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The Appropriate Assessment under the European Habitats Directive: Interplay Between Science, Law, and Policy

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ABSTRACT

Despite 25 years of the European Union's Habitats Directive, the erosion of biodiversity in the EU has continued. To help explain the failure, this article analyzes Habitats Directive Article 6(3) and (4) and their key terms. It concludes, among other points, that the "Appropriate Assessment," the objective of which is to insure the integrity of the Natura 2000 network sites, has not been used as it should have. Moreover, the vagueness of many terms in Article 6(3) and (4) have allowed biological conservation to be overcome by the imperative of economic growth. This article calls for greater recognition of the need for legal action despite incomplete scientific knowledge, as well as for better education of both the community and the courts in incorporating scientific knowledge into conservation policy.

1. Introduction

The protection of nature and biodiversity¹ is an important field of legislative activity in the European Union (EU). It was initiated with the adoption of Directive 79/409/EEC on the conservation of wild birds,² and it continued with Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora ("Directive 92/43" or "Habitats Directive").³ Moreover, the legislation relating to the above protection encompasses Directive 2000/60/EC for community action in the field of water policy,⁴ Directive 2004/35/EC on environmental liability,⁵ as well as Directive 91/676/EEC on nitrates.⁶ We must add to this legislation the international conventions signed by the EU, such as the Protocol to the Barcelona

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¹ Biodiversity is defined as "the variety of life, including variation among species and functional traits." See B.J. Cardinale et al., *Biodiversity Loss and Its Impact on Humanity*, 486 NATURE 59, 60 (2012).

² 1979 O.J. (L 103). The directive has been repeatedly amended by Commission Directives, codified by Directive 2009/147/EC, EE L 20, at 7 (2010).

³ 1992 O.J. (L 206) 1.

⁴ 2000 O.J. (L 327) 7.

⁵ 2004 O.J. (L 143) 56.

⁶ 1991 O.J. (L 375) 1.

Convention concerning specially protected areas and biological diversity in the Mediterranean (1995)⁷ and the Bern Convention on the conservation of European wildlife and natural habitats.⁸ Finally, the Convention on Biological Diversity plays an important role in the legislative activity of the EU.⁹

The Habitats Directive is an important piece of legislation that protects species and their habitats, and is binding on member states.¹⁰ It comprises two pillars. The first pillar concerns the conservation of natural habitats and habitats of species (mainly Articles 3–7), and the second pillar concerns the protection of species (Articles 12–16). This article focuses on a special issue that has attracted the attention of the doctrine and courts more than any other issue—namely, the issue involving the appropriate impact assessment and the approval of plans or projects that may significantly affect sites of the Natura 2000 network. More particularly, it is aimed at considering whether basic concepts of Article 6(3) and (4) of Directive 92/43, such as “significant effect,” “likely to occur,” or “integrity,” as have been elaborated and, in fact, reshaped by the European Court of Justice (“ECJ” or “the Court”) and the European Commission, have been clarified and, thus, become more comprehensible and definite.

The importance of Article 6(3) and (4) of the Habitats Directive is evident for three reasons: First, these provisions establish a specific procedure for the approval of plans or projects, which by their nature are the primary causes of degradation or destruction of habitats and species. Second, the above provisions apply to the Natura 2000 network, which covers a significant part of the land area of the EU (18 percent). Third, the loss of biodiversity in the EU has reached an alarming level. According to the IUCN, endangered species in Europe amount to many hundreds. It is indicatively mentioned that 15 percent of mammals, 13 percent of birds, 9 percent of reptiles, 23 percent of amphibians, 37 percent of freshwater fishes, and 9 percent of butterflies are threatened with extinction.¹¹ It is worth noting that this loss of biodiversity must be considered in relation to one of its

⁷1999 O.J. (L 322) 1.

⁸1982 O.J. (L 38) 1 & 1998 O.J. (L 358) 31. The convention affected the Habitats Directive mainly as to its structure. The latter also affected the interpretation and application of the former. See Y. Epstein, *The Habitats Directive and Bern Convention: Synergy and Dysfunction in Public International and EU Law*, 26 GEO. INT'L ENVTL. L. REV. 140 (2014).

⁹Convention on Biological Diversity, 1760 UNTS 79; 31 ILM 818 (1992).

¹⁰J. Verschuuren, *Effectiveness of Nature Protection Legislation in the European Union and the US: The Habitats Directive and the Endangered Species Act*, in CULTURAL LANDSCAPES AND LAND USE: THE NATURE CONSERVATION-SOCIETY 41 (M. Dieterich & J. van der Traaten eds., 2004); N. de Sadeleer, *The Appropriate Impact Assessment and Authorisation Requirements of Plans and Projects Likely to Have Significant Impacts on Natura 2000 Sites*, ENVTL. L. NETWORK INT'L REV., 7 (2013).

