BirdLife
EUROPE & CENTRAL ASIA

GREEN POWER

Aligning renewables with biodiversity to accelerate the energy transition

OCTOBER 2025

Windfarm. © Shutterstock

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Executive summary

This report gathers and showcases EU Member States' policies and practices aligning rapid renewable rollout with biodiversity recovery. It comes at a critical moment.

Eurasian Oystercatcher. © Johan van Beilen. Shutterstock

The Commission's latest assessment suggests the EU is on course for a 54% climate emissions cut by 2030, just short of the 55% target, while none of the measurable sub-targets of the EU Biodiversity Strategy are on track. Member States must designate Renewable Acceleration Areas (RAAs) by February 2026 and submit their Nature Restoration Plans (NRPs) by September 2026, creating a narrow window to integrate energy and nature planning from the outset.

The central finding is that **renewable expansion and biodiversity conservation and restoration need not compete**. Where sound planning, governance and safeguards are aligned, projects can avoid sensitive sites, contribute to nature restoration and command public trust. Getting the designation of RAAs right depends on robust spatial planning guided by sensitivity mapping, strong environmental assessment, early and meaningful consultation, transparent data, capable public authorities, directing development away from high-value nature areas, and ensuring that it moves ahead rapidly in areas of low sensitivity only. **If done correctly, alignment with biodiversity conservation and restoration can provide certainty to project developers, investors and regulators, simplify implementation of the legal frameworks and accelerate renewable deployment**.

For projects approved following renewable energy auctions, embedding ecological non-price criteria helps reward projects that minimise harm and deliver net biodiversity gains. While this approach is proving workable, in many systems price alone still determines outcomes, resulting in low-cost but high negative impact projects.

Strategic and project-level assessments remain central. Good practice includes transparent publication, cumulative impact analysis and clear compensation requirements. **But exemptions, compressed timelines and poor monitoring frequently weaken safeguards, creating uncertainty and public distrust**.

Delays are driven more by weak administrative capacity, inconsistent implementation and interpretation, grid connection, and poor coordination than by environmental rules. Early, inclusive engagement with civil society and fair benefit-sharing increase acceptance, yet consultation is too often late, perfunctory or absent altogether.

Connecting RAAs with NRPs offers a significant opportunity to create synergies between biodiversity restoration and renewable energy production. **However, there is little evidence so far that RAA designation is being integrated with NRP preparation**. Good technical foundations exist in places but are not yet aligned with NRPs and RAAs used to steer approvals, and restoration priorities are not yet influencing siting and mitigation at scale.

To meet both climate and biodiversity targets, Member States must align energy and nature planning from the outset, strengthen coordination between authorities, embed meaningful participation, and integrate decarbonisation across sectors. **Doing so will not only accelerate renewable energy and restore ecosystems but also deliver greater energy security, more affordable prices, a simplified implementation of the regulatory framework and a healthier environment for people and wildlife**. The next year will be decisive: governments must act now to put these foundations in place, with civil society ready to play its part in driving positive change.

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Introduction

Over the past thirty years, renewable energy has shifted from a marginal option to a central tool in addressing climate change.

Solar, wind, and grid systems have cut emissions, influenced policy and competitiveness, and improved energy security. Yet the urgency to expand renewables in today's climate emergency often means their impact on biodiversity and nature is poorly assessed.

In May 2025, BirdLife Europe published *Renewable Energy that Renews Nature*, a policy briefing setting out core recommendations to help EU Member States (MSs) align renewable energy expansion with biodiversity goals. This is particularly timely, as several major EU laws are now being implemented, including the Renewable Energy Directive (RED III) and the Nature Restoration Regulation (NRR). The key challenge now lies in translating this legislation into practice in the best way possible.

This follow-up report reviews progress in eight Member States, drawing on input from BirdLife national Partners. It highlights positive examples that show meaningful progress, while also exposing critical gaps that impede both biodiversity protection and the rapid deployment of renewables. The aim is not only to showcase what works and can be replicated, but also to flag areas where weak action risks undermining both energy and nature objectives.

The political context underlines the urgency. According to the *European Commission's latest assessment of the final National Energy and Climate Plans* (NECPs)[1], the EU is on track to cut emissions by 54% – just below the 55% target for 2030. But this estimate assumes full implementation of existing and planned national measures, an assumption which already looks questionable given that the European Commission has opened infringement procedures against 26 out of 27 MSs for missing the REDIII transposition deadline[2]. Meanwhile, the EU is far off course on its biodiversity goals: the Joint Research Centre reports[3] that none of the 13 measurable sub-targets of the Biodiversity Strategy for 2030 are on track, and 16 others cannot even be assessed due to a lack of data. According to a BirdLife report, this delay stems largely from issues that plagued previous strategies: lack of political coherence, insufficient national responsibility, inefficient non-binding targets, and reluctance to challenge the status quo[4].

[1] European Commission – Communication delivering the Union's 2030 energy and climate objectives – May 2025
[2] Commission calls on Member States to transpose the reinforced rules to promote renewable energy
[3] JRC – Assessing progress in monitoring and implementing the EU Biodiversity Strategy for 2030 – May 2025
[4] BirdLife Europe – New report: EU falling short on 2030 biodiversity goals

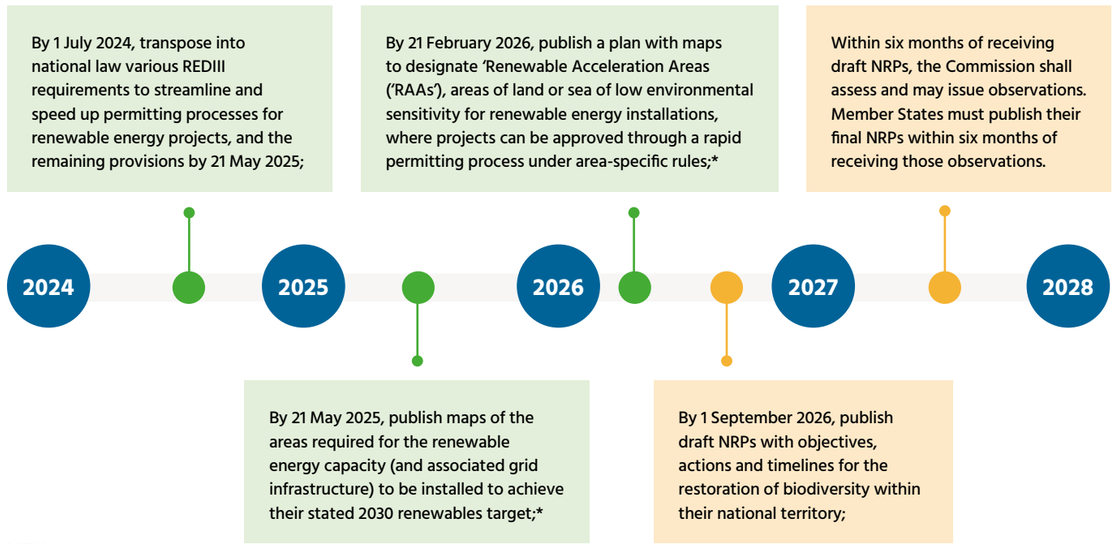
Eastern Imperial Eagle. © Svetoslav Spasov – BirdLife Bulgaria

Red Kite. © Shutterstock

According to the OECD, "*mainstreaming biodiversity in electricity planning not only mitigates adverse biodiversity impacts but can also provide certainty to project developers, investors and regulators. It can reduce the risk of project delays and failures, permitting time, and the project costs associated with biodiversity mitigation measures.*"[5]

With MSs due to designate Renewable Acceleration Areas (RAAs) by February 2026 and submit their Nature Restoration Plans (NRPs) by September 2026, now is a critical moment. Governments have a unique opportunity to better coordinate energy and nature planning, to ensure that accelerating renewables does not come at the cost of ecosystems, but instead contributes to their recovery.

The key tasks and deadlines set by REDIII and the NRR include:



*Ensure that synergies with nature restoration are considered in accordance with the NRR[7]

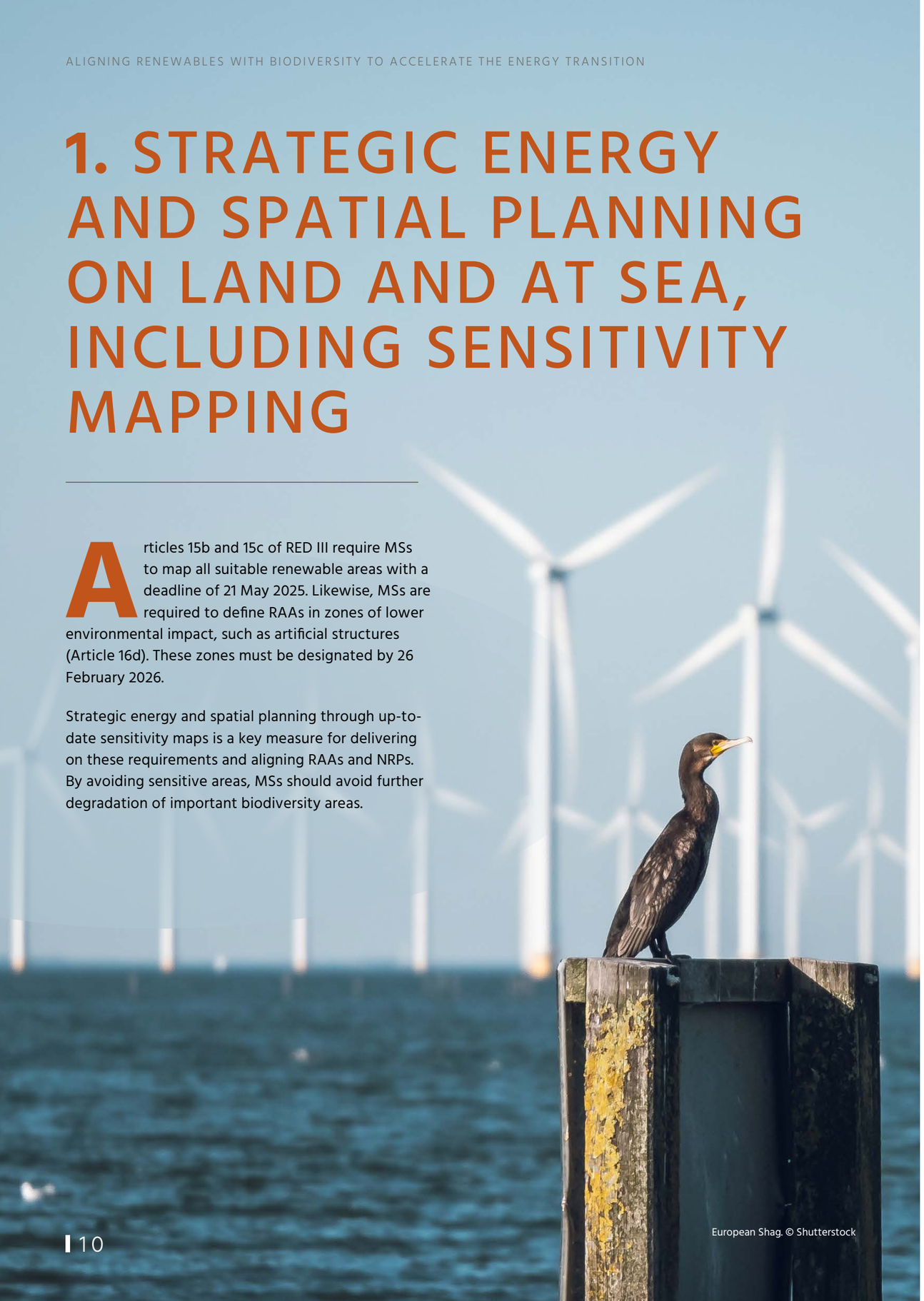
This document aims to support that effort. It presents an overview of actions in eight MSs under each of the ten priority areas identified in the previous BirdLife briefing. It showcases good examples to learn from, identifies where more work is needed, and offers clear, practical guidance for MSs to course-correct where necessary. If the EU is to decarbonise its economy while restoring nature, that work should already be happening, or at least begin now.

[5] OECD – Mainstreaming Biodiversity into Renewable Power Infrastructure – January 2024

1. STRATEGIC ENERGY AND SPATIAL PLANNING ON LAND AND AT SEA, INCLUDING SENSITIVITY MAPPING

Articles 15b and 15c of RED III require MSs to map all suitable renewable areas with a deadline of 21 May 2025. Likewise, MSs are required to define RAAs in zones of lower environmental impact, such as artificial structures (Article 16d). These zones must be designated by 26 February 2026.

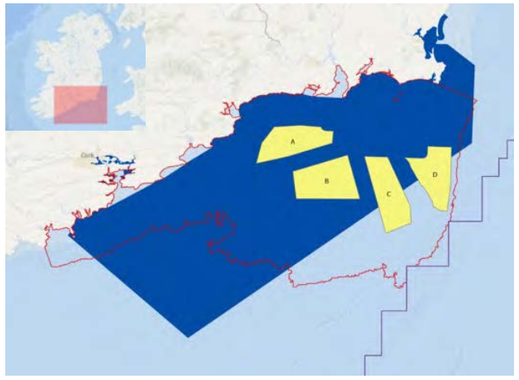
Strategic energy and spatial planning through up-to-date sensitivity maps is a key measure for delivering on these requirements and aligning RAAs and NRPs. By avoiding sensitive areas, MSs should avoid further degradation of important biodiversity areas.



