The biodiversity and climate change crises and the benefits of ecological restoration

We currently face two global environmental crises: biodiversity loss and climate change. The global assessment of the Intergovernmental Platform for Biodiversity and Ecosystem Services (IPBES) estimated that 1 million species are threatened with extinction with looming consequences for ecosystem services on which humans depend. At the same time the Intergovernmental Panel for Climate Change has alerted that, unless urgent action is taken, global warming greater than 1.5°C within 3 decades is unavoidable.

Although these two crises are often considered separately, many of the underlying causes are interlinked and related to unsustainable development. As such, some of the solutions to these two crises involve complementary and synergistic measures. In particular, climate change mitigation and adaptation require better management of biodiversity.

Nature-based solutions such as forest restoration could sequester up to two thirds of the CO₂ accumulated emissions in the atmosphere, contributing decisively to limit global warming below 1.5°C, but these efforts will only be effective if directed towards restoring natural, biologically complex and self-sustained forests; single-species plantation forestry often damages existing biodiversity and can be more prone to wildfire and disease.
Land-use planners and ecologists are reconnecting rivers to natural floodplains to absorb increased incidents of flooding.

Similarly, the protection and restoration of upland landscapes (mires, heaths, woodland and grasslands) create hydrologically ‘rougher’ surfaces that impede the flow of stormwater into streams, reducing flood peaks in downstream towns and cities and make urbanised floodplains far safer places to live and work.

Wild grazing provides a cheap way of reducing combustible biomass from dry-forested landscapes significantly reducing fire risk as droughts become longer and more extreme.

Coastal wetlands can significantly reduce the impact of increased storminess by reducing the energy of wave action during storms, reducing the impact of coastal flooding and erosion.

Healthy ocean ecosystems are necessary to address carbon storage and ensure their resilience to the effect of climate change.

Urban trees counteract heat islands in cities.

Additionally, the latest biodiversity scenarios indicate that, unless the climate crisis is promptly addressed, climate change will become a major cause of species extinction by the middle of the century, further exacerbating biodiversity loss and associated contributions to human well-being.

Bringing back nature to the EU in the post-2020 biodiversity strategy

Rewilding European ecosystems, through the restoration and maintenance of ecologically functional and connected landscapes, wetlands and floodplains, is of the utmost importance to achieve the objectives of the Birds and Habitats Directives and the Water Framework Directive. It will be necessary to bend the curve of biodiversity loss and bring back nature in Europe in the years to come. The EU’s Biodiversity Strategy to 2020 aimed to “restore at least 15% of degraded ecosystems”. The mid-term evaluation of the EU Biodiversity Strategy made it clear that progress on this target has been largely insufficient. Also, the

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An additional benefit is that restoring resilient ecosystems will help us to adapt to climate change and moderate climate risks; examples include:

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fitness check of the EU Nature Directives pointed to the lack of connectivity of the Natura 2000 network as one of the main implementation gaps.10

Large scale nature restoration will contribute significantly to:
• Tackle our biodiversity AND climate crises as such;
• Improve both the conservation status and the connectivity of the Natura 2000 network and hence contribute to halting the loss of biodiversity;
• Protect and restore carbon stocks, hence help stabilizing the climate below a 1.5°C rise in average global temperatures and hence avoid climate impacts/adapt to a changing climate.

The European Commission should therefore propose, in its upcoming Biodiversity Strategy, nature restoration legislation that ensures that nature can be brought back to the EU at the large-scale. For this, the European Commission needs to present a proposal that includes the following elements:
• A legally binding targets for Member States to increase the area of habitats in good ecological condition, through restoration of natural forests, peatlands, floodplains, wetlands, biodiversity rich grasslands, coastal zones and marine areas. This restoration target must set a concrete number of ha/km² and must be legally binding. Planned afforestation in the context of the restoration agenda should be focussed on urban forest planting of native species and facilitating natural regeneration elsewhere.
• Ensure that any financing for climate action delivers active restoration of habitats on land and at sea.

principles can enhance across ecosystem types the provision of a wide range of services to people, such as carbon sequestration, nutrient and water retention, healthy aquatic systems, as well as recreation and experiencing nature. In many rural areas with increasingly depressed economies, rewilding can create opportunities for new businesses such as ecological restoration, wildlife watching and sustainable use of natural resources.

Ecosystems managed this way, and therefore regulated by natural processes, require no or very low management costs relative to systems dependent on constant human intervention. The costs of ecosystem restoration are one of the main barriers to the effective implementation of restoration initiatives over large scales, and a contributing factor to why the EU is currently falling short on its target of restoring 15% of degraded systems by 2020. Restoring self-sustaining, functioning ecosystems can help reduce the costs of creating a coherent ecological network and increase the scale over which restoration can be applied.

Indeed, rewilding often spontaneously occurs in areas where no other land management is present (e.g. where land is no longer used for agriculture). For instance, the amount of forests and shrublands is now increasing in Europe as some agricultural areas became uneconomic during the twentieth century, for example in the post-socialist Carpathians, where large areas of land were no longer farmed allowing the natural recovery of the ecosystem. This example adds to the growing network of rewilding and large landscape restoration initiatives across Europe that include rivers and floodplains, open landscapes, forests, peatlands and mountainous areas. In all these initiatives, conditions are created for natural processes such as spontaneous forest regeneration, wildlife comeback, restoration of natural flooding regimes, erosion and sedimentation, natural grazing and many more.

Rewilding offers an effective approach to help achieve these targets. Rewilding is a form of ecological restoration that promotes self-sustained ecosystems able to provide important services to people and nature while requiring minimum human management in the long term. Critical components of rewilding include restoring the ecological role of wild species and their interactions, enhancing connectivity within and among habitats and promoting natural vegetation succession and ecosystem regulation.

Rewilding according to rewilding principles thus provides new opportunities for managing land that is otherwise economically unproductive in a manner that is cost-effective and delivers a suite of ecosystem services of benefit to people and the environment.