¹¹See International Union for Conservation of Nature [hereinafter IUCN], *Red List of Threatened Species Regional Assessment* (2007); see also S.L. Pimm et al., *The Biodiversity of Species and Their Rates of Extinction, Distribution, and Protection*, 344 SCI. 987 (2014) (asserting that at planetary scale the present extinctions rates

important features, namely the ecosystem services.¹² The Commission stresses both society and economy benefit significantly from the ecosystem services offered by the Natura 2000 network. Interestingly, the Commission has actually estimated that the value of the ecosystem services of the Natura 2000 network ranges between €223 and 314 billion per year.¹³

Article 6 of Directive 92/43 is structured in four paragraphs. Paragraph 1 refers to the obligation of member states to take positive measures for the conservation of natural habitats and the species that are present in a Special Area of Conservation (SAC). A basic positive measure involves drafting a plan for the management of the SAC. Paragraph 2 establishes a general obligation of protection consisting in avoiding deterioration and disturbance that could have significant effects in the light of the directive's objectives, which aims at the prevention of deterioration and disturbances, which could have significant consequences in terms of the directive's objectives.¹⁴ In fact, the deterioration of a SAC as a consequence of the violation of the above obligation does not justify its declassification.¹⁵ However, the protection provided by Article 6(2) is not absolute, in view of the derogation introduced by Article 6(4), which is activated after the appropriate assessment laid down by Article 6(3) has been conducted.

This article focuses specifically on the above paragraphs 3 and 4 of Article 6 of the Habitats Directive, as they regulate the appropriate impact assessment process. In [Section 2](#), an overview of Article 6(3) of Directive 92/43 is attempted, having as basic points of reference its scope and the relationship of the procedure it establishes with the procedure provided for in Directive 2011/92/EU on the Environmental Impact Assessment (hereinafter: EIA directive or directive 2011/92)¹⁶ and with the procedure of the directive on the Strategic Environmental Assessment ("SEA Directive" or "Directive 2001/42").¹⁷ [Section 3](#) considers the issue of the stages of application of Article 6(3) of this directive, namely the screening and the appropriate assessment and, in particular, the requirements for the application

of biodiversity are exceptionally high and estimating that many more extinctions are possible with severe habitat fragmentation and climate disruption).

¹²The ecosystem services are classified into four categories: the provisioning of goods and products (e.g., wood, fibers, freshwater, food, genetic resources), regulation services (e.g., climate regulation or pollination), cultural services (e.g., recreation or tourism), and supporting services (e.g., water cycling or nutrient cycling). See generally THE MILLENNIUM ECOSYSTEM ASSESSMENT, ECOSYSTEMS AND HUMAN WELL-BEING (2005); THE ECONOMICS OF ECOSYSTEMS & BIODIVERSITY [hereinafter TEEB], MAINSTREAMING THE ECONOMICS OF NATURE: A SYNTHESIS OF THE APPROACH, CONCLUSIONS AND RECOMMENDATIONS OF TEEB (2010).

¹³Eur. Comm'n, *The Economic Benefits of the Natura 2000 Network*, at 19 (2013).

¹⁴See Council Directive 92/43, art. 6(2), 1992 O.J. (L 206) 11; see also, e.g., Case C-226/08, *Stadt Papenburg v. Bundesrepublik Deutschland*, 2010 ECR I-131, at ¶ 49 (2010); Case C-258/11, *Sweetman v. Pleanala*, 2013 EUR-Lex CELEX at ¶ 33 (2013).

¹⁵Case C-301/12, *Cascina Tre Pini*, 2014 EUR-Lex CELEX, at 9 ¶ 32 (2014).

¹⁶2014 O.J. (L 26) 1 (amended by Directive 2014/52/EU, O.J. (L 124) at 1).

¹⁷2001 O.J. (L 97) 30.

thereof and the functional relationship that exists between them. Further, it discusses the pervasive intertwining of scientific knowledge and value judgments in the impact assessment process. In [Section 4](#) reference is made to Article 6(4) of the directive, particularly to its scope and to its relationship with Article 6(3). [Section 5](#) attempts to outline the US legislation (Endangered Species Act), more precisely its [Section 7](#), which is the counterpart of Article 6 of Directive 92/43, so that the similarities or differences between them be shown. [Section 6](#) analyses the main features of judicial review regarding the application of Article 6(3) and (4) and, in particular, the nature and limits thereof.

