Wind Energy Projects and Species Protection Law

Wind Energy Projects and Species Protection Law: A Comparative Analysis of the Application of EU Law in Five Member States

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Wind farms and their associated transmission infrastructure can have negative impact on biodiversity. Offshore wind farms, for example, can pose threats to animals like harbour porpoises and migrating birds and onshore wind farms and transmission grids may harm birds and bats. In this article we analyse how European Union species protection law is transposed and applied to decision-making on wind energy projects in five member states, namely Denmark, Germany, the Netherlands, Belgium and the United Kingdom. The analysis aims to understand the differences in the interpretation and application of national species protection law, point out deficiencies, and make recommendations, partly based on learning from best practices. Though transposition in national law is almost identical, implementation practice in these states varies substantially. The question is raised whether the legal regime, as currently applied, can be improved to serve the aims of a considerable increase of renewable energy sources whilst simultaneously protecting biodiversity.

I. Introduction: Wind Energy Projects and Species Protection

Wind farms and their associated transmission infrastructure can have a negative impact on biodiversity. The effects of such projects can occur both in the construction and the operational phase. Piling construction works for offshore wind farms for instance can cause hearing damage to porpoises, which, as a result of this damage, may lose the ability to find food and to keep up with the pack. The construction phase may negatively impact foraging and breeding grounds due to the noise and activity nuisance. Onshore and offshore wind farms can cause fatal collisions with birds during the operational phase[1] and onshore, bats can be killed by collision with the rotor blades or by barotrauma which by turbulences and the pressure drop behind the rotor blades.[2] Moreover, birds and other species suffer from the loss of habitat, including foraging and breeding grounds.

Despite these negative effects, wind energy projects are fundamentally important for the European Union and its member states to realize low-carbon energy production, which is necessary to achieve the targets set in the framework of the European Energy Union[3] and meet the requirements of the Paris Agreement on climate change.[4] In many EU countries, the capacity of renewable energy sources has to increase dramatically. On the other hand, biodiversity is still under significant pressure in Europe. Most strictly protected species (more than 60 per cent) are at an unfavourable conservation status.[5] The policy aim of the EU, as expressed in the EU Biodiversity Strategy, to stop biodiversity loss by 2020 is not within reach.[6] This raises the question whether the legal regime for species protection, as transposed by and applied within the member states, is likely to become a substantial obstacle for enlarging the capacity of wind energy.

In this article we analyse the relevant European Union legal framework on the protection of species[7] in

[124] European Parliament Resolution of 13 September 2016 on an EU Strategy on Heating and Cooling (2016/2058(INI)), 13 June 2018, C. 204/46.

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[1] M. Ferrer, M. de Lucas, G.F. Janss, E. Casado, A.R. Munoz, M.J. Bechard, C.P. and Calabuig, "Weak relationship between risk assessment studies and recorded mortality in wind farms", 49 *Journal of Applied Ecology* 38 (2012) and L.S. Lehnert *et al.,* "Wind farm facilities in Germany kill noctule bats from near and far", 9 *PLoS* 8 (2014) .

[2] E.B. Arnett, E.F. Baerwald, F. Mathews, L. Rodrigues, A. Rodríguez-Durán, J. Rydell, R. Villegas-Patraca & C.C. Voigt, "Impacts of wind energy development on bats: a global perspective" in *Bats in the Anthropocene: Conservation of bats in a changing world*, 295–323 (Springer, Cham 2016) and E.F. Baerwald, G.H. D'Amours, J. Brandon & R. Barclay, (2008-08-26). "Barotrauma is a significant cause of bat fatalities at wind turbines", 18 *Current Biology* 695, 696 (2008). For a recent study on the negative effects of windmills on bat activity see K. Barré, I. Le Viol, Y. Bas, R. Julliard, C. Kerbiriou, "Estimating habitat loss due to wind turbine avoidance by bats: Implications for European siting guidance", 226 *Biological Conservation*, 205 (2018).

[3] European Commission, *Energy union and climate*, https://ec.europa.eu/commission/priorities/energy-union-and-climate_en (accessed 25 March 2019).

[4] United Nations, *Paris Agreement,* https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement (last reviewed December 2015).

[5] European Environment Agency, *Biodiversity*, https://www.eea.europa.eu/soer-2015/europe/biodiversity(last reviewed 7 July 2018).

[6] European Commission, *Evaluation of the Biodiversity Strategy to 2020*, https://ec.europa.eu/info/law/better-regulation/initiatives/ares-2018-3259397_en (accessed 25 March 2019)

[7] This article concentrates on species protection law. If

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relation to renewable energy projects and the implementation and application in five European member states: Denmark, Germany, the Netherlands, Belgium (Flemish region and federal legislation on the marine environment) and the United Kingdom.[8] These countries were chosen because they all border on and share the North Sea, which on the one hand is an important area for the location of wind farms and, on the other hand, is an ecologically important part of the Atlantic biogeographical region. This article is based on a report on renewable energy projects and species protection, written and published in Spring 2018, which was commissioned by the Dutch ministries of Economic Affairs and Climate and Agriculture, Nature and Food Quality.[9]

We limit this article to wind farms, both on- and offshore, because ecological research points in the direction that they have the most potential for conflicts[10] and moreover, due to the renewable energy targets, the geographical characteristics of the five member states, and the advanced technological status of wind energy generation compared with other renewable energy systems, it can be reasonably expected that the number of wind farms will have to increase substantially, or at least that there will be pressure for such an increase.

II. The European Union Framework for Increasing the Share of Renewable Energy Sources and for the Protection of Species

2.1 The share of renewable energy sources

Renewable energy projects are an important contribution to the sustainable policy of the European Union. The EU's targets for renewable energy are ambitious;[11] the current EU-wide target of renewable energy sources (RES) contributing to a 20 per cent share overall has been translated into national targets, depending on the share of renewable energy in 2005 (see Table 1).

Table 1: RES target and RES achievement per member state

Country	2020 target[12]	RES share realized 2015
Belgium	13%	6.4%[13]
Denmark	30%	31%[14]
United Kingdom	15%	9%[15]
Germany	18%	15%[16]
Netherlands	14%	5.9%[17]

Four of the member states therefore need to significantly increase the share of RES. The five member states in this comparison produce renewable electricity from similar resources, namely wind and solar.[18] With 2020 in sight, the EU is currently considering a new legislative package to realize and further the European Energy Union,[19] and the new target for 2030 has been set at 32 per cent EU-wide.[20]

windmills are built within or close to Natura 2000 areas, the legal regime protecting these sites (mainly article 6 Habitats Directive) may also be relevant.

[8] As far as Belgium is concerned, the federal law is relevant for offshore installations. As far as onshore installations (wind, solar, power lines) are concerned, the research is limited to Flanders.

[9] C.W. Backes & S. Akerboom, *Renewable energy projects and species protection*, https://www.uu.nl/sites/default/files/res_biodiversity_a_comparison.pdf, (last reviewed 27 October 2018).

[10] R. Buij *et al., Kwestbare soorten voor energie-infrastructuur in Nederland*, WUR-report 2883, 161 ff (2018).

[11] Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing 2001/77/EC and 2003/30/EC.

[12] See Annex I under A of Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources and subsequently repealing Directives 2001/77/EC and 2003/30/EC.

[13] Eurostat, *Infographic REN 2004-2015*, http://ec.europa.eu/eurostat/statistics-explained/index.php/File:Infographic_REN-2004-2015.png (last reviewed 7 March 2017).

[14] Energistyrelsen, *Energistatistik 2016*, https://ens.dk/sites/ens.dk/files/Statistik/estat2016.pdf (accessed 25 March 2019).

[15] Eurostat, *Infographic REN 2004-2015*, http://ec.europa.eu/eurostat/statistics-explained/index.php/File:Infographic_REN-2004-2015.png (last reviewed 7 March 2017).

[16] Vgl. Bundesministerium für Wirtschaft und Energie, Zeitreihen zur Entwicklung der erneuerbaren Energien in Deutschland, Berlin 2019, p. 5; https://www.erneuerbare-energien.de/EE/Redaktion/DE/Downloads/zeitreihen-zur-entwicklung-der-erneuerbaren-energien-in-deutschland-1990-2018.pdf;jsessionid = EC8DAE42E7E3B610B1863751ADAD356C?; last reviewed 31 March 2019. https://www.umweltbundesamt.de/sites/default/files/medien/376/publikationen/erneuerbare_energien_in_deutschland_daten_zur_entwicklung_im_jahr_2016.pdf

[17] Centraal Bureau voor de Statistiek, *Aandeel hernieuwbare energie 5,9 procent in 2016,* https://www.cbs.nl/nl-nl/nieuws/2017/22/aandeel-hernieuwbare-energie-5-9-procent-in-2016 (last reviewed 30 May 2017).