European Shag. © Shutterstock

Across the EU, progress on mapping and designating RAAs shows a mixed picture. Some MSs have made significant advances in aligning renewable energy deployment with biodiversity safeguards, while others still lack the integrated, transparent, and up-to-date spatial planning needed to deliver both accelerated deployment and nature protection. Very few MSs have dedicated sensitivity maps for solar energy. This is quite a serious omission, as the potential impacts of solar installations on birds, and biodiversity more generally, are quite different from those of wind installations, potentially affecting different species and habitats.

Good practices emerge where sensitivity mapping is embedded in planning from the outset and is combined with Strategic Environmental Assessment (SEA), early engagement with environmental authorities, and public consultation.



A map showing the significant overlap between the designated areas for offshore wind identified within the DMAP (yellow polygons) with seabird IBAs (blue area).
Source: BirdWatch Ireland

Offshore wind energy planning in Denmark is a leading example, with the Danish Energy Agency identifying up to 92 GW of offshore wind potential (33 GW by 2030)[6] **through detailed mapping of environmental, technical, and socio-political constraints**. Environmental NGOs, including DOF (the Danish BirdLife Partner), were involved early, and exclusion zones were established for bird migration corridors and Natura 2000 sites. Denmark also supports cooperation at the sea basin level on offshore wind through its active role in international fora such as the North Sea Summit and the Baltic Offshore Wind Summit.

Similarly, Portugal's Marine Spatial Plan includes the Offshore Renewable Energy Zoning Plan (PAER), which was subject to a SEA. Following public consultations, **the final plan excluded areas overlapping with Special Protection Areas (SPAs), as well as areas between SPAs, and redesigned other zones**. These changes were driven mainly by discussions with the fishing sector, although **seabird sensitivity mapping[7] played an important role during the final public consultation process**.

Ireland's new Designated Maritime Area Plan (DMAP)[8] for Wexford and Waterford marks a shift from developer-led to state-led offshore planning, **prioritising sensitive habitats** and structured stakeholder engagement.

While birds were included in the DMAP process alongside other biodiversity considerations, it appears the data used for ornithology may not have been sufficiently robust[9] or assessed independently from other environmental needs. As a result, **the designated areas for offshore wind still overlap considerably with the seabird IBAs identified by BirdWatch Ireland[10]**.

[6] ENS – Planning of future offshore wind farms
[7] Mapping seabird and marine biodiversity sensitivity to marine wind farm expansion in Portugal
[8] Ireland's Department of Climate, Energy and the Environment – Designated Maritime Area Plan (DMAP) Proposal for Offshore Renewable Energy – July 2023
[9] The SC DMAP report states that all environmental and biodiversity layers were combined for the environmental heatmap used to determine and identify sensitive areas to avoid. The report states, '*attributes with more data layers are likely to contribute more highly than those with fewer*' in the final heatmap. When listing out the data and layers used, the 'Ornithology' attribute came from a single data source (ObSERVE) and had only two layers. In comparison, the 'Marine mammal' attribute had 3 data sources and 32 layers. Given that Ornithology was one of 17 attributes and had one of the lowest number of layers used, it is very likely that any important areas for birds could have been overshadowed by the other attributes with more layers.
[10] BirdWatch Ireland – Important Bird and Biodiversity Areas for Birds in Ireland – updated map published September 2025

Swans. © Shutterstock

Poland's recent renewable energy maps[11] also show promise, covering seven technologies with differentiated environmental safeguards. **Bird sensitivity mapping is included for onshore wind potential mapping**. The maps should be developed at the beginning of 2026 and then submitted to the authorities, who are responsible for adopting the final resolutions on designating renewable acceleration areas. The Regional Directorate for Environmental Protection (RDOŚ) will be responsible for verifying specific areas as acceleration zones, and for **developing measures to mitigate the impact of renewable energy installations on the environment. Tasks will also include developing nature sensitivity maps** covering land, marine areas, and inland waters that are particularly valuable for their natural environment and can be negatively impacted by the developments.[12]

Croatia has developed detailed sensitivity maps for birds, bats, large carnivores, habitats, and technical suitability for solar and wind, as well as combined maps covering all categories. **There are examples of cross-border consultation on projects, such as the Tramontana wind farm in the Italian Adriatic.**

[11] Tender – Mapping for the implementation of renewable energy in Poland to determine the availability of energy from renewable sources and the renewable energy production potential of specific renewable energy technologies, as well as the related infrastructure
[12] Anczewska, M., Niewitała-Rej, M., Stefańczyk, A. (2025), W gąszczu procedur. Jak systemowo usprawnić proces wydawania pozwoleń na inwestycje w czystą energię?, Warszawa, Polska: Instytut Reform

Yet offshore sensitivity mapping has not started, and both cross-border and cross-regional cooperation could be strengthened to ensure consistent protection of migratory routes and shared ecosystems.

Romania's Red-breasted geese sensitivity map is included in two ministerial orders, the National Species Action Plan (NSAP) and the Guide on the adequate assessment of the potential effects of plans/projects in the areas of interest.[13] While lacking an RAAs map, NGOs and authorities are developing one under a Swiss-Romanian project, approved in its initial evaluation phase, which will contribute to Romania meeting its RED obligations.

Persistent weaknesses, however, limit progress. In several countries, sensitivity mapping is either absent, outdated, or applied inconsistently.

Germany designated ~22 GW of offshore RAAs under §8a WindSeeG without baseline sensitivity mapping, resulting in **significant overlap with highly sensitive seabird areas.**[14] As the declaration of existing areas as acceleration areas was established within an 'omnibus procedure', a public consultation was not conducted – a clear breach of REDIII obligations. In the future, RAAs are set as a new permitting standard rather than being a subset of ecologically irrelevant areas. Despite ambitious targets under the Renewable Energies Law (Erneuerbare-Energien-Gesetz, EEG[15]), **Germany lacks a comprehensive mapping of the types and quantities of renewables needed to meet climate goals**, with binding spatial targets only for onshore wind.

[13] Romania's Ministry of Environment, waters and forests – Guide on the adequate assessment of the potential effects of plans/projects in the areas of interest – June 2023
[14] Die Vogelwelt – Sensitivity of seabirds to offshore wind farms in the German North Sea with regard to habitat loss through avoidance (Dierschke et al. 2024)
[15] Targets show the pathway to reach 80% electricity generation by renewables by 2030. Also, it is stated that at least half of the PV energy production should be generated by rooftop PV.

The mapping criteria applied in Renewable Acceleration Area planning, in line with Article 15c of REDIII, reveal how far bird protection is considered in practice during the implementation of RED. Some national examples are provided below:

- In Portugal, criteria include broad environmental and land-use constraints, legal exclusions such as protected areas, and some conservation values, but important bird habitats and several sensitive species groups are not fully captured.
- By contrast, Croatia integrates species observation data and expert input on birds and bats, alongside habitat maps, Natura 2000 sites, and spatial plans, providing a stronger basis for avoiding key biodiversity areas.
- Czechia's indicative spatial zoning tool goes further still in scope, with detailed exclusion and weighted indicators covering Natura 2000, Important Bird Areas, collision risks from power lines, Ramsar wetlands, and even landscape values. However, as long as the tool remains indicative only, its contribution to binding bird protection remains limited.
- Germany's implementation draft for offshore wind includes some exclusion criteria for RAAs covering marine protected areas, official migratory corridors, areas which have conservation priority according to German Marine Protected Area (MSP), 8-kilometer buffers around the previous criteria and Baltic Sea areas. However, the ecological sensitivity criterion requested by RED III is not included and sensitivity mapping approaches are ignored. Therefore, ecological assessments will be eliminated in areas of high ecological sensitivity. Furthermore, retrospectively assigned RAAs violate the mentioned buffer criterion.

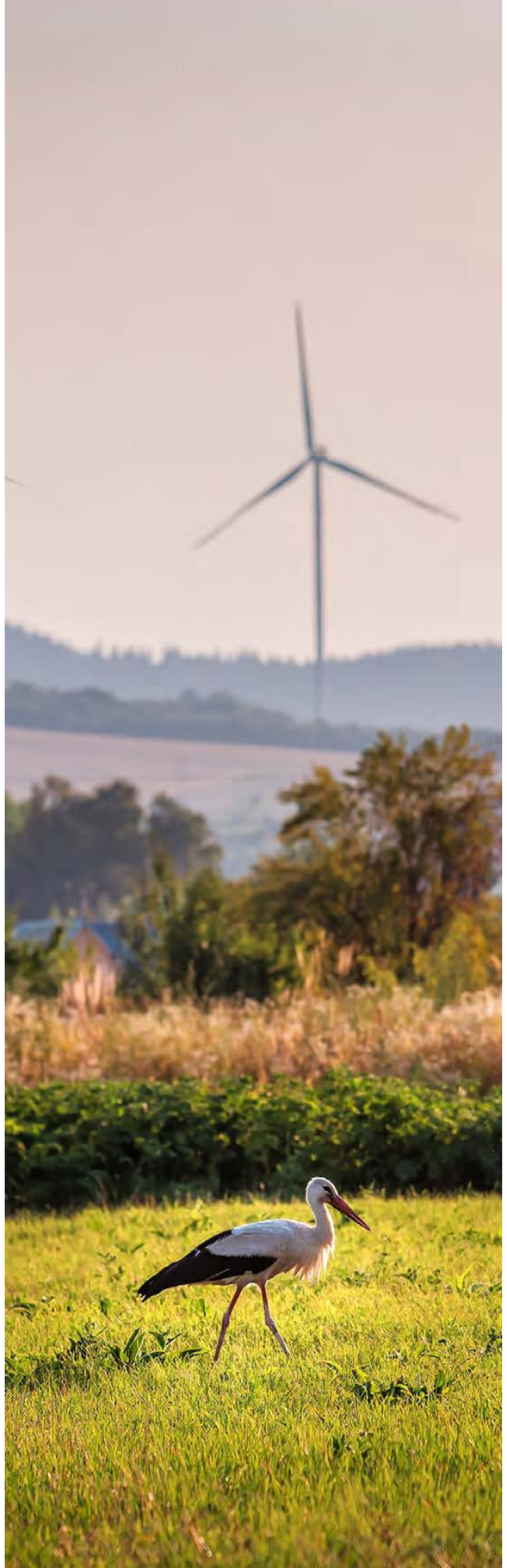
Greece faces an infringement case[16] for its **Renewable Spatial Plan adopted in 2008, which lacks an Appropriate Assessment for Natura 2000 sites**. The revision process for a new plan was initiated in 2018, yet the latter has not even been published for consultation, which in practice delays Greece's alignment with the NRR. Existing wildlife sensitivity data are used ad hoc by individual agencies but have not been integrated into RAA planning.

In Poland, while the tender exercise mentioned above reflects good planning principles for onshore renewables, offshore planning lags behind. The 2021 Maritime Spatial Plan predates RED III and omits updated sensitivity mapping, relying on outdated data that do not incorporate OTOP/BirdLife maps. Many planned offshore wind farms are sited on shoals[17] of high importance for birds, posing a major biodiversity risk.

Portugal's positive offshore example contrasts sharply with its onshore planning, where the planning of developments is not informed by sensitivity mapping and new projects are approved without adequate environmental assessment.

In Spain, problems persist with **inconsistent and sometimes incorrect use of sensitivity maps by developers and regulators**. The different approaches between national and regional authorities, and between the official maps and those generated by SEO/BirdLife, can also generate differences of opinion, objections and conflicts over the suitability of particular sites or areas for renewable development.

[16] Reasoned opinions (INFR(2014)4073) – Nature protection: Commission calls on GREECE to comply with EU law when planning wind farm projects
[17] Shallow areas of water, often with sand or rocky formations near the surface



White Stork and turbines. © Shutterstock

In Czechia, a bird sensitivity map was developed by the Czech Society for Ornithology (Czech BirdLife Partner) for onshore wind in 2024, but it was withheld by the government from public access until mid-2025.

This approach limits constructive engagement and risks mistrust. BirdLife Europe recommends that all sensitivity maps be made digital and publicly available to facilitate the engagement of other stakeholders in the process.

Sensitivity maps play a key role in ensuring that renewable energy infrastructure is sited in areas with the least negative impact on biodiversity and nature. **They should be applied not only within Renewable Acceleration Areas but everywhere, in line with the first step of the mitigation hierarchy: avoidance**.[18]

These differing approaches underline both the progress and the gaps in ensuring that RAAs are planned with comprehensive and effective safeguards for birds.

Even strong offshore performers, such as Denmark, show gaps in planning and implementing land-based renewable energy projects. In Denmark, solar and wind projects continue to be placed in high-value nature areas, including certain types of protected natural areas[19] and Important Bird and Biodiversity Areas (IBAs), without sufficient strategic planning or cumulative impact assessment. The NECP lacks robust ecological criteria for RAAs and there is no recent update available about its alignment with the NRPs.

[18] Birdlife Europe – Sensitivity Mapping: Accelerating offshore wind expansion and protecting nature – YouTube video
[19] §3 in the Nature Conservation Act protects certain types of natural areas, regardless of whether they are formally designated. These protected areas include lakes, bogs, meadows, salt marshes, fens, heathlands, and watercourses (streams and rivers).