2. Article 6(3) of the Habitats Directive: A Short Overview

2.1. *Its scope*

Article 6(3) provides for a specific environmental impact assessment process, which applies to “any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects.” The first issue concerns plans or projects falling within Article 6(3). Initially, with regard to the term “plan,” the Commission has given a broad interpretation, as it encompassing not only construction works but also intervention in the natural environment, such as intensive farming, which threatens to damage or destroy the semi-natural character of a site.¹⁸

Similarly, the ECJ, noting that there is no definition of the concept of “project” in the Habitats Directive, has held that it must be as broad as in Article 1(2) of the EIA Directive.¹⁹ Thus any activity possessing any element out of the ones referred to in Article 1(2) of the EIA Directive falls within the concept of plan of Article 6(3) of the Habitats Directive. Thus the Court ruled that “an activity such as mechanical clock fishing is covered by the concept of plan or project set out in Article 6(3) of the Habitats Directive.”²⁰

The plans or projects falling within Article 6(3) of the Habitats Directive are the ones that may have adverse effects on the areas of the Natura 2000 network, regardless of the nature and the size of the plan or the project.²¹ Thus the Court held that the only requirement set is “a probability or a

¹⁸ EUR. COMM’N, MANAGING NATURA 2000 SITES: THE PROVISIONS OF ARTICLE 6 OF THE ‘HABITATS,’ DIRECTIVE 92/43/EEC, 31–32 (2000).

¹⁹ Case C-127/02, Waddenzee 2004 ECR I-7405, at ¶¶ 23–29. Article 1(2) of the EIA directive defines the concept of project as: “the execution of construction works or of other installations or schemes—other interventions in the natural surroundings and landscape including those involving the extraction of mineral resources.”

²⁰ Case C-127/02, Waddenzee, 2004 ECR I-7405, ¶ 27.

²¹ This is a main difference compared to the EIA Directive, in which the projects subject to it are expressly mentioned, and they are the ones included in Annexes I and II.

risk that it will have a significant effect on the site concerned.”²² Actually, such effects may exist independently of the dimensions of the plan or project “if it is in a location where the environmental factors ... are sensitive to slightest alteration.”²³

Interestingly, the Court ruled that the criterion of the low cost of a plan or a project so that it be not subject to the process of appropriate assessment is not compatible with the directive.²⁴ Similarly, a piece of national legislation that provides that only plans that are subject to a notification or licensing process will undergo the process of appropriate assessment is not compatible with Article 6(3) of Directive 92/43.²⁵ Moreover, national legislation on the basis of which the projects provided for by the contracts signed by the competent public authority with individuals (such as the so-called Natura 2000 contracts in France) are systematically exonerated from the process of appropriate assessment is not in compliance with the requirements of Article 6(3) of Directive 92/43.²⁶ With regard to the systematic exemption of plans or projects from the process of Article 6(3), the ECJ stressed that

it is clear from the case-law of the Court that, in principle, pursuant to Article 6(3) of the Habitats Directive, a Member State may not, on the basis of the sphere of activity concerned or by introducing a declaratory scheme, systematically and generally exempt certain categories of plans or projects from the obligation requiring an assessment to be undertaken of their implications for Natura 2000 sites.²⁷

Moreover, this provision of Article 6(3) includes the above plans or projects regardless of whether they are in or out of the sites of the Natura 2000 network. The Court held that “in its definition of measures to be subject to an assessment of the implications the Directive does not distinguish between measures taken outside or inside a protected site.”²⁸ It also concluded that “by failing, in respect of certain projects carried out outside the SAC within the meaning of Article 4(1) of the Directive, to require compulsory assessment of the impact on the site, in accordance with Article 6(3) and (4) of the Directive whether or not such projects are capable of significantly affecting such an SAC,” Germany has failed to fulfill its obligations under Article 6(3) of the directive.²⁹ Exactly the same approach is adopted by the Commission. Its Guidance on non-energy extractive

²² Case C-418/04, *Commission v. Ireland* 2007, ¶ 226; Case C-6/04 *Commission v. United Kingdom*, ECR I-09017 ¶ 54; Case C-197/08, *Commission v. France*, ECR I-2010 3673, at ¶ 54.

²³ Case C-538-09, *Commission v. Belgium*, 2011, at ¶ 55.

²⁴ Case C-256/98, *Commission v. France*, 2000 E.C.R. I-2503, at ¶ 35.

²⁵ Case C-98/03, *Commission v. Germany*, 2006 E.C.R. I-75, at ¶¶ 42–45.

²⁶ Case C-241/08, *Commission v. France*, 2010 E.C.R. I-1723, at ¶ 56.

²⁷ Case C-538-09, *Commission v. Belgium*, 2011 E.C.R. I-4690, at ¶ 45.

²⁸ Case C-98/03, *Commission v. Germany*, 2006 E.C.R. I-53, at ¶ 32.