[18] Of course, biomass and hydropower are also important resources, but the Dutch ministries are mostly interested, due to the natural characteristics of the Netherlands, in wind and solar.

[19] European Commission, *Clean Energy for All Europeans,* https://ec.europa.eu/energy/en/topics/energy-strategy-and-energy-union/clean-energy-all-europeans (accessed 25 March 2019).

[20] European Commission, *Europe leads the global clean energy transition: Commission welcomes ambitious agreement on further renewable energy development in the EU*, http://europa.eu/rapid/press-release_STATEMENT-18-4155_en.htm (last reviewed 14 June 2018). Directive (EU) 2018/2001 of the European Parliament and of the Council of 11 December 2018 on the promotion of the use of energy from

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2.2 European species protection law: key prohibitions and derogations

Species protection law can be found in two European Union directives, namely the Birds Directive[21] and Habitats Directive.[22] Article 5 of the Birds Directive prohibits any deliberate killing or disturbance of wild birds "in so far as such disturbance would be significant having regard to the objectives of this Directive."[23] Similarly, Article 12 Habitats Directive forbids, amongst other things, any form of deliberate killing and deliberate disturbance of the strictly protected species.[24]

Key to both provisions is the prohibition on deliberate killing or disturbance. In several judgments, the European Court of Justice turned to these provisions and opted for a progressive interpretation thereof, taking into account the objective of the Directives.[25] In cases C-103/00 (Commission vs. Greece)[26] and C-221/04 (Commission vs. Spain),[27] the court held that killing is deliberate if it is "proven that the author of the act intended the capture or killing of a specimen belonging to a protected animal species or, at the very least, accepted the possibility of such capture or killing".[28] Hence, if one knows that a certain project may cause additional killing of birds or other strictly protected species, but accepts this additional, foreseeable, but unintended killing, the prohibition applies. Or, as the European Commission phrases it: "Deliberate actions are to be understood as actions by a person who knows, in light of the relevant legislation that applies to the species involved, and the general information delivered to the public, that his action will most likely lead to an offence against a species, but intends this offence or, if not, consciously accepts the foreseeable results of his action."[29] The scope of the prohibition to kill is therefore broad and it is in this light that spatial projects, amongst which wind farms, must be reviewed if they might interfere with protected species. It is not possible to generally exempt a class of project from the application of these protection rules.

Both Directives contain derogation provisions, which provides the competent authorities with the opportunity to balance the conservation of the protected species with other societal interests. Article 9 Birds Directive allows for a derogation from the prohibition of Article 5, if there is no other satisfactory solution and if one of the six reasons, mentioned in Article 9, justifies the derogation. These reasons are specific and lack a general clause or exemption of "overriding public interest" to justify derogations. According to the European Commission, the interests of public health and safety may be the most adequate reason for derogations to apply. The Commission does not provide any arguments for this choice.[30] Another reason that may be used is "for the protection of flora and fauna". The idea then is that renewable energy sources contribute to limit climate change, which in turn is potentially favourable for most species and habitats.

Article 16 Habitats Directive also contains a derogation, if there is no other satisfactory alternative. The second prerequisite is that "the derogation is not detrimental to the maintenance of the populations of the species concerned at a favourable conservation status in their natural range." According to the guidance of the European Commission,

> "no derogation can be granted if it has a detrimental effect on the conservation status or the attainment of favourable conservation status for a species at all levels. In other words, if a derogation is likely to have a significantly negative effect on the population concerned (or the prospects of this population) or at biogeographical level within a Member State, the competent authority should not allow it. The net result of a derogation should be neutral or positive for a species."[31]

An unfavourable conservation status, at the time that a derogation is requested, does not therefore prevent such a derogation being granted, as long as this does not have a (further) detrimental effect on the conservation status.[32]

renewable sources, especially Art. 3.

[21] Directive 2009/147/EC on the conservation of wild birds.

[22] Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora. On the interpretation of these provisions see EU Commission, Guidance document on the strict protection of animal species of Community interest under the Habitats Directive 92/43/EEC, Brussels 2007 and the case law of the CJEU on this topic.

[23] Further prohibitions could be relevant, such as e.g. the prohibition on deliberately destroying eggs or removing nests. However, as the prohibitions on deliberately killing or disturbing birds are the most relevant, we concentrate on these prohibitions.

[24] These are the (animal) species listed in Annex IV sub a. Further prohibitions may apply in some cases, the prohibition on the destruction of breeding sites and resting places.

[25] H. Schoukens & K. Bastmeijer, "Species Protection in the European Union: How Strict is Strict?" in C-H. Born, A. Cliquet, H. Schoukens, D. Misonne & G. Van Hoorick (eds.) *The Habitats Directive in its EU Environmental Law Context: European Nature's Best Hope?* (Routledge 2014).

[26] European Court of Justice, Case C-103/00 *Commission v Greece* [2002] ECR I-01147, often referred to as the Zakynthos or Caretta Caretta case.

[27] European Court of Justice, Case C-221/04 *Commission v Spain* [2006] ECR I-04515, often referred to as the Castilla y León or Lutra Lutra case.

[28] European Court of Justice, Case C-221/04 *Commission v Spain* [2006] ECR I-04515, para. 71.

[29] EU Commission, *Guidance document on the strict protection of animal species of Community interest under the Habitats Directive 92/43/EEC* (2007), p. 36.

[30] European Commission, (2011), p. 18.

[31] EU Commission, *Guidance document on the strict protection of animal species of Community interest under the Habitats Directive 92/43/EEC* (2007), p. 62.

[32] European Court of Justice, Case C-342/05 *Commission of the European Communities v Republic of Finland* [2007] ECR I-04713, para 29. EU Commission, *Guidance document on the strict protection of animal species of Community interest under the Habitats Directive 92/43/EEC* (2007), p. 36.

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Beyond these two prerequisites, there must be a listed reason justifying the derogation. Amongst others, a derogation can be justified "for other imperative reasons of overriding public interest, including those of a social or economic nature and beneficial consequences of primary importance for the environment".[33] Significant wind farm projects may, be justified in the public interest.[34]

III. Differences in Interpretation and Application of Species Protection Law

As far as can be seen, all the countries examined here have correctly transposed the provisions of the Birds Directive and the Habitats Directive into national law. Moreover, with two exceptions, there is also no "gold-plating": all national legislation closely follows the EU legal provisions.[35] German and Scottish law[36] is stricter insofar as not only deliberate killing and disturbance, but also any killing and disturbance are prohibited.[37] The wording of the provisions in the national legal systems is, therefore, otherwise very similar. However, there are significant differences regarding the interpretation and application.

3.1 Structure of the national implementation

Both Directives have to be implemented in national regulation. We found differences in the national implementation structures. Only in the Netherlands there is a separate permit requirement exclusively dealing with species protection. In Germany, Denmark and Belgium (both for the marine environment as well as Flanders), the species protection regime is applied within broader permitting requirements that concern not only species protection issues, but for example planning permission or environmental permission. In Germany, for example, the species protection provisions are applied either, for most of the onshore wind turbines, within an environmental permit[38] or, within planning permission, as concerns most of the offshore wind turbines.[39]

Although specific regional and federal legislation on strict species protection, including a derogation requirement, exist in Belgium, in practice the requirements for species protection are mostly integrated in other procedures and decisions. Only in cases where the 'integration track' has not been followed, which entails further consultation with the nature conservation agency, does a separate derogation need to be obtained from the competent agencies.[40]

The implementation in the United Kingdom is rather different. First and foremost, the EU species protection regime is implemented by creating criminal offences for violations, in this case, killing of species. These offences are subject to defences, which includes having a valid license for the harmful activity. However, in practice derogation licenses are not granted for renewables projects because the focus is to avoid or mitigate harmful impacts.[41] Hence, in theory, activities that would have significant effects on species will not be licensed.[42] However, all renewable energy projects will require planning permission and, in England, Natural England – the statutory nature conservation agency - will not in any case consider a species mitigation license until planning permission has been given, unless there are exceptional circumstances. The position is slightly unclear because in a leading case the UK Supreme Court held that if proposed development is found acceptable when judged on its planning merits, planning permission should normally be given, unless the planning authority considers the proposed development would be likely to offend Art. 12(1) Habitats Directive and unlikely to be licensed under the derogation powers.[43] Where in practice this line is drawn, is open to debate. Whether this is consistent with Court of Justice of the European Union (CJEU) case law has been questioned by the Governments own statutory conservation agency.[44]

[33] Article 16 of Habitats Directive 92/43/EEC

[34] The CJEU has decided this with regards to art. 6 Habitats Directive, European Court of Justice, Case C-182/10 *Solvay* [2012], para. 77.