Turbines in Essex UK. © Shutterstock

Table 1: Bird sensitivity maps in EU Member States:

	Onshore wind			Offshore wind		
	Sensitivity map		Year of publication	Sensitivity map		Year of publication
AT	☑		2025			
BE	☑	🦇	2015-2025	☑		2023
BG	☑		2013	☒		
HR	☑	🦇	2024	☒		
CY	☒			☒		
CZ	☑		2025			
DK	☒			☑		2025
EE	☑		2022	☑		2019
FI	☒			☑		2025
FR	☑	🦇	2025	☑	🦇	2025
DE	☑	⚠	2013-2023	☑	🐬	2023
EL	☑		2010-2022	☑		2022
HU	☑		2024			
IE	☑		2015	☒		
IT	☑		2025	☑		2025
LV		⚠		☒		
LT	☑	🦇	2020	☒		
LU	☒					
MT	☒			☑	🦇	2024
NL	☑		2021	☑		2021
PL	☑		2025	☑		2025
PT	☒			☑	🐬	2023
RO	☑	⚠	2023		⚠	
SK	☑	🦇	2025			
SI	☑		2012-2023	☒		
ES	☑		2023	☑		2024
SE	☒			☒		

KEY

- ☒ Bird sensitivity map not developed
- ☑ Bird sensitivity map developed
- 🦇 The sensitivity map includes bats
- 🐬 The sensitivity map includes marine mammals
- ⚠ Sensitivity map developed, but not covering all regions, limited scope, or not publicly available
- Developed by or in partnership with a BirdLife Partner
- Not relevant

Bird sensitivity maps for solar energy and electricity grids are also available in some MSs. Detailed descriptions of the sensitivity maps, with direct links to the studies and maps, can be found in the Annexe.

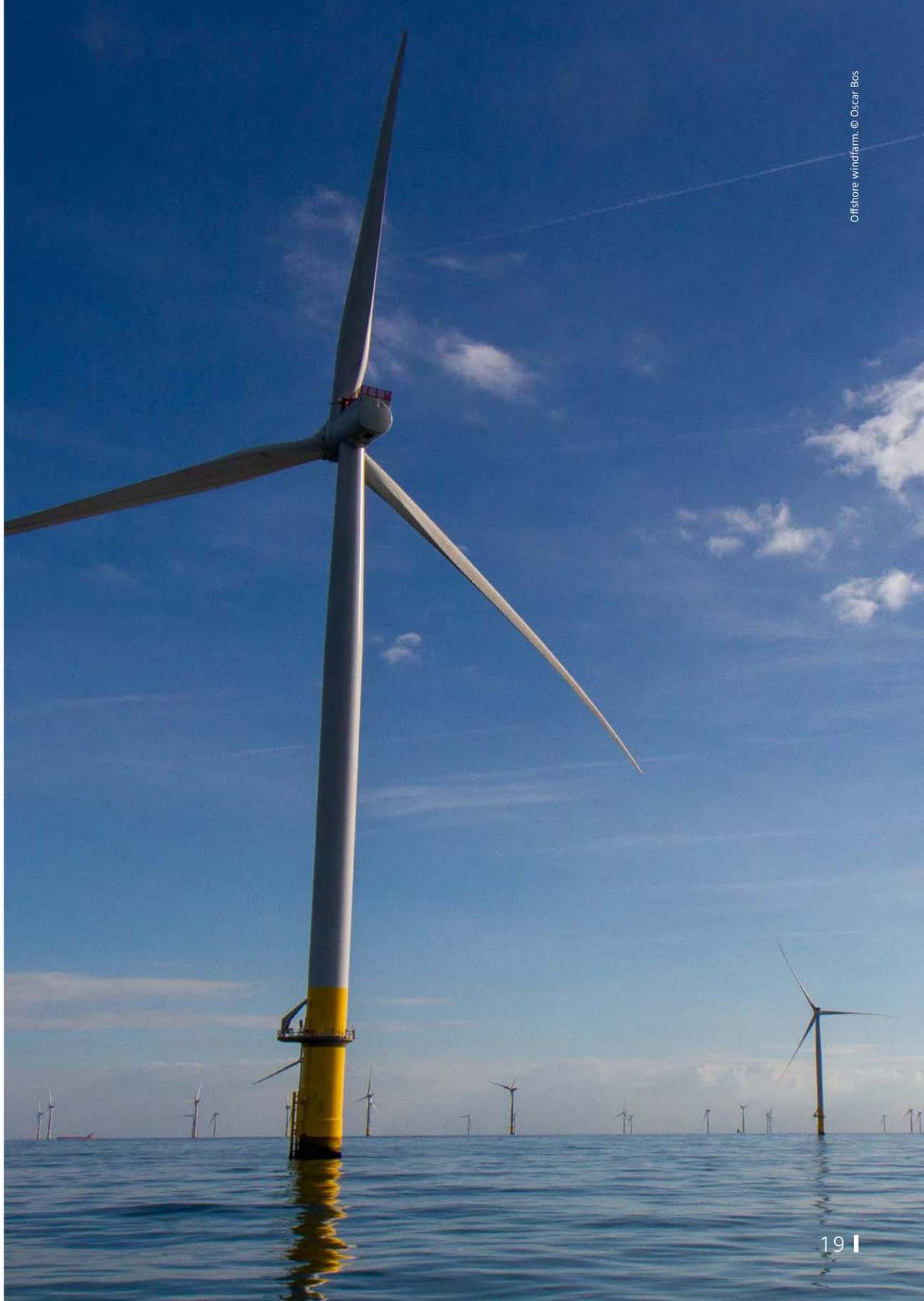
2. AUCTIONS OF NEW RENEWABLE ENERGY CAPACITY

The current focus on selecting projects and providing permissions solely based on monetary aspects can encourage a race to the bottom on environmental and social standards. For this reason, the recently adopted EU requirement for MSs to apply non-price criteria (NPCs) from December 2025 to at least 30% of auction volumes or a minimum of 6 GW annually is a step in the right direction.[20] **Embedding ecological NPCs into auction systems is a powerful way to align renewable deployment with nature protection and restoration goals**. Where they are applied well, these criteria shift the focus away from lowest-cost bidding alone, encouraging projects that minimise ecological impacts, deliver net biodiversity gain, and contribute to long-term ecosystem resilience.

> The Netherlands demonstrates the strongest integration of ecological considerations: in 2024, tenders for two offshore wind sites (Alpha and Beta, each 2 GW[21]) **weighted NPCs heavily, with Site Alpha assigning 45% of the score to ecological measures**. Bidders were required to propose concrete actions to minimise impacts on birds and marine mammals, restore underwater ecosystems, and fund scientific research. Importantly, they had to publish summaries of these measures and results, ensuring transparency and shared learning. France applies ecological NPCs within the 30% weighting allowed under State aid rules, showing how even with a limited share, environmental performance can be incentivised.

Germany's auctions for ground-mounted photovoltaic (PV) projects that receive public funding require developers to meet three of five ecological criteria under the Renewable Energies Act. While this ensures some level of biodiversity consideration, **the criteria pool includes measures already standard in many projects, allowing developers to opt for the least ambitious actions with limited additional benefit**. We recommend that mandatory ecological criteria be required from all types of projects, not only the ones receiving public funding, and the pool of criteria should encourage ambitious measures with the aim of achieving net-positive benefits to biodiversity and ecosystems.

[20] Article 26(7) of Regulation (EU) 2024/1735 on establishing a framework of measures for strengthening Europe's net-zero technology manufacturing ecosystem
[21] Dutch Ministry of Economic Affairs and Climate Policy – Ministerial Order for granting the permit for IJmuiden Ver Wind Farm Site Alpha



Offshore windfarm. © Oscar Bos

Solar Panels. © Shutterstock

Offshore, so far, half of Germany's planned capacity is auctioned using non-price criteria promoting the use of low-noise foundations. Other ecological criteria are not included. In the other half of the auctioned areas, NPCs are absent, leaving monetary bids as the only determining factor. In general, **winning developers must pay 5 per cent of their negative bid** (a system in which developers pay the government for the right to build and operate a wind farm) into a marine conservation fund. According to the current RED III implementation draft, the fixed proportion of half the areas auctioned with NPCs will be eliminated.

Denmark also applies NPC in certain offshore tenders, such as Hesselø and the (paused) Bornholm Energy Island, including environmental screening and coexistence measures for birds and fisheries. In 2024, Denmark used non-price prequalification requirements for tendering 6 GW of offshore wind capacity. These requirements focused on sustainability (Life Cycle Assessment, Environmental Monitoring and Nature Inclusive Design) and social responsibility. Unfortunately, no bids were received, and the auction model had to be repeated in 2025. **Sensitivity maps are used to avoid high-conflict areas pre-auction**, and the country engages in regional cooperation through the Esbjerg Declaration to coordinate offshore wind auctions with neighbours.

Nonetheless, as with Germany, these criteria remain limited in scope and weighting, particularly for onshore projects, where the lowest cost tends to dominate. Unfortunately, **in Denmark, there is no two-stage auction system where only low-impact projects qualify in the first stage (environmental screening), and quality criteria are weighted in the second stage**.

Weak practice remains common in Greece, Portugal, Croatia, and Poland.

In Greece, auctions for new onshore wind projects are not provided for by the legislation, whilst offshore wind auctions under Law 4964/2022 are awarded based solely on the criterion of lowest price, without making use of NPCs, or containing any other biodiversity safeguards. Portugal's solar[22], hydrogen, and hybrid wind-solar auctions are likewise financially driven, with no ecological or other non-price criteria, and projects are sometimes sited in high-sensitivity areas that should be avoided entirely. In Croatia, auctions were launched in 2020, with modest uptake until solar interest rose in 2024, but NPC remain absent and wind uptake is minimal.

In Poland, renewable energy auctions[23] are divided into "technology baskets," but recent rounds have been dominated by wind and solar. **Offshore wind auctions are still being prepared**[24], with the first scheduled for December 2025, **but criteria have not been published and are expected to be price-only**, as the auctions aim to select projects with the most favourable energy sales prices under the 25-year Contracts for Difference support system. Earlier offshore capacity (6 GW) was allocated without auctions, further limiting opportunities to integrate biodiversity safeguards.

Spanish renewable capacity auctions for onshore installations in the early years of the decade did not include non-price criteria. However, following consultations on revision of the auction regimes and approved legislation for the offshore wind sector, **future auctions will be able to include non-price criteria**, including biodiversity and wider environmental considerations, in line with EU requirements.

[22] European Commission – Tenders for Solar PV systems
[23] Polish Energy Regulatory Office – Renewable Energy Auctions
[24] Polish Energy Regulatory Office – News about the first auction for offshore wind farms

3. ENVIRONMENTAL IMPACT ASSESSMENT AT STRATEGIC PLANNING AND SPECIFIC PROJECT LEVEL

Environmental Impact Assessments (EIAs) and Strategic Environmental Assessments (SEAs) are central to ensuring renewable energy deployment supports, rather than undermines, biodiversity protection and restoration. Impact assessments can play a key role in aligning renewable development and nature restoration. **EIAs and SEAs not only assess the risks to biodiversity, but at the same time, they can assess the opportunities to recover and restore nature**.

To help speed up the EIA and SEA procedures, the European Commission has issued detailed guidance[25] on how to simplify the process effectively, and has highlighted examples of good practice.[26] According to 15c of RED, the Renewable Acceleration Areas must be subject to a SEA and, where applicable, to an appropriate assessment under the Habitats Directive. In contrast to the Emergency Regulation, RED III does not allow renewable projects to be exempted from the species protection assessments under Article 12(1) of the Habitat Directive and under Article 5 of the Birds Directive, and foresees them only for grid and storage projects in dedicated areas.[27]

Article 16a of **RED III further sets strict time limits for permit-granting within RAAs, exempting many projects from dedicated EIAs** and narrowing the scope for species and habitat assessments, which raises concerns about the robustness of bird and biodiversity safeguards. Article 16b of RED sets permitting deadlines for renewable energy outside of RAAs, during which **all relevant environmental assessments for a renewable project have to be rolled into one single procedure**, and unfortunately, the killing or disturbance of species protected under the Birds and Habitats Directives will not be considered "*deliberate*" where a project has followed all necessary mitigation measures.[28] The mitigation measures, however, should ensure compliance with environmental objectives and that a good environmental status (GES) or good environmental potential can be achieved, in the case of marine and inland water objectives.

> Across the EU, the quality, transparency, and consistency of these assessments vary widely. Good practice is evident where EIAs and SEAs integrate biodiversity considerations early, assess cumulative impacts, and make findings publicly accessible. Denmark has made progress in this regard, with **EIAs increasingly accounting for cumulative effects on bird habitats, publicly available reports, and inclusion of monitoring data on dedicated platforms. Some projects are adapted during planning to avoid sensitive areas, and compensation measures such as habitat restoration have been embedded in approvals**.

> Germany's digital portal for onshore EIA documentation is another step forward, providing open access to deadlines and permitting documents. In certain German federal states, SEAs incorporate detailed species data and specific protection recommendations for project approvals.

