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Securing success for the Nature Restoration Laws

The EU law would complement many others, but challenges loom

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In an attempt to halt and reverse biodiversity losses, the European Commission has proposed a new regulation, the Nature Restoration Law (NRL). It could become a cornerstone of Europe's ambitions to restore biodiversity and ecosystem services for decades to come (1) and demonstrate global leadership in addressing ongoing environmental crises. The draft of the law, which is a first globally, has been under political pressure from various sides, and scientists have contributed intensively to the discussion (2). After trilogue negotiations among the European Parliament, the Council of Europe, and the European Commission, the final text of the NRL has been agreed on (see the box). However, it will still be subject to final votes within the Council and Parliament. Here, we assess the potential for the NRL to overcome problems associated with implementation of related European Union (EU) legislation, strategies, and policies and what can be learned for implementation of the NRL.

The NRL acknowledges that existing EU legislation and policies have so far failed to halt biodiversity losses (1) and consequently, without new instruments, cannot meet the targets of international agreements, such as the Kunming-Montreal Global Biodiversity Framework. Although some of the NRL's aims and approaches overlap with other EU directives, strategies, and policies, in particular with the EU Biodiversity Strategy for 2030, the NRL is distinct in terms of its coverage targeting the majority of European ecosystem types, its strong focus on restoration, and its provision of binding targets and clear timelines. This potential for regulatory power may largely explain the contested nature of its passage into legislation.

The prospect of the NRL achieving its aims will be strongly determined by other European legislation and policies that address the environment as well as land and water uses (see fig. S1). Policy coherence requires complementary objectives and instrument mixes within environmental domains (3) while mainstreaming environmental objectives into other policy

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domains (4). These may enhance options for, or pose restrictions on, the implementation of the NRL. Key directives, some of which came into force decades ago, include the Habitats Directive (HD), Birds Directive (BD), Water Framework Directive (WFD), and Marine Strategy Framework Directive (MSFD). They share aims in safeguarding Europe's biodiversity but have not halted its decline. The Biodiversity Strategy for 2030 (BS) targets halting biodiversity loss, while the Forest Strategy (FS) and Common Fisheries Policy (CFP) address major land and sea uses. Last, the Common Agricultural Policy (CAP) has the largest budget and affects nearly 40% of the EU's terrestrial area, yet agriculture remains the lead driver of biodiversity loss (5). Together, these directives and policies cover a broad range of targets, sectors, and approaches and are representative for other instruments that will also interact with the NRL implementation (see the supplementary materials for details on our analysis of existing legislation, strategies, and policies).

LESSONS LEARNED

In developing the NRL, the EU has learned from past experiences with European environmental legislation and policies and avoids several obstacles that have obstructed their implementation.

As a regulation, the NRL will come into force soon after it has been passed by the EU Parliament. This is an advantage in comparison with the HD/BD, WFD, and MSFD, which needed to be transposed into national law—a process that takes several years. Although the NRL will also need national implementation—for example, through National Restoration Plans (NRPs)—these could be passed by authorities without legislative procedures. This is a major advantage because speed is vital for tackling the biodiversity crisis and fulfilling the EU's international commitments (6).

The NRL sets ambitious quantitative targets in terms of both the areas to restore and the timeframe, with targets for 2030, 2040, and 2050 (see the box). Experiences with previous legislation support this approach. The WFD and the MSFD defined deadlines for meeting the good status of all water bodies and seas (although in the case of the WFD allowing for an extension), but these firm deadlines made continuous restoration activities with intermediate targets more difficult. Timing, however, is

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also an issue for the NRL. The NRL's success hinges on prompt action and the provision of effective tools for achieving targets within short timeframes, recognizing the necessary time for nature to recover.

The NRL defines measurable and applicable indicators for restoration success. These include the area of restored habitats, which is easy to document and to control. Other more generic indicators, such as the Grassland Butterfly Index, are well established, thus facilitating implementation. A third group of indicators will require some standardization, such as indicators of forest restoration. Although no specific indicators are defined for marine ecosystems, criteria from the MSFD could be applied. Hence, the NRL can to a large degree capitalize on existing indicators, in sharp contrast to the WFD, MSFD, and HD/BD, all of which ignited extensive indicator development processes that delayed implementation.

Another advantage is the use of NRPs, which has the potential to provide an appropriately tailored national framework for NRL implementation. Although all the above-listed directives are implemented at the national level, there have been particularly good experiences when actions take account of local contexts and needs, as seen with the River Basin Management Plans under the WFD. It is therefore imperative to ensure that the NRPs will be backed by robust implementation tools that adopt an adaptive cycle, whereby the commission can request member states to increase their ambition.