[35] See J. Schumacher & P. Fischer-Hüftle, *Bundesnaturschutzgesetz. Kommentar*, § 44(4)-(6) (Kohlhammer 2018).

[36] Until 2017, the same was true for the Netherlands.

[37] German scholars emphasise that this is far from "gold plating" because Germany's law also provide an extensive understanding of the derogation rules, see J. Schumacher & P. Fischer-Hüftle, *Bundesnaturschutzgesetz. Kommentar*, § 44(4)-(6) (Kohlhammer 2018).

[38] On the basis of § 4 (1) sub. 3 Bundes-Immissionsschutzgesetz.

[39] Planfeststellungsbeschluss, on the basis of § 2 Seeanlagen-Verordnung, respectively § 45 WindseeG.

[40] See Article 23 of the Flemish Species Regulation.

[41] A useful statement on current practice is in the Witness Statement of Matthew Heydon from Natural England, submitted as part of the case *R (Eaton) v Natural England and RWE Npower Renewables Ltd* [2012] EWHC 2401 (Admin).

[42] Reg. 9(3) of the Conservation of Habitats and Species Regulations 2017.

[43] *R (Morge) v Hampshire County Council* [2011] UKSC 2.

[44] Natural England, *The Planning Act 2008, The Infrastructure Planning (examination procedure) Rules 2010 Navitus Bay Offshore Wind Park Application. Application by Eneco Wind UK Limited and EDF Energy for The construction and operation of Navitus Bay Offshore Wind Park Planning Inspectorate* (2018), p. 18 , citing European Court of Justice, Case C-418/04 *Commission v Ireland* [2007] ECR I-10947, para 208; European Court of Justice, Case C-183/05 *Commission v Ireland* [2007] ECR I-00137, paras 29-30; Opinion of A-G Kokott in European Court of Justice, Case C-383/09 *Commission v France* [2011] I-04869, para 89; judgment at paras 21, 35, 37; European Court of Justice, Case C-103/00 *Commission v Greece* [2002] ECR I-01147, para 31; European Court of Justice, Case C-518/04 *Commission v Greece* [2006] ECR I-00042*, para 21.

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3.2 The implementation of "deliberate killing"

The most rigorous interpretation and application, which is the closest to the wording of the EU legislation, is found in the Netherlands. Here, expert evidence that the construction and operation of the facilities does not result in disturbance or killing of even one additional specimen of a strictly protected species is required. If a disturbance or killing of one or more specimens is to be expected, the activity can only be approved after a derogation has been granted (under Article 9 Birds Directive or Article 16 Habitats Directive).

For Germany, the highest administrative court, the Bundesverwaltungsgericht (BVerwG), has explicitly rejected such a strict, very literal, interpretation. The court has stated:

> "If such an interpretation would be chosen, the prohibitions, which, within the concept of species protection law, are drafted for exceptional cases, would have to be applied in general and in most cases. The strict requirements of the derogations would then serve an allocative function, which was not thought of within the system and structure of the species protection law and which they cannot reasonably fulfil."[45]

In German practice, "killing" is rather interpreted as any "significant" increase of the mortality risk. That a specimen of a bird or other animal probably will die is not decisive. The prohibition of killing in Article 5 Birds Directive or Article 12 Habitats Directive only applies if the risk for such a bird or animal to be killed, for example by traffic or predators, is significantly increased by (the extra risk of) the wind turbines.[46] This threshold of a significant increase of the mortality risk is elaborated in diverse criteria and depends on local conditions and the conservation status of the respective species.[47] In practice, the assessment concept of the "Mortality-Threat Index" (Mortalitäts-Gefährdungs-Index) introduced by Bernotat and Dierschke (and supported by the Federal Agency for Nature Conservation) is often applied. This considers a population's biological (e.g. natural reproductive and mortality rates, species-specific age of the individuals or population sizes) as well as conservation parameters (e.g. threat status, rarity, conservation status or national responsibility).[48] This concept, which is highly regarded in expert discussions, makes clear that a significant increase in the risk of mortality cannot be evaluated independently of the population biology.[49] Ultimately, however, often distance criteria are applied. These criteria are based on expert assumptions about the likelihood of a significant increase in mortality for projects if certain distances to breeding grounds, flight routes etc. are taken into account. Other important criteria are species-specific behaviour, the different reproduction strategies of species, and the effect of mitigation measures.[50] These further criteria are often used in practice in addition to the more simple and pragmatic distance criteria. The "Mortality Threat Index" of Bernotat/Dierschke reaches quite different outcomes, compared with the ORNIS criterion, dealt with below (see section 3.4): dependent on the different species, the "significance" criterion can be fulfilled by a diverse range from 0.5 per cent up to 5 per cent additional loss of population.

In Flanders, the element of "deliberate" killing is, in theory, understood as the likelihood of the killing of at least one additional specimen. In practice, however, authorities appear wary of the strict prohibition. In practice, the focus rather lies on the likelihood of a significant impact on the relevant population, which can be estimated during the location planning phase, by considering whether a project is located on or near to a migration route or a breeding ground. The Flemish approach implicitly seems to underscore that the unintentional, but foreseeable, killing of some individuals is generally not to be regarded as a case of "deliberate killing" in the context developments, such as wind farms. However, this stance has not been explicitly recognised in public documents. It more or less seems to be the result of the existing application of the protection rules in concrete cases.

Also here the United Kingdom uses a rather different approach. In the UK, killing would only be

[45] Translation by the authors. In German: "Damit würden diese nach dem artenschutzrechtlichen Regelungsgefüge als Ausnahmen konzipierten Vorschriften zum Regelfall. Ihren strengen Voraussetzungen würde eine Steuerungsfunktion zugewiesen, für die sie nach der Gesetzessystematik nicht gedacht sind und die sie nicht sachangemessen erfüllen können." See: BVerwG 9.7.2008, 9A 14/07, BVerwGE 131, 274, Recital 91.

[46] See also, Bundesverwaltungsgericht, Beschl. v. 8.3.2018, 9 B 25.17, which confirms that kills by humans are included in this concept.

[47] BVerwG 9.7.2008, 9A 14/07, BVerwGE 131, 274, Recital 91; see further also U. Bick & K. Wulfert, *Der Artenschutz in der Vorhabenzulassung aus rechtlicher und naturschutzfachlicher Sich,* NVwZ 346, 347 (2017); Gellermann "§ 44 BNatSchG Nr. 9", in: Landmann & Rohmer, *Umweltrecht* (C.H. Beck 2019). For further details: Köck & Bovet, *Die Anwendung des Artenschutzrechts bei der Zulassung von Erneuerbare Energien-Projekte*, ZUR 579, 581 ff (2018).

[48] See Bundesamt für Naturschutz, *Tötungsverbot im Zusammenhang mit Eingriffen*, https://www.bfn.de/themen/planung/eingriffe/besonderer-artenschutz/toetungsverbot.html (last reviewed on 20 December 2017). See also A. Hinsch, "Windenergienutzung und Artenschutz – Verbotsvorschriften des § 44 BNatSchG im immissionsschutzrechtlichen Genehmigungsverfahren" *ZUR* 191, 194 (2011).

[49] Wulfert, Lau, Widdig, Müller-Pfannenstiel & Mengel, *Standardisierungspotenzial im Bereich der arten- und gebietsschutzrechtlichen Prüfung*, 87 (Bundesamt für Naturschutz 2015).

[50] See U. Bick & K. Wulfert, *Der Artenschutz in der Vorhabenzulassung aus rechtlicher und naturschutzfachlicher Sich,* NVwZ 346, 3478 (2017).

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considered "deliberate" if a developer or an operator failed to co-operate with the authorities in considering mitigation options once a problem at its site had been identified.[51] In practice, if a developer or an operator acts in accordance with the relevant development consent the developer will not be deemed to have acted deliberately to cause harm. Instead, any killing that arises would be deemed to be incidental and not to have arisen with reckless disregard.

In summary, then, in Germany and the Netherlands the prohibitions of Article 5 Birds Directive and Article 12 Habitats Directive are interpreted and applied with regard to each individual specimen, not on the basis of populations. In Germany this is applied through the 'significance risk' criterion. This is in accordance with EU law requirements, as the letter of the law indicates and is confirmed in case law and the guidance of the European Commission.[52] The German interpretation, which applies "the significance risk criterion", is less strict than the Dutch one. In Flanders and with regard to the Belgian marine environment (in practice), in Denmark and in the UK, the application of species protection requirements does not seem to focus on the need for a permit or a derogation for the killing or disturbance of individual specimens. To judge whether a prohibition might apply, effects on birds and other protected species are examined on a population basis, not with regard to individual specimens.