[25] European Commission Guidance on Environmental Impact Assessments
[26] Commission Staff Working Document – Fitness check of the EU Nature Legislation (Birds and Habitats Directives)
[27] European Commission – Report from the Commission to the Council on the review of Council Regulation (EU) 2022/2577 of 22 December 2022 laying down a framework to accelerate the deployment of renewable energy
[28] Article 16b(2) of Directive (EU) 2023/2413

Griffon Vulture. © Lars Soerink

Common Cranes. © Shutterstock

For all wind projects, the reduction of environmental assessments includes EIA, FFH-assessments and species protection assessments and thus, exceeds the RED III regulation. Offshore, central pre-assessments will be largely reduced according to the current legal draft. Due to the widespread designation of RAAs, even in highly sensitive areas, mitigation measures cannot mitigate severe ecological impacts and ensure reaching GES. Especially for habitat loss, there are no effective mitigation measures existing. Hence, the current SEA for RAAs states that an exemption from species protection legislation is required. At least around 22 GW of offshore capacity designated as RAAs via the Spatial Development Programme (SDP) will not undergo an EIA according to the current RED III implementation draft.

However, even in countries with stronger policy frameworks, weaknesses persist. In Denmark, **EIA annexes sometimes require freedom-of-information requests[29] to access**, undermining transparency, and **nature compensation measures have been delayed by up to two years post-construction**. In Germany, the accessibility of EIA documents depends on individual authorities uploading them, leading to gaps, while **SEA quality varies considerably between federal states**. Offshore, SEAs for MSP and the Spatial Development Programme have failed to assess cross-sectoral cumulative impacts, and biodiversity protection has not been prioritised.

Transparency and independence are recurring challenges. In Greece, post-construction monitoring is conducted by researchers directly funded by project developers, compromising objectivity. **Reports are not published online but must be requested from scattered agencies**, creating barriers to public scrutiny. Such an approach **limits the ability to detect and address unforeseen impacts**.

Low-quality or bypassed assessments remain a major problem in several countries. **In Croatia, developers avoid SEAs by splitting large projects into smaller ones below the assessment threshold**, then expanding later. Proposed amendments to the EIA regulation include a "*preliminary check*" procedure that could exempt more projects from assessment. This comes alongside ongoing infringement procedures[30] for approving wind farms (such as Vrataruša II, Senj, and Krš Pađane) without ensuring compliance with the Habitats Directive or assessing cumulative impacts. In Romania, **EIAs are often prepared by private firms that disregard methodological standards, and environmental agencies lack the expertise to interpret them**. Combined with political pressure to approve projects, this has led to large wind and solar developments being sited within or near Natura 2000 sites.

Timeframes and public participation also affect quality. **In Portugal, SEAs for onshore RAAs are expected to be completed in just three months**, which is too short for a comprehensive national-level assessment. BirdLife recommends early, transparent publication of SEA results to allow meaningful public and civil society input.

In Ireland, the absence of national guidance on EIA leaves developers relying on UK or EU standards, creating inconsistency and uncertainty. A promised national framework and an open database remain undelivered, hampering evidence-based decision-making and compliance monitoring.

- The renewable energy sector often highlights that **EIA procedures vary across all EU MSs, even on the regional level**. This not only creates inconsistency but discourages developers from investing in other EU MSs and expanding their portfolio. While considering local differences in the environment and biodiversity, a certain level of harmonisation of procedures would streamline and accelerate the process.

[29] A freedom of information request allows the public to access recorded information held by public authorities.
[30] BIOM – Croatia continues violating EU laws in the case of wind farms

Egyptian Vulture on powerline. © Fercast

4. REGULATORY AND PERMITTING REGIMES

Across the EU, **recent reforms to regulatory and permitting systems for renewable energy projects have aimed to accelerate deployment, but in many cases, this has been at the expense of biodiversity safeguards and public oversight**. The expiry of the 2022 Emergency Regulation[31] in June 2025, combined with the delayed implementation of RED III in most MSs, creates legal uncertainty for developers and weakening environmental protection during this critical expansion phase.

Examples of stronger practice show that efficiency and high environmental standards can go hand in hand. In Germany, for offshore wind projects the pre-RED III and emergency regulation system combined early auctions, centralised pre-assessments, and clearly defined planning areas, giving developers confidence while embedding robust environmental safeguards. Legally enforceable standards such as the StUK survey framework[32], the dual noise protection criterion[33], and the 2K sediment warming threshold[34] provided clear, monitorable mitigation measures. Unfortunately, recent changes rolled back these good practices.

In Germany, a 2023 Federal Administrative Court ruling[35] confirmed that post-permitting corrective action is legally possible if environmental conditions change significantly, which is an important precedent for adaptive management. Poland's recent tender for mapping potential RAAs[36] also integrates environmental safeguards from the outset, using bird sensitivity mapping for wind and fish conservation status for hydropower, with input from OTOP, the Polish BirdLife Partner. **In Croatia, artificial structures benefit from simplified permitting for solar power installations**, while additional structures still require environmental assessment, enabling cumulative impacts to be considered. This approach accelerates permitting while considering the impact on nature and biodiversity.

However, recent trends are moving in the opposite direction in many jurisdictions. **In Germany, changes under the Emergency Regulation have exempted wind projects in designated areas from EIA and species protection assessments**, removing guaranteed public participation. Mitigation measures in acceleration areas are vague or recycled from existing principles, with key decisions made bilaterally between authorities and developers, bypassing public scrutiny. **Onshore post-construction monitoring and enforcement are inconsistent or absent**, with at least one case where records of compensation measures for the original repowering project had been lost and were thus not known by the responsible authorities.

A statement by NABU (German BirdLife Partner), other German NGOs and offshore wind operators[37] in 2024 highlighted that there is no benefit in cutting environmental standards from the offshore approval procedure. On the contrary, **the efforts to speed up the environmental assessments reduce planning certainty due to unresolved conflicts with species conservation**.

[31] Council Regulation (EU) 2022/1854 of 6 October 2022 on an emergency intervention to address high energy prices
[32] StUK – Standard survey concept providing a survey framework for different environmental goods during planning, construction and operational period.
[33] Limits the permitted noise emissions to single event levels (sound per second) of 160 decibels and peak sound levels of 190 decibels.
[34] Restricts the allowed warming of sediment (upper 20 cm of seafloor) around cable infrastructure to 2 °C.
[35] Bundesverwaltungsgericht – Judgment of 19.12.2023 – BVerwG 7 C 4.22
[36] Polish Ministry of Climate and Environment – Development of mapping for the introduction of renewable energy on Polish territory to determine the availability of energy from renewable sources and the potential for renewable energy production in individual types of RES technologies, as well as the associated infrastructure.
[37] Proposals for environmentally friendly expansion of offshore wind energy – Maintain environmental protection standards in the approval process

Cranes. © Shutterstock

White Stork and turbine. © Esteban Sanchez

In Greece, projects have been approved on the basis of flawed EIAs, sometimes omitting Appropriate Assessments near Natura 2000 sites in breach of EU and national law. Post-construction monitoring is weak, with mitigation measures ignored or poorly implemented, and some developers submitting unreliable operational data.

In Poland, despite promising early-stage safeguards for mapping, **deregulation elsewhere in the system allows municipal authorities to waive EIA requirements for projects deemed to have only "potential" impacts**. Large photovoltaic plants and wind projects under 100 MW can bypass full assessment[38], leaving significant biodiversity risks unaddressed.

- **While OTOP has stepped in with voluntary bird monitoring guidelines[39]** to help fill this regulatory gap, the lack of mandatory legal standards leaves environmental oversight weak. These efforts are valuable but cannot substitute for binding, government-enforced safeguards.

[38] GFP_Legal's analysis – Construction requirements for renewable energy installations in Poland – key aspects and legal regulations #6
[39] OTOP – Bird Monitoring on Onshore Wind Farms: A Methodological Guide

Portugal has simplified its permitting process for solar PV on artificial structures, supporting small-scale and low-impact installations, which are generally exempt from renewable impact assessments, except when located on artificial water bodies or within protected heritage zones.

BirdLife Europe supports smaller installations in low- to medium-sensitivity areas to be promoted and incentivised, accelerating nature-friendly renewable development.

However, new regulations in Portugal now exempt solar projects under 100 ha outside sensitive areas from EIA, and allow wind farm repowering without environmental authority input unless within protected zones[40]. Tacit approval rules and shortened consultation periods limit scrutiny, while many high-value areas remain unprotected, meaning cumulative impacts are often overlooked.

In Denmark, there are strong examples where EIAs and monitoring have led to project relocation or redesign.

Yet the rollout of RAAs has created loopholes, as projects within them can avoid public consultation and species-specific assessments, with documented cases of municipalities failing to enforce permit conditions such as bird mortality monitoring. Implementation standards vary between municipalities, reducing consistency and public trust.

Post-construction monitoring is essential to identify unforeseen environmental impacts. Where such impacts occur (through poor siting, weak assessment or other causes) authorities must act, whether by modifying operations, relocating infrastructure, or in severe cases, suspending activity.

In France, the Montpellier court ordered the four-month suspension of the Aumelas wind farm (Hérault) after it was found responsible for the deaths of 160 protected birds, including lesser kestrels. The court also imposed fines and suspended prison sentences on the operators.[41]

This illustrates why permitting procedures must fully account for nature and biodiversity.

[40] Art.62(6) of Decree-Law no. 99/2024, of 3 December
[41] Le Monde – Pour protéger différentes espèces d'oiseaux, la justice ordonne la suspension d'un parc éolien héraultais exploité par dix sociétés, dont EDF Renouvelables – April 2025

5. OVERRIDING PUBLIC INTEREST IN PERMITTING PROCESSES

Article 16f of RED III creates a presumption that renewable energy projects, including grid and storage infrastructure, serve an overriding public interest (IROPI) until climate neutrality is achieved. This allows for simplified permitting procedures under EU environmental law. **While intended to accelerate deployment, the provision carries significant risks for biodiversity protection if applied without a strict, case-by-case assessment**. The presumption should never remove the need for robust environmental evaluation, avoidance of sensitive areas, and full consideration of alternatives.

Some national approaches show that cautious, targeted use of IROPI can reduce biodiversity risks.

Denmark applies IROPI rarely and under strict conditions, typically only after a negative outcome in an assessment where no alternatives exist.[42] **The Danish Energy Agency generally requires project redesign or cancellation for proposals affecting Natura 2000 sites, and compensation is mandated when IROPI is applied**. Civil society oversight is strong, with NGOs such as DOF and WWF Denmark monitoring cases closely. Strategic renewable zone planning also helps minimise IROPI reliance by identifying suitable areas early.

Notable cases include a 2022 rejection of a wind project in West Jutland due to impacts on great crested newt and sand lizard habitats, and authorities opted not to apply IROPI because alternatives were available. Similarly, in 2023, DOF's challenge to a wind project near Montagu's harrier breeding sites led to a scaled-down design.

[42] DEA – Guidance on Natura 2000 and habitat assessments

Juvenile Bonelli's Eagle. © Svitlana Tkach

Turbines in Poland.© Shutterstock

Croatia's Environmental Protection Act also **limits IROPI to cases involving human health, safety, or primary environmental benefits, closely matching the intended scope under EU law**.

However, **poor transparency in monitoring compliance with mitigation measures set out in EIAs and operating licences weakens the system**. There have been instances where mitigation measures set in EIAs and operating licences were not implemented, with no follow-up or sanctions, reducing the credibility of the restrictions.

In the Netherlands, North Sea wind planning integrates IROPI into site decisions under the Offshore Wind Energy Act. Natura 2000 permitting and derogations are embedded in the process, with **IROPI invoked only when no alternatives exist and projects serve overriding public interests**. This ensures ecological assessments remain central, while still allowing critical energy projects to proceed.

Germany's Renewable Energy Sources Act[43] incorporates IROPI but still requires a balancing of protected goods, aligning with the principle that exemptions must be strictly assessed.

In practice, however, IROPI has been used to bypass safeguards, particularly in offshore wind planning. The Federal Maritime and Hydrographic Agency has indicated that **exemptions from species protection obligations are "*sufficiently likely*" even where SEAs predict significant cumulative habitat loss for sensitive seabirds** such as guillemots.[44] This approach fails to consider national responsibility for local populations and undermines the purpose of cumulative impact assessments.

Elsewhere, the broad or blanket application of IROPI is undermining environmental law. **In Poland, virtually all renewable projects, including those in protected areas, are treated as serving the overriding public interest** under the Renewable Energy Sources Act.[45] This approach exceeds RED III's flexibility and bypasses the requirement for case-by-case scrutiny. In one notable case, **a hydropower plant on the Dunajec river received approval despite official recognition that it would have significant impacts on a Natura 2000 site**. The decision relied on the direct application of IROPI[46] and was issued without assessing site-specific impacts or involving the public.

Even in countries with generally careful use, problematic cases emerge. **In Denmark, a recent solar installation near a biodiverse meadow was approved using IROPI without considering alternatives**, bypassing EU safeguards. This illustrates that strong policy frameworks still require consistent enforcement to maintain integrity.