²⁹ *Id.* at ¶ 83.

activities stressed that the geographical scope for the appropriate assessment of projects includes areas either inside or outside a site of Natura 2000 network.³⁰

2.2. The Relationship between Directive 92/43, Directive 2011/92, and Directive 2001/42

2.2.1. Distinctive Procedures

According to the ECJ case law, the procedure of the EIA Directive, the procedure of the SEA Directive, and the procedure of Article 6(3) and (4) of Directive 92/43 are distinct from one another. In this regard, the Court ruled that

Those two directives (85/337 and 2001/42) contain provisions relating to the deliberation procedure, without binding the Member States as to the decision, and relate to only certain projects or plans. By contrast, under the second sentence of Article 6(3) of the Habitats Directive, a plan or project can be authorized only after the national authorities have ascertained that it will not adversely affect the integrity of the site. Accordingly, assessments carried out pursuant to Directive 85/337 or Directive 2001/42 cannot replace the procedure provided for in Article 6(3) and (4) of the Habitats Directive.³¹

The European Commission has taken the same position. In its Guidance on Aquaculture and Natura 2000, it displays the similarities and differences between the SEA, EIA, and the appropriate assessment procedures, highlighting that “an SEA and EIA cannot replace, or be a substitute for, an Appropriate Assessment as neither procedure overrides the other.”³² In particular, the Commission traces the main differences between the SEA/EIA Directives and Directive 92/43 and render them distinct. A particularly important difference is the one pertaining to the outcomes of the impact assessment.³³

It is thus clear that Article 6(3) and (4) of the Habitats Directive has special characteristics, which differentiate it and distinguish it from the provisions of the other two directives.³⁴ As was stressed by the ECJ, “Article 6(2) to (4) of the Habitats Directive imposes upon the Member States a

³⁰ EUR. COMM'N, GUIDANCE ON UNDERTAKING NEW NON-ENERGY EXTRACTIVE ACTIVITIES IN ACCORDANCE WITH NATURA 2000 REQUIREMENTS, 57 (2011).

³¹ Case C-418/04, *Commission v. Ireland*, 2007 ECR I-10947, at ¶ 231; Case C-209/04 *Commission v Austria* 2005, at ¶¶ 61–62 (“the EIA Directive contains procedural provisions designed to ensure that the consideration given to environmental issues is improved. The Habitats Directive, by contrast, lays down substantive requirements regarding approval of a project, which are intended to be served by the procedure envisaged in Article 6(3) and (4) of the Habitats Directive”); see also Case C-295/10, *Valciukienė*, 2011 E.C.R. I-8819, at ¶¶ 58–60 (stressing that procedures of Directive 85/337 and Directive 2001/42 are distinct and applied cumulatively).

³² EUR. COMM'N, GUIDANCE ON AQUACULTURE AND NATURE 81 (2012).

³³ *Id.*

³⁴ C.P. RODGERS, *THE LAW OF NATURE CONSERVATION* 223 (Oxford University Press, 2013).

series of specific obligations and procedures designed, as is clear from Article 2(2) of the directive, to maintain, or as the case may be restore, at a favourable conservation status natural habitats and, in particular, special areas of conservation.”³⁵

2.2.2. Cumulative Application of the Directives

With regard to the cumulative application of Directive 2011/92 and Directive 92/43, the Commission underlines that no serious problems have been reported, stressing that the requirements of Article 6(3) and (4) of Directive 92/43 are not properly co-assessed within the framework of the EIA procedures.³⁶ There were some problems with the cumulative application of Directive 92/43 and Directive 2001/42, which were soon detected both by the Commission and the ECJ.

In particular, the Commission stressed that “the SEA Directive and the Habitats Directive apply cumulatively for all plans and programmes which have effects on protected sites pursuant to Article 6 or 7 of the Habitats Directive and a combined procedure may be carried out provided that it fulfills both the requirements of the SEA Directive and the Habitats Directive.”³⁷ Furthermore, the Commission clarified that an impact assessment of protected sites must be part (preferably a distinctive chapter) of the Environmental Report of Article 5 of Directive 2001/42 and that the plan or the program adversely affecting the integrity of the site will only be approved under the conditions of Article 6 of Directive 92/43.³⁸ Moreover, the Commission noted in a recent Guidance document that in the event that areas of the Natura 2000 network are affected by the plan or the program falling under the procedure of Directive 2001/42, then the requirements of Article 6(3) of Directive 92/43 must be taken into account.³⁹

As it has already been mentioned, the ECJ clarified the issue of distinctive procedures provided for in Directives 2001/42 and 92/43.⁴⁰ Moreover, the Court held that the above distinctive procedures are applied cumulatively. In particular, rebutting the claim of the UK that “land use plans” do not, in their own right, allow the materialization of a specific program and that, consequently, only the subsequent license could damage the protected sites, the Court concluded that “as a result of the failure to make land use plans subject to appropriate assessment of their implications for SACs,

³⁵ See Case C-258/11, *Sweetman v. Pleanala*, 2013, *supra* note 14, at ¶ 36.

³⁶ EUR. COMM’N, REPORT ON THE APPLICATION AND EFFECTIVENESS OF THE EIA DIRECTIVE, DIRECTIVE, 85/337/EEC, COM (2009) at 378, ¶3.5.3, as amended by Directives 97/11/EC and 2003/35/EC.