ADVANCING IMPLEMENTATION

The NRL's aims reach well beyond the targets of existing legislation and policies (see the box). In addition, the NRL offers great potential to boost the implementation of other European directives and policies. Whereas the WFD and MSFD focus on individual ecosystem types (surface water and marine ecosystems), the HD/BD take a broader approach, including a wide range of habitats, and the BS is even more comprehensive (7) because it addresses species, habitats, ecosystems, ecological processes, and public engagement. The NRL is broad but targets specific ecosystem types with tailor-made approaches (see the box and fig. S1). It may therefore have impacts beyond the targeted ecosystems: For example, restoring agricultural ecosystems and forests has the potential to benefit rivers and lakes, and restoring peatlands can positively affect the landscape's water budget (8). Consequently, implementation of the NRL can substantially benefit the implementation of the HD/BD, WFD, and MSFD. This is most obvious for the HD/BD, which addresses a greatly overlapping list of habitats and species. The WFD and the MSFD can benefit from reduced pollution from agriculture and from the additional approaches the NRL provides. For example, the WFD does not explicitly address floodplains, although floodplains play an important role in the healthy functioning of rivers and their ecological quality (9). Also, the implementation of the BS will benefit from the restoration measures initiated by the NRL.

At first glance, the NRL may seem to be "conservative." It focuses mainly on the protection and restoration of habitats per se and of habitats for individual species. This is reminiscent of an approach from the 1980s, seemingly ignoring calls for more systemic, adaptive, and integrated approaches to managing nature. Article 8, with its focus on pollinators, is an exception to this. Ecosystem-based approaches, nature-based solutions, and co-benefits of

Key features of the EU Nature Restoration Law

Chapter I: General Provisions
- Defines the overall targets (continuous recovery of nature, fulfillment of climate change objectives and international regulations)
- Defines key terms: Favorable reference area (minimum area to ensure the long-term viability of a habitat type), good condition (characteristics that ensure favorable conservation status according to the HD or good environmental status according to the MSFD), sufficient quality and quantity of habitat (conditions required by a species for maintaining itself on a long-term basis)

Chapter II: Restoration Targets and Obligations
- For Natura 2000 sites (Article 4): Good condition (30% by 2030, 60% by 2040, 90% by 2050); and favorable reference area (30% of the area needed to reach the goal for each habitat type by 2030, 60% by 2040, 100% by 2050); improved connectivity
- For habitats of species listed in Annexes II, IV, and V of Habitats Directive and of Birds Directive (Art. 4): Reach sufficient quality and quantity of habitats (no time frame given)
- Marine Ecosystems (Art. 5): Reaching good condition (30% by 2030, 60% by 2040, 90% by 2050) and favorable reference area (at least 30% by 2030, 60% by 2040, and 100% by 2050)
- Urban Ecosystems (Art. 6): No loss in total national area of urban green spaces, achieve thereafter an increasing trend
- Rivers, floodplains (Art. 7): Removal of barriers to longitudinal and lateral connectivity to achieve restoration targets and 25,000 km of free-flowing rivers; maintain and improve natural functions of floodplains
- Pollinator populations (Art. 8): Improve pollinator diversity, reverse decline of pollinator populations by 2030; achieve thereafter an increasing trend of pollinator populations
- Agricultural ecosystems (Art. 9): Increasing trend at national level in two of the three indicators: "Grassland Butterfly Index," "stock of organic carbon in cropland mineral soils," "share of agricultural land with high-diversity landscape features"; targets for "Common Farmland Bird Index": increase by 10% (2030), 20% (2040), and 30% (2050) for member states with depleted farmland bird populations, and by 5% (2030), 10% (2040), and 15% (2050) for member states with less depleted populations; restoration of organic soils in agricultural use constituting drained peatlands: 30% (by 2030), 40% (by 2040), 50% (by 2050)
- Forest ecosystems (Art. 10): Increasing trend at national level of the "Common Forest Bird Index" and in 6 out of 7 additional indicators such as standing deadwood or forest connectivity

Chapter III: National Restoration Plans
- Obliges member states to prepare restoration plans to implement the measures required for targets of Chapter II, and to quantify the area to be restored
- Member states have full flexibility to use or to discard funds from Common Agricultural Policy and Common Fisheries Policy for NRL implementation