3.3 Derogations

In theory each of the five member states offers the opportunity to apply for a derogation, but in practice derogations are only obtained in the Netherlands. Here developers can apply for a derogation under the justification of "other imperative reasons of overriding public interest" in case of bats or other species[53] and "in the interests of public health and safety" and "for the protection of flora and fauna" in case of birds.[54] The reasoning is then that renewable energy projects contribute to limiting climate change and therefore help to protect flora and fauna. The Dutch Council of State has explicitly accepted this interpretation that the Birds Directive provides reasons that more obviously justify derogations than the others.[55]

In Germany, the UK, Denmark and Belgium, often no explicit derogations from the prohibitions of Art. 5 Birds Directive and Art. 12 Habitats Directive is necessary to allow renewable energy projects. If a project is likely to have significant effects on a population of a protected species, either mitigating measures are prescribed which ought to prevent such effects or the project is not allowed. In Flanders, for instance, the effects of wind farms are mostly assessed in the context of an Environmental Impact Assessment (EIA), which lists the possible mitigation measures that are in order to avoid significant damage.

3.4 The application of the ORNIS criterion

The ORNIS, which is not explicitly mentioned in one of the Directives, but emerged from case law,[56] establishes that if casualties remain under 1 per cent of the baseline "natural mortality rate", the threshold for derogations as specified in Article 9 of the Birds Directive, set at "small numbers", would be met.[57] The ratio then is that an additional loss of less than 1 per cent of the usual mortality is not significant. The application of this criterion is, in principle, independent from the actual ecological status of the species and the size of the population. Hence, it can also be applied if a species (already) is in an unfavourable conservation status or if it concerns a small population. The ORNIS criterion has been accepted in the case law of the Court of Justice with regards to the hunting of birds in relation to the Birds Directive.[58]

In the Netherlands, the ORNIS criterion is often applied, namely within decisions on applications for derogations as a criterion to decide whether a derogation can be granted "under strictly supervised conditions and on a selective basis, the capture, keeping or other judicious use of certain birds in small numbers"[59] or whether "the derogation is not detrimental to the maintenance of the populations of the species concerned at a favourable conservation status in their natural range".[60] Until 2015 the ORNIS principle was merely applied to bird species but, since a judgment in 2015, this principle can also be applied to some other species, especially those which are deemed to be "sufficiently similar" to birds, such as bats.[61]

[51] It should be noted that within the UK there seem to be some differences approaching this issue between on the one hand England, Wales and Northern Ireland and Scotland on the other hand.

[52] See for example European Court of Justice, Case C-221/04 *Commission of the European Communities v Kingdom of Spain* [2006] ECR I-04515, para 71; also: EU Commission, *Guidance document on the strict protection of animal species of Community interest under the Habitats Directive 92/43/EEC* (2017), p. 35 ff.

[53] On the basis of Art. 16 Habitats Directive.

[54] On the basis of Art. 9 Birds Directive.

[55] ABRvS 4 May 2016, ECLI:NL:RVS:2016:1227.

[56] European Court of Justice, Case C-79/03 *Commission of the European Communities v Kingdom of Spain* [2004] ECR I-11619, para 41.

[57] See European Commission, *Second report on the application of Directive No. 79/409/EEC on the conservation of wild birds, COM(93) 572 Final, Brussels* (1993), p. 11 and European Court of Justice, Case C-79/03 *Commission of the European Communities v Kingdom of Spain* [2004] ECR I-11619, para 41.

[58] European Court of Justice, Case C-79/03 *Commission of the European Communities v Kingdom of Spain* [2004] ECR I-11619, para 41.

[59] Art. 9 (1) sub c Birds Directive.

[60] Art. 16 (1) Habitats Directive.

[61] See ABRvS 18 February 2015, ECLI:NL:RVS:2015:438 (*Sabinapolder*). See also the overview provided by L. Boerema, "Soortenbescherming en windturbines: stilstand

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If the 1 per cent threshold is exceeded, the impact of a project may be examined more closely. In some cases, the "Potential Biological Removal Method" ("PBR method") is applied, for instance with respect to offshore wind, which gives a better and more accurate picture of the consequences of a project, taking into account the different modes of action of different species and different characteristics in the actual state of conservation.[62] The PBR method was developed in response to the United States Marine Mammal Protection Act[63] and is used in different parts of the world like the US, Australia and also in (parts of) Europe. However, when planning and permitting wind farms, the ORNIS criterion and the PBR method seem to play a substantial role only in the Netherlands, due to the fact that derogations are dealt with only in this country.

In Germany, the mortality risk index, an expert concept to implement the "significant risk" criterion established by the court's (see above 3.2), is to some extent similar to the ORNIS criterion. It serves a similar function, namely to decide whether the killing or disturbance of a certain amount of specimens of a species may have an effect on the conservation status of (the local population of) a species or whether such effect can be excluded. However, in Germany this question and criterion are not dealt with in the context of decisions on derogations, but in an earlier phase with regards to the question whether the killing of some specimens increases the mortality risk and therefore qualifies as "deliberate killing" in the sense of Article 5 Birds Directive or Article 12 Habitats Directive.

One may raise the question whether such threshold are in line with the case law regarding art. 6(3) Habitats Directive, which might by analogy eventually also be relevant in this regard. The usage of a threshold might however be of a great practical value and seems to be justifiable as long as cumulative effects are sufficiently taken into account,[64] in order to avoid "a death by a thousand cuts" scenario.

IV. The implementation and application of the SEA and EIA requirements

Strategic and Environmental Impact Assessments (SEA and EIA) can be very important tools to reduce the effects on protected species by choosing the right locations of wind farms. This however is only possible if there are enough choices. The positive effect of SEA may diminish in the future when less suitable locations have to be chosen to realise the targets for wind energy, better sites having already been used. EIA can help to reduce and mitigate negative effects of wind farms by providing information on species-friendly design, layout and operating schemes of wind farms.

4.1 The implementation of the SEA obligation for plans

In all five member states, offshore wind plans and programmes are subject to Strategic Environmental Assessment. In all countries a spatial planning instrument is used for the zoning of wind locations. In Germany, this concerns the Raumordnungspläne für die ausschließliche Wirtschaftszone (AWZ), which are drawn up since 2009 and have to undergo a strategic environmental assessment in which the effects on species, especially birds, play an important role. Similarly, the Belgian Marine Spatial Plan (2014) allocates a zone for offshore wind farms. This plan was subjected to a prior strategic environmental assessment. In 2016, the UK Offshore Energy Strategic Environmental Assessment was published.[65] A SEA was conducted for the draft plan. On the basis of the assessment the definite plan will be finalized which aims to enable further offshore wind farm leasing (as well as the exploitation of fossil fuels) in the relevant parts of the UK Exclusive Economic Zone and the territorial waters of England and Wales. The Netherlands determined several offshore wind farm locations in an Offshore Wind Energy Structural Vision, which is a Dutch instrument that creates self-binding policy for the Government.[66] Such a Structural Vision is a plan subject to a SEA.[67] In Denmark, designations of sites for offshore wind farms to be established by tenders have been subject to an SEA.[68]

With respect to onshore wind energy, these appear

cont.
of achteruitgang?", 1 *Tijdschrift voor natuurbechermingsrecht* 3, 11 ff (2017).

[62] In more detail Backes & Akerboom, "Member State report: The Netherlands", in: Backes & Akerboom (eds.), *Renewable energy projects and species protection*, 116 ff (Utrecht Center for Oceans, Water and Sustainability Law, 2018).

[63] Y. Richard & E.R. Abraham, *Application of Potential Biological Removal methods to seabird populations, Ministry of Primary Industry New Zeeland, Auckland 2013*, https://pdfs.semanticscholar.org/766c/a589e66b75f05b0cf0536a4749ad141d79bc.pdf (last reviewed 28 October 2018).

[64] See below, section 5.

[65] See Department for Business Enterprise & Regulatory Reform, *Post Public Consultation Report, https*://www.gov.uk/government/uploads/system/uploads/attachment_data/file/536672/OESEA3_Post_Consultati on_Reprt.pdf (last reviewed 30 April 2018). This is the output from the draft SEA report followed by consultation thereon, especially the responses from the statutory nature conservation bodies. See also UK Parliament, *OFFSHORE ENERGY STRATEGIC ENVIRONMENTAL ASSESSMENT: Written statement*, https://www.parliament.uk/business/publications/written-questions-answers-statements/writtenstatement/Commons/2016-07-13/HCWS84/ (last reviewed 30 April 2018).