³⁷ EUR. COMM’N, IMPLEMENTATION OF DIRECTIVE 2001/42 ON THE ASSESSMENT OF THE EFFECTS OF CERTAIN PLANS AND PROGRAMMES ON THE ENVIRONMENT, ¶ 9.19 (2005).

³⁸ *Id.* at ¶¶ 9.23–9.27.

³⁹ EUR. COMM’N, GUIDANCE ON INTEGRATING CLIMATE CHANGE AND BIODIVERSITY INTO STRATEGIC ENVIRONMENTAL ASSESSMENT, 35 (2005).

⁴⁰ See Case 418/04, *supra* note 31.

Article 6(3) and (4) of the Habitats Directive has not been transposed sufficiently clearly and precisely into United Kingdom law.”⁴¹ Finally, it should be stressed that the Court found that the examination regarding the extent to which a plan is subject to SEA pursuant to Article 3(2)(b) of Directive 2001/42 “is necessarily limited to the question as to whether it can be excluded, on the basis of objective information, that that plan or project will have a significant effect on the site concerned.”⁴²

3. The Procedure Laid Down by Article 6(3)

3.1. Screening

3.1.1. Preliminary remarks

Article 6(3) of the Directive 92/43 states that “any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects shall be subject to appropriate assessment of its implications for the site...” Thus the only exception relates to the plans or projects that are directly connected or necessary for the management of the site.⁴³ The Commission clarified that there are two initial stages, namely screening and appropriate assessment. A third one (the examination of alternative solutions) is added to the first two, and then a fourth follows (the determination of compensatory measures).⁴⁴

The European Commission confirms the above gradation,⁴⁵ which is fully aligned with the ECJ settled case law.⁴⁶ In particular, with regard to screening, the Court stressed that its conduct is a prerequisite for the appropriate assessment to follow.⁴⁷ Furthermore, according to the Court, the activation of the mechanism of Article 6(3) of the Habitats Directive does not require a definitive proof of significant effects, but it limits itself to the existence of “the mere probability that such an effect attaches to that plan or project.”⁴⁸

⁴¹ Case C-6/04, *Commission v. United Kingdom*, 2005 ECR I-09017, at ¶ 56.

⁴² Case C177/11, *Poleodomon kai Chorotakton v. Ipourgos Perivallontos*, 2012 ECLI:EU:C:378, at ¶ 24.

⁴³ H. Tegner Anker, *The Precautionary Principle and Nature Conservation Law: EU and Danish Experiences*, in *IMPLEMENTING THE PRECAUTIONARY PRINCIPLE 274* (N. de Sadeleer, ed., Earthscan, 2010); see EUR. COMM’N, *MANAGING NATURA 2000 SITES*, *supra* note 18, at 32–33.

⁴⁴ EUR. COMM’N, *MANAGING NATURA 2000 SITES*, *supra* note 18, at 30.

⁴⁵ EUR. COMM’N, *GUIDANCE ON AQUACULTURE AND NATURA 2000* 47–49 (2012) (“The screening exercise is usually carried out by the authority responsible for the adoption of the plans or the approval of development applications and/or the nature authorities... It is worth recalling that the initial screening undertaken here is not the same as a full-scale Appropriate Assessment—it only requires sufficient information to be able to decide if there is a likely to be a significant effect or not”).

⁴⁶ See C-127/02 *Waddenzee*, 2004 ECR I-7405. This is the seminal case.

⁴⁷ *Id.* ¶ 40.

⁴⁸ *Id.* ¶ 41.

The ECJ also explained that “the first sentence of Article 6(3) of the Habitats Directive subordinates the requirement for an appropriate assessment of the implications of a plan or project to the condition that there be a probability or risk that the latter will have significant effects on the site concerned.”⁴⁹ The Court did not restrict itself to the above observation, but it did make clear that the requirement to which it referred must be interpreted in the light of the precautionary principle, and therefore that, even if there are doubts as to the absence of adverse effects, the appropriate assessment must be carried out. Moreover, it stresses that such an interpretation “makes it possible to ensure effectively that plans or projects which adversely affect the integrity of the site concerned are not authorized.”⁵⁰ Relying on the above considerations, the Court concluded that an appropriate assessment of any plan or project must be undertaken “if it cannot be excluded, on the basis of objective information, that it will have a significant effect on that site, either individually or in combination with other plans or projects.”⁵¹

Furthermore, with regard to the screening stage, the Advocate General E. Sharpston asserted that Article 6(3) “lays down a two-stage test. At the first stage, it is necessary to determine whether the plan or project in question is ‘likely to have a significant effect [on the site].’”⁵² She then stressed that the requirement of the first stage, i.e., that the effect is significant, is set forth in order to lay down a *de minimis* threshold. However, she elucidated that “the threshold at the first stage of Article 6(3) is a very low one. It operates merely as a trigger, in order to determine whether an appropriate assessment must be undertaken ...”⁵³

Besides, the Court points out that Article 6(3) of Directive 92/43 provides for two phases. In the first phase, member states have the obligation to undertake an appropriate assessment of the implications of a plan or a project on a protected site “when there is likelihood that the plan or project will have a significant effect on that site.”⁵⁴ The second phase commences after the completion of the appropriate assessment and pertains to the permit that must be granted “on condition that it will not adversely affect the integrity of the site concerned, subject to the provisions of Article 6(4).”⁵⁵

⁴⁹ *Id.* ¶ 43.

