suitable innovative systems and methodologies for the ecological restoration of carbon sinks, with a view to significantly reducing the carbon and environmental footprint of Europe whilst helping with the implementation of EU climate, energy, biodiversity, agricultural, forestry and fisheries policies;
- create opportunities for public-private partnerships and (voluntary) market-based incentives for businesses and individuals within restoration initiatives;
- seek to ensure co-funding for long-term maintenance, also through trans-disciplinary research and stakeholder engagement;
- demonstrate the empowerment, involvement and reconnection of citizens with nature, as large-scale restoration actions would clearly deliver on public spending for public good and could be highly engaging and visible to citizens
- develop answers on how to frame transformational change, which supports a just transition by investing in nature, to explicitly help vulnerable regions and communities to improve their resilience when rapid changes in climate and environment, economies and social conditions occur.
- timely inform, in cooperation with the European Commission, through targeted dissemination of outcomes to UN conventions, such as the Convention on Biological Diversity (CBD), the Intergovernmental science-policy Platform on Biodiversity and Ecosystem Services (IPBES), the Intergovernmental Panel on Climate Change (IPCC) and further relevant global processes and organisations.

Type of action: Research and innovation action

⁷ For socio-economic benefits of restoration to improving ecosystem services, see e.g. SWD(2019)305 final