[66] See Chapter 2 of the Spatial Planning Act.

[67] Article 6.5 of the Offshore Wind Energy Act.

[68] E.g. Havmølleudvalget, *Energistyrelsen, Udpegning Af Områder Til Kystnære Havmøller*, https://ens.dk/sites/ens.dk/files/Vindenergi/strategisk_miljoevurdering_af_kystnaere_placeringer_juni_2012.pdf (accessed 29 March 2019).

to be less strictly steered by SEAs. Flemish, Danish and German plans and programmes for wind farms have been subject to SEAs. As for the Flemish Region, spatial execution plans, which set the framework for future wind farm developments, will also be subject to a prior SEA. However, the relatively lenient land use prescriptions will provide additional leeway for the construction of wind farms in agricultural areas, which renders the drafting of a prior spatial execution plan in many instances superfluous. In such cases, a prior SEA will therefore be absent, which might lead to more complications during the permitting procedures, as the alternatives assessment at this level will probably be less extensive. In a recent decision, however, a Flemish administrative court has submitted a list of preliminary questions to the Court of Justice of the EU regarding the alignment of the decisions laying down the general conditions to be observed when authorizing wind farms with the SEA Directive.[69] Since these decisions have not been subjected to a prior SEA, questions arose as to the compatibility with the SEA Directive. The result of this case might affect the legality of many of the planning permits that have been handed out for wind turbine project during previous years.

In Germany, planning decision on suitable areas for onshore wind energy is made mainly in regional and local plans (Raumordnungspläne, Bauleitpläne), which are subject to SEA too. Therefore, SEA is relevant for most of the site decisions for wind energy. However, also here, strategic planning is not a prerequisite for realising wind farms. If the land use planning authority doesn't take a decision about the zoning for wind energy projects, SEA will not be relevant.

In the United Kingdom, areas have been designated for onshore wind farm development in the past. However, these areas were allocated on the basis of trying to minimize the spread of wind energy and visual impacts across the landscape, so developments are clustered together.[70] For the Netherlands at least, the most important allocation instrument for onshore wind activity – the Onshore Wind Energy Structural Vision – was drafted before January 2017, rendering a SEA not yet obligatory.

4.2 The implementation of the EIA obligation for projects

Because certain wind farms and wind turbines are listed under No. 3 sub i. of Annex II of Directive 2011/92/ EU on the assessment of the effects of certain public and private projects on the environment, member states need to determine whether that activity has to be made subject to an impact assessment (EIA).[71] The determination of whether an EIA is necessary is subject to criteria following from the Directive, as formulated in Annex III, which allow for a degree of natural variation. The countries dealt with in this article have transposed this similarly, but slightly different in detail. In the Flemish Region, for example, an EIA is required for the construction of at least 20 turbines and for the construction of at least 4 turbines that can have a significant impact on a particularly protected area. Below this threshold, a screening duty applies pursuant to which the project developer needs to analyse whether the proposed project would give rise to significant effects. In Germany, EIA is obligatory for proposed developments involving more than 20 wind turbines higher than 50 meters high. However, a site-related preliminary screening is required for just 3 to 5 wind turbines and a general preliminary screening is required for 6 to 19 turbines.[72]

V. Cumulative Effects of Renewable Energy Projects

An important means to enhance the effectiveness of EIAs for limiting the negative effects on protected species is the need to address cumulative effects in the EIA reports. According to Annex 4 No. 5 lit. e) of the Directive, the cumulation of effects with other existing and/or approved projects, "taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources" are to be included in the EIA-report. This provision was added by Directive 2014/52/EU. In the meantime, all legal orders addressed in this comparison, have transposed this requirement into national law. It may be expected that the application of this provision will widen the scope to examine and describe cumulative effects in the EIA process. In turn, this may enhance the pressure to take these cumulative effects into account in the permitting decisions more systematically.

The duty to assess cumulative effects is not entirely new and has been addressed in policy documents before.[73] However, mentioning this requirement

[69] Flemish Administrative Court on Disputes regarding Planning Permits, 4 December 2018, no. RvVb-A-1819-0352.

[70] See HM Government, *Renewable and low carbon energy (updated)*, https://www.gov.uk/guidance/renewable-and-low-carbon-energy#paragraph_026, para 005 (last reviewed 28 March 2019); House of Commons, *Briefing Paper No. 04370, Planning for Onshore Wind* https://researchbriefings.files.parliament.uk/documents/SN04370/SN04370.pdf (accessed 28 March 2019).

[71] Art. 4 (2) Directive 2011/92/EC on the assessment of the effects of certain public and private projects on the environment jo. Annex II, sub 3 (i).

[72] §§ 3b and 3c jo. item 1.6 of Annex 1 of the EIA Act.

[73] See for example European Commission, *Guidance on EIA scoping, Brussels 2001, Scoping Checklist (without page number)*, http://ec.europa.eu/environment/archives/eia/eia-guidelines/g-scoping-full-text.pdf (last reviewed 1 November 2018).

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explicitly, in EU legislation and its transposition in national legislation, may have the effect that EIA reports on renewable energy projects in the future will have to devote more attention to cumulative effects. It is not unlikely that this will also have an impact on permit procedures and that cumulative effects will play a greater role in decisions on permits for sustainable energy projects.

If one takes a look at, for example, the existing and projected wind farms in the southern part of the North Sea (between the UK, Belgium and the Netherlands),[74] it becomes obvious that the cumulative effects of existing and planned wind farms (and other projects) are an important issue to address when trying to limit the negative effects of wind energy projects on species. Although article 16 Habitats Directive, unlike Art. 6 Habitats Directive, does not explicitly refer to cumulative effects, cumulative effects should, from an ecological point of view, been taken into account when assessing whether certain projects have effects on the conservation status of a species. One can also argue that it is not possible to assess the effects of a project, like a new wind farm, on the conservation status of a certain species in a sound manner if cumulative effects with all other existing and projected activities in the area are not assessed.[75] The guidance of the European Commission, however, mentions cumulative effects only when discussing the monitoring and reporting requirements.[76] In practice, the extent to which cumulative effects are taken into account varies enormously.

In the Danish marine environment, cumulative effects have been considered in at least some EIA's drafted for such projects. However, it is not obvious that this has been done in all cases. For the UK, dealing with cumulative effects has been described as a "huge challenge" especially regarding off shore wind farms in the North Sea, where a kind of 'gold rush' has occurred, with smaller farms coming in first and making effective decision-making (e.g. a lower number of bigger farms) more difficult.[77] There appears to be a lack of formal guidance regarding the need and scope of the assessment of cumulative effects, e.g. which other wind farms should be deemed appropriate for inclusion in the cumulative assessment used to predict the cumulative mortality, especially in relation to projects 'in the pipeline'.

In the Dutch SEA accompanying the Offshore Wind Energy Structural Vision,[78] cumulative effects of offshore wind energy plans and other offshore activities were taken into account. At the same time as this SEA was drafted, the Government was preparing a framework for ecology and cumulation, in order to understand the impact on species of wind energy in general and specifically the impact of the designated offshore wind areas. Given that the final SEA mentioned the framework that was in preparation, it was acknowledged that the framework might lead to further mitigation measures and different locations. The Framework is now finalized[79] and describes the methodology of measuring the effects and proposes possible mitigation measures. The scope of the report is limited to the already designated areas outside the 12-nautical mile zone.

With respect to onshore wind activities, in the Flemish region it has been found that the determination of cumulative effects for individual projects is difficult and often has not been possible, mostly due to a lack of data and information. At present, cumulative aspects are considered within the risk atlas, which has been drafted on behalf of the Flemish Government to build up the necessary policy knowledge on the interactions between wind turbines and birds in Flanders. This risk atlas is available as a web application.[80] Although this risk atlas and the connected webtool do not have any legal status, its practical importance for the choice of areas for wind farms should not be underestimated.

In the Netherlands, the importance of cumulative effects of onshore wind farms are assessed, but are not systematically taken into account.[81] Only the province of Groningen has been requesting an assessment of cumulative effects in EIAs for some time.[82] In Germany, the findings are quite similar to those in the Netherlands. Cumulative effects do not play a significant or structural role in determining planning and permitting decisions for onshore wind or solar energy developments.

To conclude, how far, and how often, cumulative effects are taken into account in practice is not yet clear for all five member states.