⁵⁰ *Id.* ¶ 44.

⁵¹ *Id.* ¶ 45.

⁵² See Case C-258/11 Sweetman, *supra* note 14, at ¶ 45 (Opinion by AG Sharpston).

⁵³ *Id.*, ¶¶ 48, 49. Note that the Advocate General stresses that Article 6(3) is poorly formulated and that this leads to confusion (note 20 of her opinion).

⁵⁴ *Id.* ¶ 29.

⁵⁵ *Id.* ¶ 31.

3.1.2. The interpretation of the term “likely to occur”

In the light of the foregoing, a crucial issue requiring further clarification is the determination of “significant effect” and the likelihood of it occurring whether individually or in conjunction with other plans or projects. With regard to the notion of “likely to occur,” the ECJ associated it with “a probability or a risk that that plan or project will have a significant effect on the site concerned.”⁵⁶ The terminology used by the Court indicates a low threshold of evidence regarding the probability of occurrence of adverse effects.⁵⁷ It is important to note that, according to case law, it is for the competent authorities “to determine the critical probability threshold for adverse effects on public health, safety, and the environment ...”⁵⁸

However, the determination of probability or risk is not arbitrary, but it is associated with scientific knowledge. Thus when a decision is about to be made on the basis of a hypothesis in statistical research, two types of errors may occur.⁵⁹ The most established approach in science is the one aiming at limiting or avoiding the probability of the false conclusion that there is an effect, where, in fact, there is not.⁶⁰ This view, which was named *error type I*, also known more familiarly as a “false positive,” may lead the competent administrative authority to falsely infer that there is a cause-and-effect relationship and to thus impose unnecessary restrictive measures.⁶¹ The second approach, much more rare, intends to limit or to avoid the probability of the false conclusion that there is no effect, where, in fact, there is. This view, which was named *error type II* or a “false negative,” leads to the absence of regulations because it is falsely believed that there are no effects.⁶²

Thus when there is scientific uncertainty, as is the case of environmental problems,⁶³ which error is preferable: error type I or error type II?

⁵⁶ See Case C-6/04 Commission v. United Kingdom, 2005 ECR I-09017 at ¶ 54; Case C-410/04 Commission v. Ireland, 2007 ECR I-10947 at ¶ 226.

⁵⁷ See Opinion AG Sharpston in Case C-258/11 Sweetman, *supra* note 14, at ¶ 46.

⁵⁸ Case T-31/07, Du Pont de Nemours et al. ECLI:EU:T:2013:167, at ¶ 145.

⁵⁹ K.S. SHRADER-FRECHETTE & E.D. MCCOY, METHOD IN ECOLOGY: STRATEGIES FOR CONSERVATION 155 (1993); L. BUHL-MORTENSEN, *Type II Statistical Errors in Environmental Science and the Precautionary Principle*, 32 MARINE POLLUTION BULL. 528, 528–531 (1996).

⁶⁰ EUROPEAN ENVIRONMENT AGENCY, LATE LESSONS FROM EARLY WARNINGS: THE PRECAUTIONARY PRINCIPLE 1896–2000, 184 (2001). This opinion is the prevailing one, because scientists consider a danger to be real when there is a probability of less than 5 percent that the proof advocating the existence of the danger has a random origin. Thus they generally focus their attention on not saying that there is something, when there is nothing.

⁶¹ R.M. M'Gonigle, T. Lynne Jamieson, M.K. McAllister, & R.M. Peterman, *Taking Uncertainty Seriously: From Permissive Regulation to Preventive Design in Environmental Decision Making*, 32 OSGOOD HALL L. J. 99, 104 (1994).

