Biodiversity and agriculture

Biodiversity is a term used to describe the richness of life in a particular place, area, or the whole Earth at a particular time. It encompasses both the species richness and genetic diversity of each species, as well as the diversity of ecosystems that are created by the living component (biota) and the non-living environment that predetermines the possibility for species to exist and evolve. Ecosystems play a vital role in providing food and feed, energy, medicines and genetic resources for other products, the various materials necessary for the physical well-being of people and for the maintenance of culture, and a range of ecosystem services such as pollination, soil formation and preservation its structure, water retention and climate regulation. Caring for diverse wildlife is part of European values and the relationship with the landscape as a home.

Biodiversity within, between and among species and ecosystems is declining faster than at any time in human history. Previous efforts to address the biodiversity crisis, whether in the Convention on Biological Diversity 2 adopted by the global community in 1993 and its subsequent Protocols3,4 and strategies 5 , or at EU level, such as the EU Biodiversity Strategy 2020 6 , have not been enough to improve this trend. According to the European Environment Agency's findings in 2019 7 , only a small proportion of protected species (23%) and habitats (16%) were in favourable conservation status in the EU, and the Union has failed to halt biodiversity loss by 2020 as it had set out to do. Much more effective action will therefore be needed, including at EU level, just as the Habitats Directive has proved at least partially effective. A promising step is the proposal for quantitative, continuously evaluable and partly legally binding targets for the new EU Biodiversity Strategy 8 , unless adjustments are made, that would weaken the set goals and thus devalue the whole strategy. The addition of elements that are still missing, in particular soil protection and soil biodiversity, which is essential for soil functions, is essential. Over the next few years and decades, the European Union should launch a comprehensive, systematic programme of nature restoration at various spatial levels: from small-scale natural elements to the scale of landscapes. We see the following as key issues that the European Union should address in relation to more effective biodiversity conservation:

1. Significantly reduce large-scale uniform farming (industrial agriculture) and reduce the burden of industrial fertilisers and pesticides even below the levels envisaged by the EU's proposed 2030 biodiversity strategy. Improve the functioning of the Common Agricultural Policy and its reform in order to increase transparency, responsibility, participation and learning in line with the UN Sustainable Development Agenda Goal 16, thereby regaining legitimacy and public trust (see published opinion of scientists 9). Reform the Common Agricultural Policy from subsidised farming to payments for public services: support for above-ground and soil biodiversity, protection of soil itself and prevention of soil degradation, and water retention. Gradually assemble the sub-programmes into a coherent system of multi-year contracts for results within individual farms, landscapes or catchments. Through targeted support, invest in the diversification of rural economies and the transformation of farms into sustainable, labour-intensive agriculture. Landscape restoration and wise landscape management while maintaining its multifunctionality will be essential to ensure biodiversity as well as sustainable management, climate protection and public health.

2. Significantly increase ecological stability through skilfully designed interconnection (connectivity) of natural and near-natural areas across Europe, in particular by linking the sites of the

EU Natura 2000 protected areas network, and prevent further fragmentation of populations of endangered species and their habitats by artificial infrastructure, thus better ensuring the movement of organisms (but not economically and epidemiologically important ones) and thus better protection of genetic and species diversity as a condition for the health of entire ecosystems. In view of the global changes taking place in the Anthropocene, not only in the climate, promote an adaptive approach to biodiversity management, including dynamic territorial protection (e.g. changes in the delimitation of protected areas depending on changes in the distribution of the object of protection, increasing the representation of climatically diverse habitats) and thus limiting the homogenisation of biota (promotion of native species and habitats v. regulation of invasive non-native species and reduction of uniform environment). There will be a need to respond to the rapid developments in molecular genetics and synthetic biology and to regulate interventions in genetic diversity in a timely manner on the basis of an Environmental Risk Assessment (ERA,10 including impacts on individual species, their communities and entire ecosystems. Conversely, molecular techniques can be used for bioindication and monitoring, e.g. in relation to habitats and spontaneous colonisation of degraded ecosystems (restoration ecology), in species conservation and regulation of trade in fauna and flora and products.thereof. Promote an international agreement on the regulation of synthetic biology, genome editing and gene drive of organisms in which hereditary information has been artificially induced to change, which spreads freely through populations by hybridisation with related wildlife species and cannot be stopped. In the meantime, and until sufficient scientific knowledge is available, a moratorium on their release into the environment should be achieved.

3. To genuinely and not only verbally integrate (i.e. implement) biodiversity and landscape conservation into important economic sectors-preferably agriculture, forestry, water management, and others in the sense of the European Landscape Convention 11. Through targeted measures, ensure sustainability - including biodiversity conservation - in the supply chains of European companies and economies that extend beyond the EU. Thus, drastically reduce the European contribution to global biodiversity loss, in particular the destruction of natural habitats due to the production of commodities imported into the Union. Promote a participatory approach, i.e. the involvement of all stakeholders in biodiversity conservation, and inform, educate and enlighten the general public and target populations, inter alia by using contemporary public relations and marketing practices . Ensuring synergies between the desired practices in all declared priorities (so that the effect is not lost), e.g. ensuring that successful increases in the area protection of species and biotopes does not negate the input of nutrients, especially nitrogen and phosphorus.

4. Systematic use of economic and financial instruments to protect biodiversity, such as ecosystem valuation, payments for ecosystem services, integration of biodiversity and ecosystem services into corporate accounting and decision-making, assessment of major investments according to the sustainability of economic activities (so-called taxonomy 12), shifting the tax burden from labour to pollution, the polluter pays principle, etc.

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