Regarding bats, it has been argued in ecological science that (even) a national scope of cumulative effects would not suffice. There are concerns about

[74] See e.g. rebo, *Offshore Windfarms*, https://www.reboostende.be/offshore-wind-farms (last reviewed 1 November 2018).
[75] See e.g. Arcadis e.a., *Groningse windparken, Cumulatie ecologie*, 12 (Assen 2017).
[76] European Commission, *Guidance document on the strict protection of animal species of Community interest under the Habitats Directive 92/43/EEC* (2007), p. 65.
[77] C.W. Backes & S. Akerboom (eds), *Renewable energy projects and species protection*, 35 ff (Utrecht 2018).
[78] See paragraph 4.2 of this article.
[79] Only to a certain extent; the Framework is drafted acknowledging that knowledge improves. New insights will be continuously incorporated in the Framework.
[80] See Instituut Natuur- en bosonderzoek, *Risicoatlassen vogels en vleermuizen mbt windturbines – versie 2015*, https://geo.inbo.be/windturbines (last reviewed 28 March 2019).
[81] See e.g. Arcadis e.a., *Groningse windparken, Cumulatie ecologie*, 7 (Assen 2017)
[82] See for example the case Sabinapolder, ABRvS 18 February 2015, ECLI:NL:RVS:2015:438 and the report Arcadis e.a., *Groningse windparken, Cumulatie ecologie*, 12 (Assen 2017).

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potential cumulative impacts of wind turbines across Europe[83] on bats in the UK, which, mainly due to lack of data, cannot sufficiently be addressed. It is argued that a European approach would be needed for this.

Given the explicit European obligation to include an assessment of cumulative effects in EIAs, and the national implementation hereof, it is likely that such effects will indeed have to be taken into account on a more systematically and structured basis. There is however a strong signal with respect to a lack of information, data and knowledge of the application and determination of the actual effects.

VI Mitigation and Monitoring

6.1 Mitigation

Mitigation is an important way to limit the negative effects of wind projects. This starts with the choice of location, for instance by locating it outside a Natura 2000 area or migration route or breeding ground.[84] Secondly, when a location has been chosen, the number and height of wind turbines may play a role, as may the positioning of lines or separate wind turbines. Other measures may be a limitation of the number of turbines, increasing the wind speed threshold required before blades are permitted to rotate (in some cases this is based on an algorithm including data on other factors such as temperatures and species activity), or even a temporary shutdown, for example if many specimens of certain species are passing by.[85] In some cases, the number of losses can be reduced to the extent that they are not deemed significant.

In all of the countries examined, these kinds of mitigation measures are taken to reduce the negative effects of wind energy projects. In the Netherlands, mitigation measures are frequently prescribed.[86] Mitigation measures are standard if they are necessary to reduce the effects of the wind activity in order to be able to grant derogations. If, however, a wind farm causes additional killings of less than 1 per cent of annual mortality rate, it is more difficult to argue that nevertheless additional mitigation is required. The burden of proof that additional mitigation is proportional, is very high in such cases, as a general requirement to reduce the detrimental effects of projects like wind farms on species as much as possible does not seem to be acknowledged by the Dutch courts. In a recent case, the Judicial Division of the Dutch Council of State was very sceptical about the need to impose mitigation measures in such a situation. The court ruled that the permitting authority had not properly argued why a proactive shutdown requirement was necessary, effective and proportional.[87]

In Flanders, mitigation measures will be necessary when there is a substantial risk of interference with protected species (e.g. a wind farm located next to a protected site and/or close to a breeding ground). In some cases, mitigation is required if monitoring demonstrates that the actual impact exceeds a certain threshold. Such requirements follow from the legal regime of the Habitats Directive, but may also be qualified as adaptive management approaches. Such approaches are to be seen as steps towards a more adaptive management-based approach. For now, however, no clear-cut conclusions can be drawn regarding the usage of mitigation duties as a consequence of monitoring results in the context of wind farm development projects. Therefore, it can be safely assumed that – in view of the proportionality principle – mitigation requirements will be most relevant where there is a significant risk.

In Germany, mitigation is an important instrument both for dealing with the prohibition on killing and for dealing with the prohibitions relating to disturbance and damage. All working aids and guidelines that have been established at the level of the federal states mention mitigation measures, which serve the purpose of ensuring that a planned wind project remains below the threshold of a "significant increase in the risk" of mortality in a protected species and therefore the prohibition on killing protected species does not apply. The courts even have essentially recognized that avoidance measures can contribute towards a project being approved, even when protected species that are sensitive to wind energy regularly reside in the vicinity of a wind farm or turbine. Several measures have been subject to judicial scrutiny and recognized as suitable. In cases where uncertainty prevails in relation to the effectiveness of the avoidance measures, accompanying monitoring to assess the success of the mitigation measures is often demanded when issuing an

[83] C.C. Voigt, A.G. Popa-Lisseanu, I. Niermann, S. Kramer-Schadt, "The catchment area of wind farms for European bats: a plea for international regulations" 153 *Biological Conservation* 80–6 (2012).

[84] European Commission, *Wind energy developments and Natura 2000* (2011) , p. 31 and p. 52 ff.

[85] See also European Commission, *Wind energy developments and Natura 2000* (2011), p. 84 ff.

[86] There are many examples to be given here. The EIA Commission groups all wind EIAs together on its website, http://commissiemer.nl/themas/windenergie. Here one can find all relevant EIAs and the advice of the EIA Commission. Also the relevant exemptions make explicit what mitigation measures have been taken. See for instance the concept exemption for the Hattemerbroek wind farm, which has been open to consultations as of 13 December 2017. In this concept, the authority has laid down mitigation measures to be applied to different species. The concept is accessible through https://www.oldebroek.nl/dsresource?objectid=efbff2af-d6cb-46528be2-6483e50dddd3&type=org.

[87] See for example ABRvS 16 August 2017, ECLI:NL:RVS:2017:2206, JM 2017/120 (*Slufterdam*).

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approval.[88] In some cases, the competent authorities have changed the requirements to take mitigation measures on the basis of monitoring results.[89]

Specific mitigation measures are not prescribed in UK legislation, although the 'no other satisfactory solution' test[90] would provide a legal standard, in effect requiring impacts to be reasonably mitigated. However, as noted above, species licensing is not used, so any required mitigation is via planning control processes; this includes Government planning policy guidance which advocates pursuing mitigation through careful design and appropriate construction techniques, and mitigation obligations in EIA.

In Danish practice, different mitigation measures can be described in an EIA and laid down in the permit. Such measures can relate to both the period of construction and operation. Usually, mitigation is only prescribed if this is necessary to prevent significant negative effects of a project on the conservation status of a species.

6.2 Monitoring requirements

Articles 11 and 17 of the Habitats Directive require governments to monitor and report on the conservation status of the strictly protected species. Also the Birds Directive also requires periodical reporting (Article 12 Birds Directive), although these reporting requirements are drafted less precisely. These obligations will not be further dealt with here. In relation to project developers of wind projects, administrative authorities may require enterprises which operate sustainable energy projects to monitor whether the effects of these projects are in accordance with what was assumed when the projects were given permission to operate and do not contribute to a deterioration of the conservation status of the relevant species. Typical monitoring measurements are acquisition devices to detect and record bats or thermal animal detection systems (TADS).[91] In line with Article 8a (4) of the EIA Directive, as amended by Directive 2014/52/EU, member states are required to define procedures for monitoring significant adverse effects on the environment, whereby the types of parameters that are to be monitored and the duration of monitoring the species, the location and the scope of the project, as well as the extent of its effects on the environment, must be appropriate. Monitoring can however be costly. Therefore, the question is to what extent private entities can be obliged to invest in monitoring the effects of their activities.

Since May 2017, the Danish Act on Environmental Assessment of Plans and Projects stipulates that monitoring conditions shall be laid down in the EIA permit if the project is foreseen to have significant adverse effects on the environment. This could also entail monitoring obligations as regards species, even though monitoring cannot pave the way for accepting projects with significant effect on protected species.