⁶² *Id.*

⁶³ Holly Doremus, *Constitutive Law and Environmental Policy*, 22 STAN. ENVTL. L. J. 295, 319 (2003), (stating that “the most universally recognized feature of environmental problems is the pervasive uncertainty that surrounds them”); A. Dan Tarlock, *Who Owns Science?*, 10 PA. ST. ENVTL. L. REV. 135, 141 (2002) (asserting that in the area of environmental policy “the most important decisions must be made under extreme conditions of scientific uncertainty”); COMMITTEE ON DECISION MAKING UNDER UNCERTAINTY, ENVIRONMENTAL DECISIONS IN THE FACE OF UNCERTAINTY 22 (National Academies Press, 2013) (noting that in the US, “Congress, the courts, and advisory

The answer depends on the risk regulatory regime that prevails.⁶⁴ More specifically, in the sound science risk regulatory paradigm it is required that errors type I must be avoided. That means that the benefit of the doubt leads to the conclusion that there are no adverse effects.⁶⁵ In other words, they prefer the risk arising from the non-rejection of a harmful activity to the risk of rejection of a non-harmful activity.⁶⁶ In contrast, in the competing risk regulatory paradigm based on the precautionary principle, it is required that errors type II must be decreased.⁶⁷ In other words, errors type I are preferred. Thus the risk of rejection of a harmless activity (economic damage) is preferred over the risk of non-rejection of a harmful activity.⁶⁸

Furthermore, with respect to the risk of significant effects on species and habitats, the choice of the statistical error that will be preferred is also a result of a value judgment and policy considerations.⁶⁹ When an option is chosen in favor of the reduction of the risk of significant effects (that is, to the detriment of an economic activity), there is an evident preference for error type I or a reduction of error type II.⁷⁰ In particular, preference for a reduction of errors type II is, among others, necessitated by the fact that, first, those who conduct the potentially harmful activities draw benefit from them; thus the selection of the reduction of errors type II equally redistributes risks and benefits.⁷¹ Second, the reduction of errors type II reinforces the protection of nonhuman species, which are usually not taken into consideration in the process of assessing the cost and the benefits.⁷² Thus choice of methodology (preference for error type I or preference for error type II) can change the substantive outcome of the competent authorities' decisions.⁷³ Interestingly, the fact that the appropriate assessments carried out under Article 6(3) of the Habitats Directive are mostly positive

bodies have recognized the inevitability of uncertainty in human health risk assessment and environmental decision making").

⁶⁴In environmental policy and law, the assessment and management of environmental and/or health risk are increasingly shaped by two competing paradigms, which can be designated "sound science" and "the precautionary principle"; see generally J. PEEL, *SCIENCE AND RISK REGULATION IN INTERNATIONAL LAW* (2010); E. FISHER, *RISK REGULATION AND ADMINISTRATIVE CONSTITUTIONALISM* (2007).

⁶⁵Jr J. Cairns, *Absence of Certainty Is Not Synonymous With Absence of Risk*, 107 ENVTL. HEALTH PERSP. A56 (1999).

⁶⁶See Shrader-Frechette & McCoy, *supra* note 59, at 157.

⁶⁷J.B. Ruhl, *The Battle over Endangered Species Act Methodology*, 34 ENVTL. L. 555, 570 (2004).

⁶⁸See Shrader-Frechette & McCoy, *supra* note 59, at 157; see also D. Nadine Scott, *Shifting the Burden of Proof: The Precautionary Principle and Its Potential for the "Democratization" of Risk*, in LAW COMMISSION OF CANADA, *LAW AND RISK* 62 (2005).

⁶⁹See Shrader-Frechette & McCoy, *supra* note 59, at 154; M'Gonigle et al., *supra* note 61, at 105.

⁷⁰K.S. SHRADER-FRECHETTE, *ETHICS OF SCIENTIFIC RESEARCH* 101–117 (1994).

⁷¹J. Lemons, K. Shrader-Frechette, & C. Cranor, *The Precautionary Principle: Scientific Uncertainty and Type I and Type II Errors*, 2 FOUNDATIONS OF SCI. 230 (1997).

⁷²*Id.*

⁷³See Ruhl, *supra* note 67, at 571.

is due, among other reasons, to the preference of the competent national authorities for a reduction of errors type I.⁷⁴

3.1.3. The “Significance” of Effects

The “significance” is more of a legal standard than a rule, according to which the judgment about it is dependent on the specificities of the individual case.⁷⁵ However, it is useful to say that, given the scientific uncertainty about the understanding of nature and its processes, the determination of the “significant effect” is “always subjective, normative and value-dependent.”⁷⁶ This means that the judgment of the significance “is not a pure scientific activity, but [as a matter of fact] a political judgment in a societal process to which natural as well social-sciences contribute.”⁷⁷

Yet as regards the determination of the “significant effect,” the ECJ emphasizes the role of science, and in doing so it assumes a linear and unidirectional relationship where only science informs policy. For instance, the Court ruled that, “the significant nature of the effect on a site of a plan or project not directly connected with or necessary to the management of the site is linked to the site’s conservation objectives.”⁷⁸ On the basis of this observation that arises from the combination of the first subparagraph of Article 6(3) of the Habitats Directive and recital 10,⁷⁹ the Court stressed that if the effects of a plan or a project on a site do not compromise the objectives of preserving this site, they are not significant effects. On the contrary, the effects of a plan or a project that endanger the objectives of preserving this site must be considered to be able to affect significantly this site. Therefore, the determination of “significance” of the effects must be interpreted objectively in the light of the Site Conservation Objectives, the

⁷⁴ An indication of the relative scarcity of negative appropriate assessments is the small number of the opinions issued by the European Commission pursuant to Article 6(4) of Directive 92/43. See L. Kramer, *The European Commission’s Opinions under Article 6(4) of the Habitats Directive*, 21 J. ENVTL. L. 59, 66 (2009); see also H. Schoukens & A. Cliquet, *Mitigation and Compensation under EU Nature Conservation Law in the Flemish Region: Beyond the Deadlock for Development Projects*, 10 UTRICHT L. REV. 194, 198 (2014) (arguing that the EU nature conservation law definitively blocks a relatively small number of planning projects).