Chapter IV: Monitoring
- Obliges member states to monitor indicators for restoration targets; progress reports by the Commission

Chapter VI: Final Provisions
- Application of the NRL will be evaluated by 2033, including possibly legislative proposals for amendments
- "Emergency brake" allows member states to halt NRL implementation in farmland, if agricultural production is at risk

restoration for other environmental and societal objectives are mentioned, but the text does not elaborate on their implementation. Despite this, the NRL holds considerable potential to operate at ecosystem levels, providing widespread societal benefits, particularly through the increased supply of ecosystem services (*10*). Enhancing landscape structure and rewetting peatlands can increase the resilience of agricultural ecosystems to droughts and pests, and restoring pollinator populations can have direct positive impacts on agricultural production. Similarly, reconnecting rivers with their floodplains can mitigate flood risks (*11*); increasing urban green spaces can benefit urban climate and people's health; increasing forest diversity can enhance resilience to extreme events; and restoring marine ecosystems can benefit recreation (*12*).

AVOIDING PITFALLS

A recurring problem with the implementation of European environmental legislation and policies is the gap between targets and effective implementation options. HD, BD, WFD, and MSFD have so far not achieved their aims, and neither has the BS (see table S2). Reasons are manifold. Besides shortcomings in aims and approaches (see table S3, a to g), a common denominator is the lack of resources needed to implement them successfully, including funding, human resources, appropriate planning procedures, and administrative capacities for implementation. The passing of legislation and policies have not always been followed by the provision of appropriate resources and capacity-building for implementation and monitoring. The NRL encounters similar challenges because it is even more ambitious. Implementation at the national level must therefore assure a stringent procedure and a resilient funding structure, as suggested by the original Commission proposal. Although the targets are legally binding, the measures to achieve them will be voluntary actions by land and water owners and managers, who would need to accept co-responsibility and possess the capacity to respond. This requires not only financial investments but also supportive institutions for cooperation, peer-to-peer learning, business models that support land-use change, and societal acceptance to work with nature.

The required resources are not exclusively of public origin. After the NRL's approval, the EU and member states are tasked with mobilizing private financing of restoration, endorsing suitable business models that incorporate cost recovery (*13*). These may involve refined carbon credit trading, collaboration with insurance companies to mitigate flood or drought risks, or customized options for investing in nature. The European Investment Bank, and its enhanced capacity to offer advisory services alongside conventional financing, could assume a more prominent role in this regard.

It will be of equal importance to acquire public funds for restoration of nature from other components of the EU budget—in particular, regional development and agriculture. So far, despite the installment of relevant instruments, the CAP has not succeeded in achieving the aims of HD, BD, and WFD. The CAP is unlikely to contribute sufficiently to the NRL implementation if its support schemes are not modified to strengthen the ambition of measures, strictly enforce cross-compliance, and increase funding for focused measures. A

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specific clause is granting member states full flexibility in using or foregoing CAP or CFP funds for NRL implementation. Using these funds could potentially offer unprecedented, cost-efficient opportunities for both the NRL and the CAP and CPF. The CAP's agriculture-environment-climate measures, along with the somewhat less ambitious "Eco-schemes," could support habitat restoration and the recovery of pollinator populations. Implementing the NRL in farmlands is also vital for achieving various goals, including river-floodplain connectivity, river to coast-marine connectivity (through controlled floods), peatland targets (through alternative agricultural schemes such as paludiculture), and even urban restoration (by maintaining urban and peri-urban green and blue spaces). Simultaneously, addressing climate change in agriculture necessitates restoration measures such as landscape water storage, reduced livestock densities, and diminished nitrogen inputs.

The trilogue negotiations have introduced two further elements that substantially weaken the NRL. First, member states may permanently deprioritize restoration actions in areas used for other targets such as renewable energy infrastructure and military facilities. Second, the inclusion of an "emergency brake" enables member states to temporarily suspend NRL implementation in farmland, over their entire area, under exceptional circumstances that affect land availability for agricultural production. However, an evaluation of the NRL planned for 2033 could result in legislative proposals for amendments, including a better coherence with other legislation or policies.

Translating ambitions into actions still requires a close alignment with both existing and emerging European legislation and policies. Stability in the legislative developments is crucial, considering that nature restoration requires long-term perspectives. Provision of funding schemes will determine whether the NRL will address current pressures and drive much-needed transitions. Given the urgency of global crises, Europe cannot afford to delay; the opportunity to install and implement an ambitious law, and the opportunity to show global leadership, should not be missed. ∎

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