In Flanders, monitoring is often included in permits for wind farm developments and, together with the adaptive licensing method, is widely used because of the difficulties in assessing the mortality rates (see above 3.2). Measures are taken if the effects are heavier than expected. However, there is currently no explicit guidance as to the precise use of such monitoring schemes. Again, from the available case law it can be deduced that monitoring is especially relevant in cases where a risk of significant effects cannot be excluded beforehand. Guidelines for monitoring are described in Everaert (2015).[92] Whether or not monitoring is to be carried out can be determined per location by an expert, the project developer and/or through policy decisions. The possibility of a monitoring plan with agreements on taking or modifying mitigating measures can also be investigated on a case-by-case basis. Recent case law developments have not explicitly excluded the use of monitoring protocols. However, if used, they should be integrated in a comprehensive manner in the applicable permit conditions. In a 2018 decision, the Belgian Council of State quashed an environmental permit for the operation of three wind farms because it found the monitoring programme not to be in line with the preventative approach that is underlying Flemish nature conservation law. Amongst others, it pointed to the fact that the monitoring measures would only enter into force after a wind turbine killed 3 bats. In its view, this threshold is too high to prevent significant

[88] For details on this see Ruß, Artenschutzrechtliche Monitoringauflagen bei der Genehmigung von Windenergieanlagen, Zeitschrift für Umweltrecht (ZUR) 28 (2017), 602-608; for judicial practice, see for example Lüneburg High Administrative Court, 10 January 2017 – 4 LC 198/15, margin no. 142.

[89] Technical Agency Wind, *Nachträgliche Anpassung immissionsschutzrechtlicher Genehmigungen aufgrund artenschutzrechtlicher Belange* (2016), p.6 ff

[90] Reg. 55(9) The relevant licensing body must not grant a licence under this regulation unless it is satisfied – (a) that there is no satisfactory alternative; and (b) that the action authorised will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range. 87 The issue has arisen in relation to Art 6 Habitats Directive cases – *R (Feeney) v Secretary of State for Transport* [2013] EWHC 1238 (Admin); *R (Champion) v North Norfolk DC* [2013] EWCA Civ 1657 – but not species licensing cases.

[91] The issue has arisen in relation to Art 6 Habitats Directive cases – *R (Feeney) v Secretary of State for Transport* [2013] EWHC 1238 (Admin); *R (Champion) v North Norfolk DC* [2013] EWCA Civ 1657 – but not species licensing cases.

[92] J. Everaert, *Effecten van windturbines op vogels en vleermuizen in Vlaanderen Leidraad voor risicoanalyse en monitoring. Instituut voor Natuur- en Bosonderzoek*, https://pureportal.inbo.be/portal/files/11928837/Everaert_2015_EffectenVanWindturbinesOp VogelsEnVleermuizenIn Vlaanderen.pdf (last reviewed 29 March 2019).

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damage to nature.[93] In short, monitoring programmes need to be operationalized prior to eventual damage. All too loosely formulated monitoring protocols will unavoidably clash with the precautionary principles, as applied by the CJEU in its recent case law.[94]

Moreover, it needs to be effectively guaranteed that concrete consequences are attached to negative monitoring results. For wind farms in the Belgian marine environment, a continuous environmental impact assessment will be conducted in order to monitor the effects of the activity on the environment. In order to protect the marine environment, the conditions of the permit can be changed (adaptive licensing).[95]

In Germany, specific monitoring measures are often demanded for a period of two to five years as a condition for permits being granted for wind energy projects. This will be the case when a significant increase in the risk to protected species caused by the installation or operation of wind energy turbines cannot be excluded with the required certainty, but it would be disproportionate to entirely reject approval due to such residual uncertainties.[96] To date, it appears that no approval for a wind energy project has been revoked or withdrawn based on the results of monitoring, but the competent authorities have changed the mitigation measures which have to be taken on the basis of monitoring results.[97]

In the Netherlands, there is no legal or standardized method of monitoring. Monitoring may be required if mitigation measures are necessary and their effectiveness can be assumed, although some uncertainty remains. Whether monitoring requirements are prescribed mainly depends on the question of whether mitigation is a necessary requirement to ensure that there are no negative effects on the conservation status of the species. A derogation may require monitoring with the possibility of adjusting the derogation if the case indicates the need of such a requirement. On the basis of the results of monitoring, the derogation can then be re-evaluated and (other) mitigation measures can be required. However, this approach may conflict with legal certainty and is not regularly used in practice.

In the UK, non-binding standing guidance from Natural England to developers in relation to birds, for example, provides guidance on where, when and to what extent surveying and pre- and post-construction monitoring should take place.[98] However, as in practice species licences are not, as noted above, used for renewable energy projects, there is a difficulty in requiring a developer to monitor for impact because there isn't a licence to attach this condition to. Moreover, such requirements would be resisted anyway on the grounds that there isn't a significant impact and therefore there is no basis in law to require monitoring.

If we compare the monitoring requirements in the legal orders researched, we see that it is quite common to prescribe monitoring if this is necessary to evaluate the effectiveness of mitigation measures which are necessary to reduce the negative effects of sustainable energy projects. It is important to acknowledge that for many species, and especially for bats, the impacts of wind farms may be very difficult to predict prior to construction. This is because of the complexity of the systems being studied (responses may vary according to habitat, weather etc.) and also the animals themselves may behave differently at a site before and after the construction of turbines without the possibility to predict such changes in behaviour.[99] On the other hand, courts are very sceptical and restrained if monitoring seems to be used to fill gaps in knowledge, which could have been avoided by research before the permit for an installation was applied for.

[93] Belgian Council of State, 4 October 2018, no. 242.513.

[94] R. Frins & H. Schoukens, "Balancing wind energy and nature protection: from policy conflicts towards genuine sustainable development", in: L. Squintani, *et al.* (eds.) *Sustainable Energy United in Diversity – Challenges and Approaches in Energy Transition in the European Union*(-European Law Publishing 2014), 102-105.; see more recent, concerning the protection of Natura 2000 sites: European Court of Justice, Case C-142/16 *European Commission v Federal Republic of Germany* [2016]; see also C. le Lievre, *Sustainably reconciling offshore renewable energy with Natura 2000 sites: an interim adaptive management framework*, 129 Energy Policy, 491-501, also regarding Natura 2000.

[95] Article 29, Law on the protection of the Belgian marine environment and its implementation decree of 7 September 2003. R. Frins & H. Schoukens, "Balancing wind energy and nature protection: from policy conflicts towards genuine sustainable development", in: L. Squintani, *et al.* (eds.) *Sustainable Energy United in Diversity – Challenges and Approaches in Energy Transition in the European Union* (European Law Publishing 2014), 102–105.

[96] Technical Agency Windenergie (Fachagentur Windenergie an Land), *Vermeidungsmaßnahmen bei der Planung und Genehmigung von Windenergieanlage* (2015), p. 90.

[97] Technical Agency Wind (Fachagentur Windenergie an Land), *Nachträgliche Anpassung immissionsschutzrechtlicher Genehmigungen aufgrund artenschutzrechtlicher Belange* (2016), p. 6 ff.

[98] Natural England and DEFRA, *Wild birds: surveys and monitoring for on shore wind farms*, https://www.gov.uk/guidance/wild-birds-surveys-and-monitoring-for-onshore-wind-farms (accessed 28 March 2019) (separate guidance applies to Scotland and Wales). There is also separate standing advice from Natural England to local authorities on how to deal with planning applications involving protected species: Natural England and DEFRA, *Protected species: how to review planning applications*, https://www.gov.uk/guidance/protected-species-how-to-review-planning-applications (last updated 12 August 2016).

[99] See however recently K. Barré, I. Le Viol, Y. Bas, R. Julliard, C. Kerbiriou, "Estimating habitat loss due to wind turbine avoidance by bats: Implicationsfor European siting guidance", 226 *Biological Conservation*, 205 (2018).

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VII Some Concluding Remarks

This article dealt with the implementation and interpretation of EU species protection law in five EU member states from the perspective of wind energy project planning. One of the fundamental questions dealt with was whether species protection law is a substantial obstacle for planning and realising wind energy. In general, the answer to this question is negative. This is partly different (only) for the Netherlands, as we will briefly summarize below.

On the basis of research, which has been laid down in an extensive report,[100] the Netherlands, Germany and the Flemish region do expect species protection law to become a substantial and problematic issue considering the need for a very substantial enlargement of the capacity of sustainable energy sources in the future, the growing need to take into account cumulative effects into account more thoroughly, and the scarcity of locations with low potential of conflicts with species protection requirements. Furthermore, in the light of ambitious expansion targets and establishment of setback distances, e.g. forested areas increasingly become the focus of planning authorities and wind farm developers. On the other hand, developers in the UK seem to locate species protection issues at the very bottom of a long list of other issues that limit their activities, at least until now. In Denmark species protection law has not so far been an obstacle in the expansion of wind energy projects. Below we will summarize the issues found with respect to species protection law and wind energy realisation.