[43] Law on the Expansion of Renewable Energies (Renewable Energy Sources Act – EEG 2023) – §2 Special Importance of Renewable Energies
[44] Disturbance of 90,000 individuals, while considering the national guillemot stock with the overall East-Atlantic population.
[45] Journal of Laws 2015, item 478 – Art. 3b of the Renewable Energy Sources Act
[46] In line with Journal of Laws 2024, item 1478 – Art. 34 of the Nature Conservation Act

6. ESTABLISHING PUBLIC DATA PLATFORMS

Solar Panels. © Shutterstock

Transparent, accessible, and well-structured public data platforms are essential for effective environmental assessment, informed permitting, and meaningful public participation in renewable energy planning. While some MSs have made progress in building such systems, coverage across the EU remains patchy,[47] data are often outdated or incomplete, and biodiversity information is scattered across multiple agencies with limited interoperability. Without real-time updates and unified formats, platforms cannot fully support cumulative impact assessment or ensure accountability in the rollout of RAAs and NRPs.

Good practice examples show the value of integrating environmental and permitting information into open-access, user-friendly platforms.

Denmark provides one of the more advanced models: the Danish Energy Agency maintains several public tools (Energikortet, Wind Turbine Register, Green Pool) that are regularly updated and widely used by municipalities, NGOs, and citizens to track renewable energy installations, grid infrastructure, and compensation areas. **Biodiversity data is accessible via Arealinformation, which includes Natura 2000 sites, §3 protected areas,[48] and Annexe IV species habitats, allowing users to overlay environmental and project data for scrutiny**.

However, Denmark lacks a single centralised platform combining EIA results, permit rejections, and follow-up monitoring data. Species data, such as on birds and bats, are available; however, data are not updated in real time or integrated into official renewable energy planning tools. DOF's bird maps,[49] for instance, are hosted separately and often overlooked in screening.

Portugal's SILiAmb platform, hosted by the Portuguese Environmental Agency, centralises EIA documentation and project statuses, and the Participa platform allows NGOs and citizens to submit formal feedback on projects. These tools support transparency; however, with each government entity having its own webGIS platform[50] fragmentation is a huge barrier: **biodiversity data are dispersed between agencies, academia, and NGOs, most webGIS platforms lack recent updates, monitoring reports are not published, and public consultations are not proactively communicated**.

Greece's Electronic Environmental Registry is an important transparency tool for major projects (permitting category A), **making EIA studies publicly accessible throughout the permitting process**. **Until recently, category B projects (those with smaller environmental effects) were not included**, despite legal provisions requiring it. This loophole allowed developers to split large projects into smaller ones to avoid higher environmental standards, public consultation, and publication on the platform. The authorities have announced that by September 2025, the platform will be updated to require the uploading of EIAs for category B projects as well, in order to address this gap.

[47] At the EU level, the GreenData4All initiative aims to improve the sharing of environmental geospatial data and public access to environmental information, but without a binding framework requiring MSs to integrate and use it, progress will remain uneven.
[48] §3 in the Nature Conservation Act protects certain types of natural areas, regardless of whether they are formally designated. These protected areas include lakes, bogs, meadows, salt marshes, fens, heathlands, and watercourses (streams and rivers).
[49] DOFbasen – https://dofbasen.dk/

[50] For example: https://geocatalogo.icnf.pt/websig/

In Croatia, the Bioportal managed by the Institute for Environmental and Nature Protection **provides public access to biodiversity, geodiversity, and landscape diversity data, including sensitivity maps**. The Ministry's websites are publishing information on renewable installations, EIAs, SEAs, and permitting outcomes, but it is disorganised, inconsistent, and often out of date.

BIOM (the Croatian BirdLife Partner) has recommended creating a single, comprehensive, up-to-date platform with clear guidelines for use, online commenting with official responses, archived procedures, and digital participation monitoring.

Poland's General Directorate of Environmental Protection hosts a database for environmental decisions[51], but **the amount of published data is minimal, and incompatibility between IT systems used by different ministries prevents efficient coordination**.

Italy's national permitting platform, created through legislative and ministerial decrees, was intended to unify processes, **but later simplification laws have fractured the system** by separating environmental and landscape assessments. As a result, the goal of centralising information has been undermined[52].

Germany's approach remains highly decentralised, with each federal state (and in some cases even individual regions) **operating separate data platforms[53], using different formats and access procedures**. In some areas, data can be downloaded directly, while in others, formal applications are required. Several regions have not updated biodiversity datasets, such as nesting site records, and federal offshore wind monitoring data is only available by request from the Federal Maritime and Hydrographic Agency, with no public platform.

At the other end of the spectrum, **Ireland lacks any online platform for offshore wind developers to publish EIA or SEA data**, preventing researchers and policymakers from accessing crucial information for marine planning. **The government has indicated a willingness to create such a database** through its draft Marine Planning Policy Statement, but no system is currently operational.

Environmental data should be managed through harmonised national data platforms accessible and interoperable at the EU level. A federated system – where data remains with national authorities or developers and is ensured to be findable and reusable via common standards, formats, and protocols – offers a practical solution.

[51] http://bazaoos.gdos.gov.pl/web/guest/home
[52] Source: Solar Power Europe – EU Renewable Energy Permitting State of Play – July 2025
[53] As an example, here you can find the online data platform of the „Mecklenburg-Vorpommern" federal state (https://www.geoportal-mv.de/gaia/gaia.php) and for Hamburg (https://geoportal-hamburg.de/)

Eurasian Skylark. © Colum Clarke

7. IMPROVEMENTS IN THE PERFORMANCE OF PUBLIC AUTHORITIES

Efficient, well-resourced public authorities are essential to accelerate renewable energy permitting while safeguarding biodiversity. However, across most MSs, delays in renewable deployment are less the result of environmental safeguards than of insufficient administrative capacity, poor coordination, political disagreements and slow implementation of EU law. The European Commission's recent infringement procedures against 26 MSs for failing to transpose RED III underscore the systemic shortcomings.

Coordination between agencies and levels of government remains a major weakness. In Germany, the Federal Maritime and Hydrographic Agency will, following the RED III implementation draft, manage offshore wind permitting with limited transparency, engaging primarily with developers and excluding NGOs. Preliminary sensitivity maps developed by the Federal Agency for Nature Conservation[54] are not being applied in planning, and there is no integration so far between the designation of RAA and NRP. Improving federal, state, and local coordination, with clear national guidelines and roadmaps that incorporate regional input, is essential to address these gaps.

In Greece, licensing often proceeds despite objections from competent environmental authorities, and without adequate assessments. The absence of a formal dispute resolution **mechanism means conflicts are pushed into lengthy court proceedings, creating uncertainty for developers and delaying projects for one to two years**. Authorities are under-resourced, and NGOs are rarely involved in any official panel or group which monitors the implementation of renewable projects.

Poland faces a similar capacity challenge. Due to sufficient delays in RED III transposition, authorities responsible for RAAs at the voivodeship and regional level are left with a very limited time frame in order to implement before the RED III deadline. The country has also missed deadlines for finalising its NECP. Civil society participation is inconsistent, with no structured process for consultation, undermining transparency and long-term planning.

[54] Sensitivity map as part of the NaMaRo project

Staff shortages in institutions responsible for issuing environmental permits are one of the main reasons for the lengthy processes. In Poland, this was confirmed by an audit of civil service employment (including the Regional Directorate for Environmental Protection) conducted by the Supreme Audit Office in 2023. It pointed to the growing number of tasks combined with a simultaneous reduction in personnel resources. Low wages and high employee turnover undermine employment stability and hinder the development of competent teams. Experienced employees are increasingly leaving the public administration, which lowers the level of professionalism[55].

In Croatia, NGOs participate in government and ministry working groups, but their recommendations are often dismissed without explanation. Coordination has worsened following the governmental elections in mid-2024, when responsibility for renewables was split between two ministries (economy, and environment and green transition), slowing decision-making and increasing fragmentation.

More centralised, well-coordinated systems show the benefits of strong institutional design.

Denmark's Danish Energy Agency (DEA) acts as a single point of contact, integrating advisory, permitting, and data management. It offers guidance on EIA, Natura 2000, and species protection, and supports stakeholders through digital tools, webinars, and cross-ministerial coordination, especially in renewable area designation. **NGO engagement is embedded in working groups and consultations**. However, municipal capacity is uneven: many lack ecological expertise, fail to apply available data consistently, and neglect cumulative impact assessments. Expert advice is sometimes sidelined in fast-tracked permits, and appeal processes can be slow.

Ireland's Marine Spatial Planning Advisory Group provides an example of early, inclusive stakeholder engagement. **Bringing together NGOs such as BirdWatch Ireland with government representatives and industry stakeholders**, the forum facilitates two-way communication – government updates are shared before plans are finalised, and stakeholders can raise concerns or provide input, strengthening transparency and responsiveness.

[55] *Supreme audit office information from 2023*: https://www.nik.gov.pl/aktualnosci/administracja/sluzba-cywilna-i-sluzba-zagraniczna.html

White Stork nesting on grid. © Ayse Deniz Firtina

Solar Panels. © Leonid Sorokin

8. INFORMING AND INVOLVING AFFECTED COMMUNITIES AND WIDER CIVIL SOCIETY

Early, meaningful, and transparent public participation remains one of the most reliable ways to secure both social acceptance for renewable energy projects and alignment with biodiversity and restoration goals. This has been recognised by the recent RED, which envisages multiple measures that can be taken to that end, such as promoting the participation of local communities in renewable energy projects[56], repowering existing projects[57], and the inclusion of renewable energy in joint offshore renewable energy projects[58], and others. In addition, Article 15d(1) of the RED places a distinct obligation on the Member States to carry out public consultations in accordance with Article 6 of the SEA Directive with the "*public affected or likely to be affected*" by the RAAs. The obligation to carry out public consultations in the RAA designation stage also stems from Articles 6 and 7 of the Aarhus Convention.

Yet across MSs, engagement often occurs too late in the process – or not at all - leaving affected communities with little influence over project siting and design. This erodes trust, fuels conflict, and increases the risk of legal challenges that slow down deployment.

A good example comes from Slovenia, where the National Spatial Plan was shaped through a highly participatory Strategic Environmental Assessment (SEA). With the active involvement of DOPPS (Slovenian BirdLife Partner), the government was able to integrate environmental priorities and stakeholder perspectives into territorial planning. The open and inclusive approach helped to reduce legal disputes, strengthen legitimacy, and achieve better environmental results.

Timeliness and accessibility of engagement remain major barriers. **In Greece, public involvement typically begins only when an EIA for a specific project is submitted to the Electronic Environmental Registry**. While an open consultation period of 45–60 days is offered, **there is no clear administrative process for evaluating public comments or explaining how feedback is incorporated**. Croatia faces similar shortcomings, **with citizens often unaware of projects until SEA consultations are published, severely limiting their ability to shape decisions**. Consultations are primarily run online via a central portal, with occasional in-person meetings, but political decisions sometimes cut the legally required 30-day minimum period, further undermining participation. Political distrust and low institutional responsiveness contribute to broader disengagement.

[56] Recital 20 of Directive (EU) 2023/2413
[57] Recital 34 of Directive (EU) 2023/2413
[58] Article 1(4)(b) of Directive (EU) 2023/2413

Power lines. © Shutterstock

Weak public consultation is particularly problematic in Romania, where legal provisions requiring developers to invite stakeholders to public hearings are rarely applied in practice. **Information is often shared only upon request, and in some cases, communities learn of projects only after approvals have been granted**. Slovakia and Romania have both seen complaints from civil society over limited access to environmental information and insufficient consultation periods, restricting the ability of communities to respond effectively[59].

Shortened or token consultations are also evident elsewhere. **In Portugal, a September 2024 consultation on parts of the REDIII transposition allowed only ten days for public feedback, making meaningful engagement virtually impossible[60]**. Such practices stand in sharp contrast to the principle of early and inclusive engagement, especially at RAAs, where EU law now permits certain projects to proceed without public consultation at all. This is already evident in Germany, where wind projects in RAAs are exempt from consultation under the EU Emergency Regulation and REDIII, reducing transparency and community input.

Benefit-sharing mechanisms show more positive examples.

In some German states, local financial participation is legally required[61], ensuring that a portion of revenues from renewable projects remains in the host community. This approach is also encouraged at the national level through legal recommendations[62]. This reflects a strong alignment with BirdLife's call for broader benefit-sharing.

However, these potential advances would be undermined when permitting exemptions removes consultation altogether.

In Poland, **large-scale PV and wind projects under 100 MW can proceed without an EIA** (and therefore with limited social consultation on environmental aspects) if deemed by the regulatory authority to have only "potential" impacts. This bypasses local voices for projects of considerable scale.

Public engagement is essential for nature restoration projects as well. To ensure just and effective engagement, a recent BirdLife guidance and collection of case studies outlines key barriers, enablers and recommendations.[63]

[59] European Environmental Bureau – The top ten barriers to faster renewables deployment – July 2025
[60] The Nature Conservancy – Enabling a Community-Powered Energy Transition: Good practices for engaging stakeholders, fostering collaboration, and promoting socioeconomic benefits – March 2024
[61] In Mecklenburg-Western Pomerania, the Citizens' and Municipal Participation Act (Bürger- und Gemeindebeteiligungsgesetz) came into force in May 2016 and was the first law nationwide requiring municipalities and residents to participate in the profits from wind turbines. Project developers are obligated to offer municipalities and residents within a 5 km radius of the turbine the opportunity to participate – source
[62] Law on the Expansion of Renewable Energies (Renewable Energy Sources Act – EEG 2023) – §6 Financial participation of municipalities in the expansion
[63] BirdLife International – Just and effective engagement in landscape restoration (Europe) – Guidance and Case Studies – 2025

Solarfarm. © Shutterstock

9. ACCELERATING RENEWABLE ENERGY WHILST PREPARING NATURE RESTORATION PLANS

White Stork nest. © Lauren Tiuss

The legal requirement for MSs to develop draft Nature Restoration Plans by September 2026 is a good opportunity to bring renewable energy deployment and biodiversity recovery into alignment. **Done well, the process can ensure that areas with potentially high ecological value are safeguarded from inappropriate development, that restoration targets are embedded in energy planning, and that both climate and nature objectives are met in a spatially coherent way**.

Aligning the NRPs and the RAAs would also benefit the industry sector, according to whom, there are significant benefits to shifting operational practices and investing in biodiversity-enhancing business models, such as improving reputation, reducing risks of delays and cancellations due to public concern, or inspiring investor confidence and trust[64].

There is a wide range of examples of how nature restoration can take place in the RAAs, for example:

- IE: Wind farm integrated with bog rehabilitation plans to re-wet, block drains and create peat-forming wetlands and wet woodland trajectories.[65]
- NL: Placement of oysters and reef structures within the wind farm to re-establish biogenic reefs;[66]
- DE: Large-scale clean-up[67] plus habitat management in and around the solar arrays to conserve dry-heath and open-grassland species. 10-year monitoring showed improved conditions for target birds like the hoopoe and tawny pipit.[68]
- BE and FR: Electricity grid infrastructure with restoration efforts at forest edges and natural habitats, building natural ponds, planting conservatory orchards, sowing meadows and creating pasturage facilities for local farmers.[69]

[64] Eurelectric – Power Plant 2.0 – A guidebook to electrify in harmony with nature
[65] Mountlucas Bog Cutaway Bog Decommissioning and Rehabilitation Plan – 2021
[66] Frontiers in Marine Science – Performance of European oysters (Ostrea edulis L.) in the Dutch North Sea, across five restoration pilots
[67] Over 380 hectares were cleaned up and remediated, removing the contamination risks to the soil and groundwater. The cleanup operation completely removed all munitions with no depth limit.
[68] Solar parks – Opportunities for Biodiversity A report on biodiversity in and around ground-mounted photovoltaic plants
[69] Renewable Grid Initiative – Green Corridors – Restoration of wildlife corridors under overhead lines in Belgium and France

To encourage such projects to be realised in a synergetic way, this briefing has already highlighted several measures in the previous sections: appropriate integrated spatial planning to avoid land use conflicts, non-price auction criteria that require taking into account nature restoration; permit conditions mandating consideration of restoration measures grounded in robust impact assessments and informed by transparent and early public consultations; and the use of comprehensive environmental data platforms. However, **as a first step, MSs should align the implementation of the NRR and the RED through the preparation and planning phase, ensuring that Renewables Acceleration Areas do not undermine but contribute to restoration and biodiversity goals**. Unfortunately, there is little evidence so far that the designation of RAAs under RED III is being integrated with the preparation of NRPs across the EU.

Some countries have developed strong technical foundations for integrated planning, but have yet to use them in RAA designation.

In Germany, for example, **scientific mapping of sensitive raptor habitats and other key biodiversity areas has advanced considerably**.[70] Yet the most recent Spatial Development Plan dropped references to available sensitivity maps and made no connection to restoration needs.

In Greece, the development of NRR is at an early stage; however, the government so far did not yet initiated any procedural steps to facilitate the smooth implementation of the NRR and its provisions. Similarly, in Romania, the RAA and NRP processes are at a very early stage, with experts only now being contracted to map RAAs, and no public information is available so far on NRP progress. Without clear coordination, there is a high risk that mapped RAAs will ignore restoration needs entirely.

Poland's RAA designation process involves regional and energy authorities but is driven largely by technical and administrative criteria. Consultation documents[71] set out targets for the number of acceleration areas per region, but provide no indication of how biodiversity priorities or high-restoration-value areas will be integrated.

Denmark has excluded protected areas, Natura 2000 and areas with high natural value from renewable development through coordination between the Danish Energy Agency and the Ministry of Environment, using MiljøGIS data and input from civil society. This approach provides a good model for integrating environmental data into energy planning. However, **there is no mechanism ensuring that the NRP can influence renewable project approvals**, meaning developments can still proceed in areas later prioritised for restoration – such as lowland or coastal wetland areas.

In Denmark, compensation projects for wind energy projects are approved on a case-by-case basis and are not linked to strategic biodiversity and nature restoration goals, which **limits the potential of the renewable energy sector to contribute systematically to broader restoration goals**.

Offshore wind cooperation with Sweden and Germany is well-established, **but there is no formal framework for joint nature protection planning yet**, particularly in the Baltic Sea and key migratory bird stopover areas.

Together with the other NGOs of the #RestoreNature coalition, BirdLife is preparing a mid-term assessment on how the preparation of NRPs is progressing in EU MSs. Publication is expected in Autumn 2025.

[70] DDA – Habitat modelling as a basis for species conservation – first results published
[71] Polish Government Legislation Centre (RCL) – Draft Act amending the Act on the promotion of electricity generation in offshore wind farms and certain other acts

10. PROGRESS ON BROADER DECARBONISATION PRIORITIES BEYOND RENEWABLE ENERGY

Delivering climate neutrality while protecting nature requires a whole-economy approach that extends beyond renewable energy rollout. **Action must cut across transport, agriculture and other land uses, energy efficiency, heating and industry, applying the do no significant harm (DNSH) principle and avoiding investments that lock in fossil fuel dependency**.

In the maritime sector, a positive development is the designation of the Mediterranean Sea as a Sulphur Emission Control Area (SECA) from May 2025, following a decision issued by the International Maritime Organisation. This will cap sulphur content in fuel to 0.1%, reducing CO_2, NOx, and particulate emissions from shipping[72]. Yet Greece's transport decarbonisation is weakened by a collapsing railway system[73], with the lowest-density network in the EU[74], pushing passengers towards higher-emission travel.

Several MSs' energy plans continue to prioritise fossil fuels. Croatia's NECP outlines positive steps on improving energy efficiency, modernising infrastructure and providing financial support to the private sector for the green transition and energy sufficiency. However, these efforts are undermined by continued investment in fossil fuels, such as the Plomin coal plant (planned to be operational until 2033), LNG expansion, and new hydrocarbon exploration permits.

Despite falling gas demand, the plan aims to raise domestic oil and gas production from 49% to 59% in the 2030s and expand LNG capacity – highly likely to create stranded assets. Small modular nuclear reactors are planned to replace the Krško plant after 2043, signalling a continued reliance on non-renewable generation. In Croatia, the DNSH principle is mentioned but not operationalised, and renewable impacts on biodiversity are absent from the NECP.

Poland's NECP process is similarly conflicted. With the final version delayed by over a year, the draft relies on outdated policy assumptions and flawed emissions accounting (especially in agriculture), while agricultural mitigation potential remains untapped.

Some MSs take a more integrated approach. Denmark combines renewable expansion with ambitious energy efficiency policies, including financial incentives, building standards, and the SparEnergi digital advisory service. Fossil fuel phase-out is embedded in law: oil and gas boilers will be banned by 2035, no new exploration is permitted, and district heating and large-scale heat pumps are replacing gas.

Denmark has also committed to restoring carbon-rich nature through the Green Tripartite Agreement, designating 100,000 ha for rewetting and converting up to 390,000 ha of farmland into forests and wetlands, directly cutting emissions from degraded ecosystems.

In Denmark, transport is now the largest source of CO_2 emissions, electrification is slow, reliance on biomass is high, and agricultural climate policy (including a CO_2 tax) has been delayed.

[72] Cretalive News – Cleaner air in the Mediterranean since May 1
[73] Efsyn – Greek railways are collapsing day by day
[74] KavalaNews. – „The degradation of the railway and railways services in Greece"

Northern Gannet. © SarahLou Photography

Conclusion

This report shows that renewable expansion and ecosystem restoration can be mutually reinforcing, but only if they are planned and governed as part of the same framework.

Where countries have aligned sensitivity mapping, restoration priorities, and renewable siting, projects are already demonstrating how to deliver clean energy while strengthening biodiversity.

Yet in most cases, energy and nature remain treated as parallel agendas. Poor spatial planning, fragmented permitting, routine reliance on IROPI, weak consultation and insufficient transparency continue to hold back progress. These are not simply technical shortcomings: they reflect political choices about commitments to EU legislation and how much weight is given to environmental safeguards, public trust, and long-term resilience. Too often environmental legislation is blamed for delays in reaching objectives for renewables and electrification targets, whereas the reality suggests that the problems lie elsewhere, often in poor coordination and insufficient resourcing of public authorities.

The coming year is decisive. By February 2026, Member States must designate Renewable Acceleration Areas, and by September 2026, they must submit their draft Nature Restoration Plans. If these processes develop in isolation, the EU risks falling short on both climate and biodiversity targets. If they are integrated, **Europe has the chance to set a global example of how to accelerate decarbonisation while repairing damaged ecosystems**.

The challenge is therefore not only to speed up renewable deployment, but to do so in a way that **builds legitimacy, reduces conflict, and secures durable benefits for people and nature**. Civil society has a central role to play in pressing governments to seize this opportunity. The window is narrow, but the prize is lasting: a fair energy transition that restores the natural world on which it depends. BirdLife will continue to work with public institutions, the renewable and grid sectors, colleagues in the NGO sector, and other relevant actors, to press for the progress required at EU and national levels.

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METHODOLOGY

To compile this report, BirdLife Europe circulated a detailed questionnaire to national BirdLife Partners across the EU MSs.

The questionnaire was based on the recommendations set out in BirdLife's previous May 2025 briefing, *Renewable Energy that Renews Nature*, and asked partners to provide concrete examples of good and bad practices in the alignment of renewable and nature measures.

The questions covered each of the ten themes and requested structured inputs, including documented examples, relevant links, and practical lessons or recommendations.

Eight national BirdLife Partners returned completed questionnaires, while further input was gathered from other national BirdLife partners from other countries during bilateral meetings on topical internal workshops on energy policy. Their contributions formed the primary source of evidence for this report. The resulting report aims to reflect the diversity of MS approaches while identifying cross-cutting trends, highlighting replicable good practice, and flagging policy gaps or problematic developments.

Further details of the examples cited in this report are available on request from BirdLife – contact András Takács, Energy Policy Officer at **andras.takacs@birdlife.org**.

GLOSSARY

BfN	German Federal Agency for Nature Conservation
DNSH	Do No Significant Harm
EEZ	Exclusive Economic Zone
EIA	Environmental Impact Assessment
EU	European Union
GW	Gigawatt
IBA	Important Bird and Biodiversity Area
IROPI	Imperative Reasons of Overriding Public Interest
LNG	Liquefied Natural Gas
MS	Member State
MSP	Marine Spatial Plan
MW	Megawatt
NECP	National Energy and Climate Plan
NGO	Non-Governmental Organisation
NPC	Non-price criteria
NRP	Nature Restoration Plan
NRR	Nature Restoration Regulation
PV	Photo-voltaic
RAA	Renewable Acceleration Area
RED III / RED	Renewable Energy Directive
SEA	Strategic Environmental Assessment
SDP	Spatial Development Programme
SPA	Special Protection Area
UK	United Kingdom