7.1 Application of EU species protection law

There are significant differences in the interpretation and application of EU species protection law. Although the wording of the provisions, which in all countries have largely been reproduced from the Habitats Directive and the Birds Directive,[101] is fairly similar in all of the countries and regions investigated, the application of these very similar provisions differs substantially. Some countries apply Art. 5 Birds Directive and Art. 12 Habitats Directive with regard to populations and not, as the letter of the law indicates, with regard to each individual specimen. In Denmark, the appeal bodies and courts seem to scrutinize the application of species protection law somewhat leniently and generously. In Germany, the species protection provisions are applied, just as in the Netherlands, on the basis of individual specimens. However, a more pragmatic interpretation is chosen which maybe more in accordance with the purpose of the EU law provisions. The existing guidance document on the strict protection of animal species of Community interest[102] is more than ten years old and does not seem to provide enough guidance on the interpretation of the legal terms in Art. 5 Birds Directive and Art. 12 Habitats Directive. It should be revised and enlarged.

7.2 In particular: the ORNIS criterion

As a consequence of the differences in the interpretation of Art. 5 Birds Directive and Art. 12 Habitats Directive, the rules for granting derogations, and within this, the ORNIS criterion, do not play a substantial or decisive role in permitting wind energy projects, except in the Netherlands.[103] In contrast, Germany has chosen to apply distance criteria and the above mentioned Mortality Threat Index. In the end, this German method and the Dutch ''Potential Biological Removal Method'', which complements the ORNIS criterion, may lead to quite similar results. Both methods, however, are applied in relation to different requirements within the legal regime on species protection.[104]

7.3 The application of cumulative effects

Whether, to what extent, and how frequently cumulative effects are taken into account in decision making on renewable energy projects differ widely between the legal orders examined, and also within the legal orders themselves. There is no common opinion on the scope and methodology of the assessment of cumulative effects. It can be expected that this topic will attract more attention among all the parties concerned, maybe also in judicial proceedings, as the recently amended EIA Directive, which in the legal orders at stake was transposed in 2017, now more explicitly requires cumulative effects to be taken into account. As the EIA reports have to be addressed in the permit decisions for sustainable energy projects, it is also more obvious that cumulative aspects have to be dealt with in these decisions. Yet the scope and practical implications of the need to take cumulative effects into account remain unclear. An EU-wide discourse on this

[100] C.W. Backes & S. Akerboom (eds.), *Renewable energy projects and species protection*, https://www.uu.nl/sites/default/files/res_biodiversity_a_comparison.pdf (last reviewed 27 October 2018).

[101] The only substantial exception seems to be that in Germany, like in the Netherlands until the end of 2016, also unintentional killing is forbidden.

[102] EU Commission, *Guidance on the strict protection of animal species of Community interest under the Habitats Directive 92/43/EEC document* (2007).

[103] See also R. Frins & H. Schoukens, ''Balancing wind energy and nature protection: from policy conflicts towards genuine sustainable development'', in: L. Squintani, *et al.* (eds.) *Sustainable Energy United in Diversity – Challenges and Approaches in Energy Transition in the European Union*(European Law Publishing 2014),. 93 ff, with regards to the derogation clause of artikel 6 (4) Habitats Directive.

[104] Namely with regards to the question whether killing results in a significant higher risk to die and therefore is forbidden (Germany) and with regards to the question whether a negative effect on the conservation status of a species can be excluded, being a prerequisite for granting a derogation.

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topic would be desirable. The EU Commission could be asked to take the lead in this – or at least to facilitate and coordinate this process – which may lead to EU-wide guidance, complementary to the 2011 guidance on Wind energy developments and Natura 2000.

7.4 Mitigation measures

In most countries, there are substantial discussions on the state of the art of mitigation measures, and on the question of whether – and to what extent – the initiators of sustainable energy projects should be obliged to implement such measures. An EU-wide exchange on the technical and governance aspects of mitigation measures seem to be desirable. Again, this may lead to the development of a guidance document on this topic, complementary to the 2011 guidance on Wind energy developments and Natura 2000.

7.5 Monitoring requirements

With respect to monitoring requirements, most of the legal orders decide on a case-by-case basis. Clear guidance as to whether and what kind of monitoring obligations apply is lacking. Monitoring is especially difficult with regard to offshore wind farms, due to the obvious fact that carcasses are hardly ever found. An alternative approach to overcome this problem may be to assess 'sensitivity indices' for the species concerned.

In all legal orders in question, legal debates with respect to the necessity and acceptability of monitoring have been reported. This indicates that also with regards to monitoring requirements and the possibilities and limits of adaptive management,[105] an EU-wide exchange of thoughts could be desirable. Also here, the development of some guidance at EU level could be useful, complementary to the guidance on Wind energy developments and Natura 2000 from 2011.

7.6 A more strategic and inclusive approach desired

As the Commission already indicated in its guidance from 2011, there is a clear need for more detailed transnational surveys and research into the spatial distribution of vulnerable species across the EU and the effects of sustainable energy resources, especially wind farms, thereon.[106] A meaningful application of species protection law with regards to wind energy projects should address the inevitable tension between both these sustainability issues on a higher level than the level of individual projects. To comply with the requirement to reduce CO_2-emissions drastically in order to meet the aim of limiting temperature rise to 2 or even 1,5 degrees at a maximum, a huge upscaling of the capacity of wind energy sources seems to be inevitable. It is at least very questionable whether the actual and potential detrimental effects of this task can be adequately addressed and solved by applying the species protection law only on a case-by-case basis for each individual project. A comprehensive strategy could be developed on how to realize the enormous task of enlarging the capacity of sustainable energy resources and at the same time not further endangering the conservation status of protected species. This seems to require a strategic programme or plan, at least at the national level, or even better at the level of a biogeographical region, like for example the North Sea. The spatial plans for e.g. wind energy projects which have been developed in many member states[107] are a promising basis for this, but are limited to a national scale and at least some do not take into account all the available information on the ecological effects of proposed (wind) energy projects. If such a comprehensive strategy is developed, the assessments and decisions on individual projects can relate and refer to this. That will make these individual assessments and decisions more reliable, meaningful and probably also less burdensome.

7.7 Thinking about solutions

One could think of establishing an inclusive approach which identifies the needs of renewable energy projects (like new locations and upscaling existing wind farms), the best locations and mitigation measures, the negative consequences for protected species which will occur albeit mitigation measures are taken and, where indicated and needed, measures to improve the conditions for the species concerned within, but also outside the areas needed for sustainable energy projects. The aim of such an inclusive approach would be to prevent negative consequences for the conservation status of protected species, or even to improve the conservation status proactively (via habitat restoration actions), and, at the same time, to reduce the administrative burden and legal risks for the planning and realization of sustainable energy projects. With regards to Art. 6 (3), the Court of Justice EU has acknowledged the possibility and the additional benefits of such an inclusive or integrated approach.[108] linking individual assessments and decisions to such an integrated programme is only allowed when the conditions of Art. 6 (3) Habitats Directive are met, more especial, when it is assured that no significant adverse effects on the integrity of the site concerned occur. For the application of the species protection

[105] See further also on adaptive management in Natura 2000 sites: H. Schoukens, "The Quest for the Holy Grail and the Dutch Integrated Approach to Nitrogen: How to Align Adaptive Management Strategies with the EU Nature Directives?", 15 *JEEPL* 2, 171–217 (2018).

[106] European Commission, *Wind energy developments and Natura 2000* (2011), p. 52.

[107] See the examples summarized in European Commission, *Wind energy developments and Natura 2000 (*2011), p. 54 ff.

[108] European Court of Justice, Cases C-293/17 and C-294/17 *Coöperatie Mobilisation for the Environment UA, Vereniging Leefmilieu v College van gedeputeerde staten van Limburg, College van gedeputeerde staten van Gelderland* [2018].

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provisions, linking individual decisions to an inclusive programme also has to (and easily can) ensure that the aims of the protection regimes of art. 5 and 9 Birds Directive and Art. 12 and 16 Habitats Directive are complied with. Examining the effects of renewable energy (and other) projects on the basis of such an inclusive programme precisely aims at improving the effectiveness of the application of these provisions.

7.8 An inclusive approach has to take all significant threats into account

Negative influences on certain species caused by renewable energy projects do not stand on their own. Other threads, like the collision risks caused by glass of buildings (building frontages), by power lines or new roads also have a negative influence on bird species and other protected species. However, for some of these activities, the effects on protected species do not seem to be assessed. For example, in approval procedures for buildings the risk for killing birds doesn't play any role, amongst others because there is no obligation for an EIA-assessment. If an inclusive approach is developed, the significant negative effects of all kind of activities should be taken into account, regardless whether the species protection law usually is applied with regards to such activities or not.