Turbines. © Shutterstock

ANNEX

Sensitivity maps in EU Member States

Country	Sensitivity map	Comment
Austria (AT)	Onshore wind	The Austrian onshore bird sensitivity map for onshore wind is based on the distribution of 49 wind power-sensitive bird species and the modelled intensity of autumn bird migration. – Developed by Birdlife Österreich, published in 2025.
Belgium (BE)	**Flanders** Onshore and offshore wind, and digital map	By combining expert-guided vulnerability atlases for birds and bats, the report outlines a tiered risk analysis process: begin with geospatial risk mapping (risk classes 0–3), then integrate local species data and optional pre-construction surveys (e.g. bat detectors, bird counts), followed by tailored impact assessments and monitoring recommendations. – Developed by the independent research institute of the Flemish government (INBO), published in 2015. INBO published an updated version in 2025, which describes materials and methods.
	Wallonia Onshore wind	For onshore wind energy in Wallonia, guidelines are described in a report, which also includes risk maps for birds and bats in the appendices. – Developed by public authorities, updated in 2024.
	Offshore wind	The study uses ship-based surveys (2007–2022), environmental and anthropogenic data (depth, salinity, ship traffic, wind farms, etc.) within 2×2 km grids to model seabird distributions using regression and AIC model selection. It then develops sensitivity maps and suggests mitigation such as marine reserves and migration corridors. – Developed by the independent research institute of the Flemish government (INBO), published in 2023.
	High-voltage power lines report and scientific paper	The study targets bird species vulnerable to power-line collisions in Belgium, including waterbirds, migratory species, rare breeders, and widespread breeding birds. It overlays their spatial distributions on the national high-voltage grid (1×1 km resolution), producing sensitivity maps that identify high-risk spans and guide mitigation for electricity transmission infrastructure. – Developed in collaboration with Natuurpunt and Natagora (Belgian BirdLife Partners), published in 2020.
Bulgaria (BG)	Onshore wind	National and regional wind sensitivity maps were created to address rapid wind farm expansion. The 2013 national map covered 41 bird species, while the regional Red-breasted Goose map (2010–2015, EU LIFE project) focused on Coastal Dobrudzha, where hunting and disturbance threaten key feeding grounds. Maps classified areas as High, Medium, or Low Sensitivity and overlaid projected wind capacity to 2020.[75] – Developed by BSPB, published in 2013. Since then, no new maps have been published, but EUKI's RENewLand project is currently working on supporting Hungary, Romania and Bulgaria in the development of their RAAs, which will consider bird sensitivity.
Croatia (HR)	Onshore wind and solar	The Croatian sensitivity mapping includes nature sensitivity, habitat sensitivity, bird sensitivity, bat sensitivity, large carnivore sensitivity, combined (birds/bat/large carnivores) sensitivity and technical suitability maps for solar and wind energy development. The Ministry also published guidelines for the use of the sensitivity map. – Developed by authorities, with BIOM (Croatian BirdLife Partner) providing data, published in 2024.
	Offshore wind	At the moment, there are no bird sensitivity maps for offshore wind available in Croatia. BIOM (Croatian BirdLife Partner) is looking for funding to develop an official sensitivity map for offshore wind. An offshore map is currently being prepared by BIOM to help address knowledge gaps. Once published by the end of 2025, it will serve as an advocacy resource, but it is not part of any official sensitivity mapping process.
Cyprus (CY)		Cyprus does not have bird sensitivity maps. The Ministry of Interior outlines exclusion criteria[76] for renewable energy (both solar and wind) locations. For instance, developments are not allowed in areas of wetlands and Natura 2000, in areas up to 500m from the border of a migratory bird flyway, nesting and territorial areas of birds of prey under threat, the Bonelli's eagle, and the griffon vulture.
Czechia (CZ)	Onshore wind	In Czechia, a bird sensitivity map was developed by the Czech Society for Ornithology (Czech BirdLife Partner) for onshore wind in 2024 and published in 2025. The map is currently being considered for the preparation of RAAs and is available for voluntary use by developers. – Developed by ČSO (Czech BirdLife Partner), published in 2025.
	Electricity grid	Česká společnost ornitologická (Czech BirdLife Partner) developed a sensitivity map for a Czech grid operator (E.ON), as a tool for prioritisation of existing high-voltage powerlines for prevention of electrocution and collisions. The grid operator uses the map for their planning process to make the lines in the priority areas safe as soon as possible. The mapping is developed only for existing powerlines; it wasn't intended as a tool for planning new ones. The map is not publicly available.

[75] European Commission: Directorate-General for Environment, Arcadis, Birdlife, Allinson, T., Jobson, B. et al., *The wildlife sensitivity mapping manual – Practical guidance for renewable energy planning in the European Union*, Publications Office, 2020, https://data.europa.eu/doi/10.2779/065468 – page 82-88

[76] Order no. 1/2024 in accordance with Article 6 of the law licensing framework for renewable energy sources

Denmark (DK)	Offshore wind	Mapping relative risk to seabirds from offshore wind energy developments in Danish waters. Based on 243 days of aerial Distance Sampling line transect surveys of birds in Danish marine areas over the past 24 years we developed this risk assessment algorithm for birds and offshore wind farm development. The assessment was based on abundance estimates from 17 marine bird species and their susceptibility towards offshore wind farm development. Using habitat, displacement and collision risk layers we classified the Danish marine areas in least and greatest risk of impacts to marine birds. – Developed by a research institute, published in 2025. A new report is currently being developed, which will contain maps showing the cumulative effects, with publication date planned for early 2026.
	Onshore wind	There is no bird sensitivity map for onshore wind developed in Denmark.
Estonia (EE)	Onshore wind	The report analyses Estonia's terrestrial birdlife to guide wind-farm planning. Using national survey data and the EELIS database, it focuses on sensitive species such as white-tailed and greater spotted eagles, cranes, black storks and geese. Methodology includes refining nesting-site records, assessing risk zones, and applying buffer areas of varying sensitivity (zones 1–3). The mapping highlights high-risk areas where birds are most vulnerable to collision, disturbance or habitat loss, supporting nature-conscious development. – Developed by the Eesti Ornitoloogiaühing (Estonian BirdLife Partner), in collaboration with Eagle Club under a government contract – published in 2022
	Offshore wind	A national maritime spatial plan was carried out in Estonia, and within its framework, two GIS layers were prepared: • "Best areas" – areas where, based on existing knowledge, the construction of offshore wind farms would likely cause the least harm to birds, and • "Bad areas" – areas that are considered least suitable for wind farm development from the perspective of birds. These areas do not mean that wind farms could immediately be built in the first ones or that they should never be built in the latter. In both cases, environmental impact assessments must precede wind farm planning. For the "Bad areas," however, the likelihood of the studies showing favourable results for developers is very low. – Developed by public authorities, in collaboration with Eesti Ornitoloogiaühing (Estonian BirdLife Partner), and published in 2019.
Finland (FI)	Offshore wind	Sensitive bird areas in the Finnish maritime area for the Baltic Sea Action Plan. The analysis was mainly based on BirdLife's AVISTEP method, but has been developed a bit with more complex statistics. – Published by Finnish Environmental institute. Developed by Metsähallitus, Natural Resources Institute Finland, BirdLife Suomi (Finnish BirdLife Partner), Finnish Environmental institute and university of Oulu – published in 2025.
	Onshore wind	There is no onshore sensitivity map available or in the pipeline.

France (FR)	Onshore wind (nation-level)	The VULNEO project developed an assessment of the sensitivity and vulnerability of avifauna to onshore wind turbine Infrastructures in Metropolitan France, focusing on both birds and bat species. – Developed by public authorities in partnership with NGOs and research centres, published in 2025. At the national level, there is also a tool for visualising and analysing the various issues facing regions that need to be taken into account in the development of renewable energies.
	Onshore wind (region-level): • Nouvelle Aquitaine (2017) • Pays de la Loire (2020) • Bretagne (only for bats) (2024) • Normandie (only for bats) (2021) • Hauts de France (2017) • Grand Est (2025) • Bourgogne-Franche-Comté (only for birds) (2021) • Occitanie (only for bats) (2024) • Provence-Alpes-Côtes d'Azur (2023) • Auvergne-Rhône-Alpes (2025) • Ile-de-France (2023) • Centre-Val de Loire (2023)	Most of the regional bird and bat sensitivity maps for onshore wind were developed by public authorities, in a few cases in collaboration with LPO (French BirdLife Partner).
	Offshore wind	The report outlines how future maritime planning for offshore wind farms must map ecological sensitivity. It flags impacts on birds and, to a lesser extent, migratory bats, whose offshore presence remains understudied. The sensitivity mapping overlays species' flight behavior and migration corridors onto proposed grid and park layouts, guiding siting choices that avoid high-risk zones for these volant species. – Developed by Cerema under France's Ministry of Ecological Transition, published in 2024.
	Electricity grid	In mainland France and Corsica, four maps have been created based on the distribution of the 95 bird species that are most vulnerable to collision or electrocution. The distribution of species was determined by collating more than 30 million naturalist data from the network and nature conservation associations: • Sensitivity map to collision risk on high voltage • Sensitivity map to collision risk on medium and low voltage • Sensitivity map to electrocution risk on high voltage • Sensitivity map to electrocution risk on medium and low voltage o Developed by LPO (French BirdLife Partner) within the LIFE SafeLines4Birds project, published in 2025.

Turbines. © Shutterstock

Germany (DE)	Onshore wind[77]: • Baden-Württemberg (2022) • Hesse 2021 • Rhineland-Palatinate (2023) • Bavaria (2021) • Brandenburg (2023) • North Rhine-Westphalia • Saarland (2013) • Saxony-Anhalt (2019) • Schleswig-Holstein (page 69) • Thuringia (2015) • Region Westmecklenburg (page 34) (2017)	There is no nationwide, coordinated mapping implemented or in the planning, however, most states (10,5 out of 16) have done their own bird sensitivity mapping for onshore wind. The following states, according to our knowledge, do not have sensitivity maps: Saxony, Lower Saxony, Bremen, Hamburg, Berlin, and parts of Mecklenburg-Vorpommern. The listed sensitivity maps are mostly developed by the regional authorities and mostly cover only a few of the bird species which can potentially collide with wind turbines. In some cases, such as in Baden-Württemberg, the local federal BirdLife organisation was highly involved.
	Offshore wind	A NABU study identified areas in the North and Baltic Seas that are less critical for offshore wind energy from a nature conservation perspective, as well as to highlight specific conflicts and possible solutions. The area of the German Exclusive Economic Zone in the North and Baltic Seas has been classified using a traffic light system. – Developed by NABU, published in 2023.
	Offshore wind	The NaMaRo project, commissioned by the German Federal Agency for Nature Conservation (BfN) runs from October 2023 until the end of 2025. It aims to ensure that marine nature conservation is adequately considered in the planned update of marine spatial planning and can be strengthened overall. To this end, the ecologically most sensitive areas are identified that should be kept free from increased use, especially through the expansion of offshore wind energy.[78]

Greece (EL)	Onshore wind	A bird sensitivity map for onshore wind farms was developed, using all the available information from field work and literature, which was known at the time. It should be taken into consideration that there were extremely limited telemetry data back then. Despite the time that has lapsed since, this map could still be consulted in some cases; nevertheless, it needs an update if it is to be taken as a highly credible tool. – Developed by HOS (Greek BirdLife Partner), published in 2010.
	Onshore wind report and map	The document presents a sensitivity map for the Griffon Vulture in Greece. Using telemetry data, breeding colonies, flight activity, feeding sites, and key corridors, the mapping identifies zones where wind energy developments pose high collision risks. Sensitivity levels are graded, highlighting priority areas to avoid infrastructure. The approach supports spatial planning, safeguarding Griffon Vultures while offering co-benefits for Cinereous and Bearded Vultures within overlapping ranges. – Developed under the LIFE-IP 4 NATURA project, in collaboration with HOS (Greek BirdLife Partner), published in 2022.
	Onshore wind	The sensitivity map for onshore wind was made for the Eastern Rhodopes Mountains in the Balkans, covering an area of 15,000 km2 in Greece and Bulgaria. Assessing the cumulative impact of wind farms on Cinereous Vultures in south-eastern Europe. – Developed by a research institute, published in 2017.
	Offshore wind	The Greek Strategic Environmental Impact Assessment for Offshore Wind Farms maps significant marine areas for seabirds, which was developed in order to be taken into account for the Strategic Planning for offshore wind farms. The bird sensitivity map for offshore wind can be found on page 164. Unfortunately, although the data are presented in the respective EIA, they are not taken seriously into account in the final selection of the 'suitable' areas for offshore wind farms. – Developed Nature Conservation Consultants (a private environmental office), in collaboration with HOS (Greek BirdLife Partner) for the Greek administration, published in 2022.

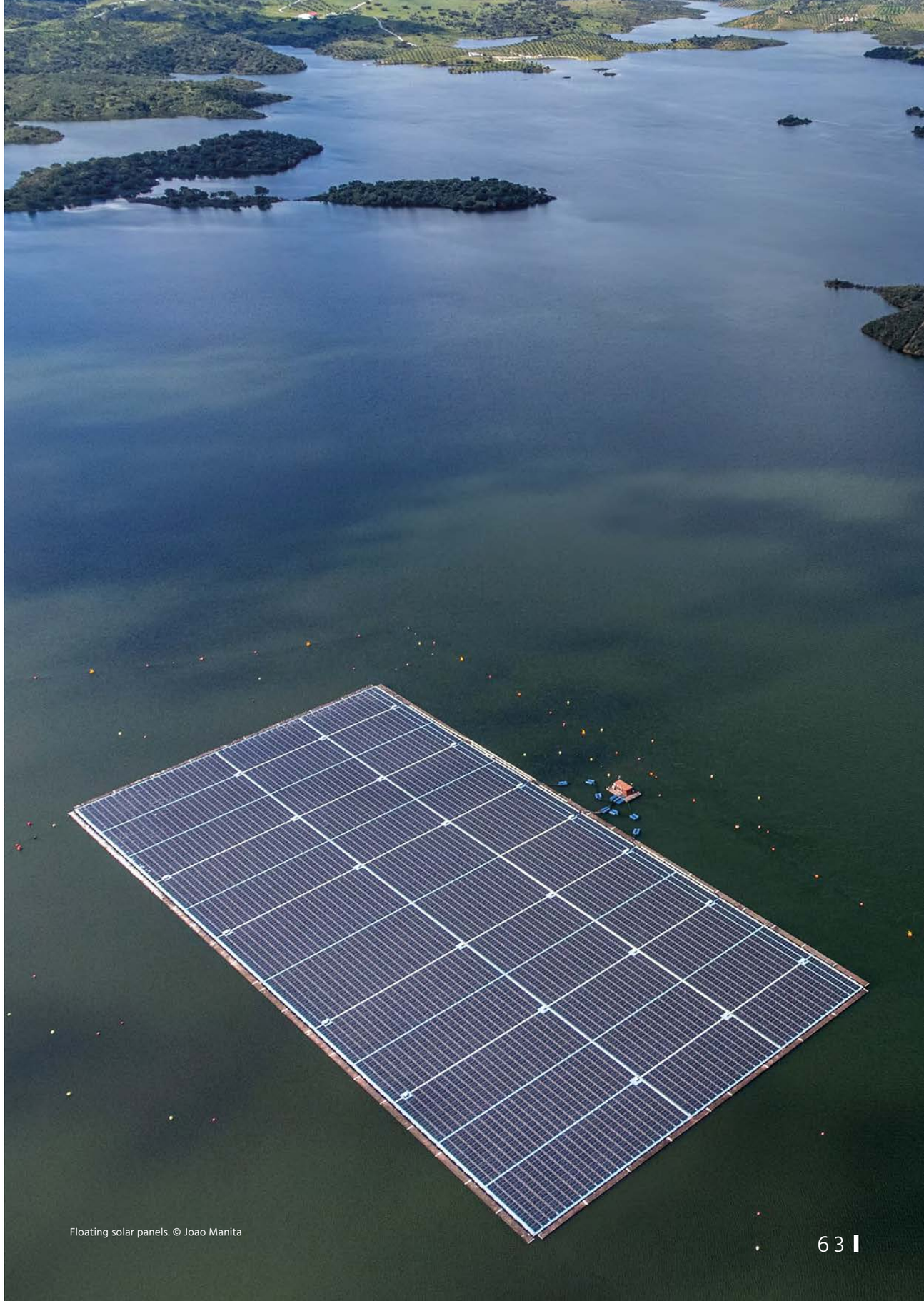
[77] Schwerpunkträume zum Artenschutz in der Windenergieplanung – Methodische Ansätze zur planerischen Ausweisung von Flächen zur Windenergienutzung
[78] The following studies were included in the sensitivity mapping: Sensitivity of seabirds to offshore wind farms in the German North Sea with regard to habitat loss due to avoidance, Large-scale effects of offshore wind farms on seabirds of high conservation concern, and Cumulative effects of offshore wind farms on common guillemots (Uria aalge) in the southern North Sea – climate versus biodiversity?

Hungary (HU)	Onshore wind	The bird sensitivity map for onshore wind shows bird protection wetlands, Natura 2000 bird areas, protected natural sites, and wild bird density (2010–2023), highlighting overlaps with legally protected areas and buffers. – Developed by MME, published in 2024. EUKI's RENewLand project is currently working on supporting Hungary, Romania and Bulgaria in the development of their RAAs, which will consider bird sensitivity.
	Electricity grid	The report focuses on mapped critical powerlines causing bird electrocution and collisions. The methodology combined updated bird-distribution data, pylon types, retrofitting status, habitat context, and citizen-science carcass findings. It identified the most hazardous pylons, assessed retrofitting effectiveness, and produced sensitivity maps that guide targeted infrastructure improvements to reduce bird mortality. Further documents can be found here. – In 2008, MME Hungary (Hungarian BirdLife Partner), the national TSO, and five other DSOs conducted a study to understand the interaction between birds and powerlines.
Ireland (IE)	Onshore wind map and guidance	Bird Sensitivity Mapping for Wind Energy Developments and Associated Infrastructure in the Republic of Ireland. The project developed a mapping tool showing where protected birds are most sensitive to onshore wind energy. Combining expert opinion and risk data for 22 vulnerable species, it maps collision, disturbance, habitat loss, and barrier effects at 1-km^2 resolution across Ireland. The tool supports early planning, with online access and detailed species guidance. – Developed by BirdWatch Ireland, published in 2015.
	Offshore wind	Ireland does not have a bird sensitivity map for offshore wind; however, they are seeking funding to develop one.
Italy (IT)	Onshore and offshore wind	BirdLife International created a raster layer using data collated by BirdLife in collaboration with Lega Italiana Protezione Uccelli (LIPU – Italian BirdLife Partner), showing national level relative bird sensitivity to onshore and offshore wind energy development in 4 categories: Low, Medium, High and Very High. – Developed by BirdLife and LIPU, published in 2025.
Latvia (LV)	Onshore wind	Bird sensitivity maps were developed by the University of Latvia; however, they are still not officially approved and published. The Ministry of Climate and Energy is working on maps for onshore wind (and possibly solar as well), which will have a much broader focus, not only on birds.
Lithuania (LT)	Offshore wind	There is no bird sensitivity map for offshore wind. There was a LIFE project focusing on Marine spatial planning in correlation with sensitive areas.
	Onshore wind report and map	The study mapped 69 breeding, 43 migratory bird species and 17 bat species in Lithuania, combining wind resource modelling, grid connectivity, planning status and species-level sensitivity (using conservation status, collision risk, abundance, and behaviour). It overlaid these with wind development prospects to identify conflict areas and inform mitigation. A digital map and recommendations are also available to the public. – Developed by a research institute, developed in 2017, published in 2020.
Luxembourg (LU)		Luxembourg does not have a bird sensitivity map; however, potential sites for wind turbine construction are assessed based on local observations collected over the past six years within a 3 km radius. Further monitoring is then often carried out, using this data as a basis. The Luxembourgish Geoportail shows the location of all existing and planned wind turbines, where users can also overlap them with nature protected areas.
Malta (MT)	Offshore wind	The Maltese avifauna sensitivity map for offshore wind was developed as a follow-up to the SEA carried out by the Maltese government to guide the develop of the offshore wind sector. The sensitivity map is weighted by species characteristics such as vulnerability to collision and displacement from wind energy infrastructure, their conservation status and the proportion of 9 populations occurring in Malta. – Developed by BirdLife Malta, published in 2024.
Netherlands (NL)	Offshore wind	The report updates seabird sensitivity mapping for offshore wind farms in the North Sea. Using long-term ship and aerial survey data, species-specific risk scores were applied to produce a Windfarm Sensitivity Index across 5x5 km grid cells. Results show the highest risks for seabirds in coastal waters, especially southern Dutch waters. – Developed by a research institute, published in 2021. An older report from 2015 assessed the cumulative effects of offshore wind farms on birds and bats. It combines spatial distribution, migration routes, and population data with collision and displacement risk models. Standardised scenarios and sensitivity analyses support consistent, comparable evaluations across projects and species. – Developed by research institute, published in 2015.
	Onshore wind	Sovon investigated the locations of many bird species vulnerable to wind farms. Using data on the distribution, abundance, and flight movements of these bird species, maps were created showing areas where the risks of wind turbines on vulnerable species are expected to be greatest. In addition, a map showing bird migration is included. The updated report is replacing the map from 2009. – Commissioned by the Ministry of Agriculture, Nature and Food Quality, developed by Sovon, and published in 2021.

Poland (PL)	On and offshore wind	The bird sensitivity map targets both onshore and offshore wind energy in Poland. It focuses on high priority bird species (primarily migratory and threatened taxa) using AVISTEP and Wildlife Sensitivity Mapping methodologies to assess collision risk, habitat loss, and disturbance. The map categorises areas from very low to very high sensitivity, aiding planners, conservationists, and developers in identifying landscapes and marine zones where wind farm deployment would pose minimal risk. It supports strategic, biodiversity-aware wind planning. – Developed by OTOP, published in 2025.
Portugal (PT)	Offshore wind[79]	Analyses the sensitivity and seasonal distribution of 34 seabird species that regularly occur along the Portuguese mainland coast (up to 65 km offshore). Estimated sensitivity of each species was based on factors associated with collision vulnerability, displacement vulnerability, and conservation status at national and international levels. – Developed by SPEA (Portuguese BirdLife Partner), BirdLife International and cE3c, published in 2023.
	Onshore renewables	At the moment, there is no official bird sensitivity map for onshore renewables in Portugal, and SPEA (Portuguese BirdLife Partner) is looking for funding to develop one.
	Electricity grid	As part of the LIFE PowerLines4Birds project, risk maps were produced. Information about the power lines and habitat was used, including specific information on the birds' location and nests. Therefore, each map is built for a specific species and context, for example, where the nests are in a given year. This approach differs from the methodology of other sensitivity maps, and the sensitive location data results that the maps are not publicly available.
Romania (RO)	Onshore wind	Landscape sensitivity in south-eastern Romania for the conservation of Red-breasted geese in relation to strategic territorial planning and individual investment projects. The Lesser White-fronted Goose, another vulnerable goose species, is also present in the same area, hence it provides an umbrella for many other migrating waterfowls and even raptors, as this group is migrating mostly over SE Romania. – Developed by SOR, published in 2023. Romania does not have a country-level sensitivity map for wind or solar; however, EUKI's RENewLand project is currently working on supporting Hungary, Romania and Bulgaria in the development of their RAAs, which will consider bird sensitivity.
	Offshore wind	The Red-breasted geese sensitivity map was designed to cover onshore habitats of waterbirds, it only covers certain marine areas and does not take into account the ecological needs of other bird species, particularly seabirds. Romania does not have a comprehensive bird sensitivity map for offshore wind, and would be interested in receiving funding for its development.
Slovakia (SK)	Onshore wind	Slovakia's new national sensitivity map evaluates risk to both birds and bats (covering nesting, migration, and wintering species) to direct wind energy development away from ecologically sensitive zones. The map identifies over 73 % of Slovak territory as unsuitable for wind farms, based on assessed threats to bird and bat populations. – Developed by SOS/BirdLife Slovensko, published in 2025.
Slovenia (SI)	Onshore wind	The study mapped strongly and moderately sensitive areas for 17 bird species across Slovenia. It integrated data on species distributions, rare species, congregation zones, and reserves using GIS. Sensitivity categories were assigned by species specific criteria, then merged into a rasterised, public facing sensitivity map. – Developed by DOPPS/BirdLife Slovenija, published in 2012. The Slovenian government developed a comprehensive potential mapping and vulnerability analysis for all renewable energy sources in Slovenia. Their analysis includes biodiversity sensitivity for hydropower, solar power, and wind farms. It is not clear how data on birds were considered and included. – Developed by public authorities, published in 2023.
	Offshore wind	As Slovenia's coastline is only 46,6 km long, very crowded, and its primary focus is tourism, offshore wind is not strongly considered in the area. For this reason, a bird sensitivity map for offshore wind has not been developed.
	Electricity grid	A currently ongoing EU project, Life For Lifelines, is aiming to ensure a safe ecological corridor for breeding and migrating birds between the Alps and the Adriatic Sea. The project will focus on electrocution and collision with medium and high-voltage power lines. The project will ensure the protection of the existing 1,150 medium-voltage power lines, which will reduce the mortality of target species by 90% within the protected areas of the SPA. Furthermore, the project will develop an improved sensitivity map of identified bottlenecks and migration corridors, integrated into the existing sensitivity study and technical documentation. – EU-funded project, in partnership with DOPPS (Slovenian BirdLife Partner), with results being published in 2029.

[79] Guilherme JL, Morais B, Alonso H, Andrade J, Almeida A, Barros N & Dias MP (2023). Mapping seabird and marine biodiversity sensitivity to marine wind farm expansion in Portugal | Mapeamento da sensibilidade das aves marinhas à energia eólica no mar em Portugal (Version 1). Sociedade Portuguesa para o Estudo das Aves (SPEA).

Spain (ES)	Offshore wind	In 2023, the Spanish Ecological Transition Ministry published national environmental sensitivity maps for offshore wind, with areas of 'exclusion' and 'restriction' clearly identified. Spain's Marine Spatial Plans, published in early 2024, include maps which indicate areas considered to be suitable or priority for wind development and for biodiversity conservation. Later in 2024, SEO/BirdLife published a critical assessment of this MSP zonation to evaluate the risks to seabirds, and is working on a full seabird sensitivity map.
	Onshore wind and solar	In 2023, the Spanish government published detailed national environmental sensitivity zoning maps or onshore wind and solar developments with a detailed cartographic viewer and supporting documentation, for all the elements of environmental sensitivity considered in EIA. In addition, a number of Spain's 17 autonomous regions have produced their own environmental sensitivity maps for evaluating the suitability of locations for projects of less than 50MW capacity. SEO/BirdLife's 'Climate Observatory' includes an interactive summary map, updated every 6-9 months, which shows the state of the art for each region and includes links to available online resources. In 2023, SEO/BirdLife produced national bird sensitivity maps for the same renewable technologies, available on its website with supporting documentation and in interactive and downloadable GIS format.
	Electricity grids	Between 2010 and 2016, a project was developed to map bird flight corridors across Spain, later updated in 2021, to address the collision risks posed by high-voltage power lines. The work focuses on 52 species sensitive to such impacts, including steppe birds, vultures, raptors, waders, and aquatic species. Using GIS tools, the project produced sensitivity maps based on species' flight behaviour, conservation status, and distribution, and collision risk maps combining environmental and infrastructural factors. These outputs identify high-risk zones, guide the planning of new routes, and prioritise corrective actions on existing lines. Measures include the installation of anti-collision devices, with the aim of marking all critical spans by 2025. – Developed by a grid authority, published in 2021.
Sweden (SE)		No bird sensitivity maps are publicly available in Sweden; an academic study published in 2015 presented maps based on broader environmental sensitivity.



Floating solar panels. © Joao Manita

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Stichting BirdLife Europe gratefully acknowledges financial support from the European Commission. All content and opinions expressed in this publication are solely those of Stichting BirdLife Europe. The European Commission is not responsible for any use that may be made of the information it contains.