⁷⁵ N. de Sadeleer, *supra* note 10, at 10.

⁷⁶ G. Wood, *Thresholds and Criteria for Evaluating and Communicating Impact Significance in Environmental Statements: “See No Evil, Hear No Evil, Speak No Evil”?*, 28 ENVTL IMPACT ASSESSMENT REV. 22, 23 (2008) (noting that environmental quality is subjectively experienced with the significance of impacts dependent on the value a society places on a particular environmental receptor at a particular point in time).

⁷⁷ P.F.M. Opdam et al., *Identifying Uncertainties in Judging the Significance of Human Impacts on Natura 2000 Sites*, 12 ENVTL. SCI. & POL’Y 912, 917 (2009); T.S. Aagaard, *A Functional Approach to Risks and Uncertainties Under NEPA*, 1 MICH. J. ENVTL. & ADMIN. L. 87, 108 (2012).

⁷⁸ Case C-127/02, *Waddenzee 2004* E.C.R. I-7405, at ¶ 46.

⁷⁹ Directive 92/43, *The Habitats Directive*, 1992 O.J. (L 206), 8 (see Preamble at recital 10: “an appropriate assessment must be made of any plan or programme likely to have a significant effect on the conservation objectives of a site which has been designated or is designated in future.”)

particular characteristics, and the environmental conditions of the concerned site.⁸⁰ It is worth noting that Site Conservation Objectives are “the specification of the overall target for the species and/or habitat types for which a site is designated in order for it to contribute to maintaining or reaching favourable conservation status of the habitats and species concerned, at the national, the biogeographical or the European level.”⁸¹

Another feature of the screening stage, as it is expressly stated in Article 6(3) of the Habitats Directive, is the obligation requiring the effects of the plan or project under assessment to be taken into consideration cumulatively with the effects of other plans or projects. The directive does not mention which are those “other plans or projects” that need to be taken into consideration. It is important to note that the concept of cumulative effects is suitable mainly for cases when minor effects are insignificant individually but bear negative effects jointly. In this regard, the Advocate General Sharpston made referral to the “death by a thousand cuts” phenomenon. This concept refers to “the cumulative habitat loss as a result of multiple, or at least a number of, lower level projects being allowed to proceed on the same site.”⁸²

In view of the foregoing, a new plan or project that in itself has insignificant effects may bring significant effects, when added to other plans or projects.⁸³ Finally, with regard to the question of whether the concept of other plans or projects encompasses only the existing or also the future ones, the Commission considers that, apart from the existing ones, the ones that have already been programmed but have yet to be realized are also included.⁸⁴

Moreover, it must be stressed that the competent authority has the obligation to prove whether it is possible for a plan or project to have “significant” effects, so that an appropriate assessment would be required.⁸⁵ Thus this decision of the competent authority in the screening stage is an administrative act, which is subject to judicial review.⁸⁶ It is important to note that the judicial review of such a decision is extended, as it does not only include the question whether the preliminary assessment adequately traces the issue of likelihood and “significant” effects of the concerned site

⁸⁰ See Case C-127/02, *Waddenzee 2004*, *supra* note 46.

⁸¹ Eur. Comm’n, *Commission Note on Setting Conservation Objectives of Natura 2000 Sites*, Doc. Hab.12-04/06 (2012), http://ec.europa.eu/environment/nature/natura2000/management/docs/commission_note/commission_note2_EN.pdf

⁸² See Case C-258/11, *Sweetman*, *supra* note 14.

⁸³ Nicolas de Sadeleer, *Habitats Conservation in EC Law: From Nature Sanctuaries to Ecological Networks*, 5 Y.B. EUR. ENVTL. LAW 215, 244 (2005).

⁸⁴ See Eur. Comm’n, *Managing Natura 2000 Sites*, *supra* note 18, at 35.

⁸⁵ Case C-600/12, *Comm’n v. Greece*, 2014 ECLI:EU:C:2014:2086.

⁸⁶ See, e.g., *Alternative A5 Alliance*, Re Judicial Review [2013] NIQB 30 ¶ 90 (H. Ct.) (Ir.) <http://www.bailii.org/nie/cases/NIHC/QB/2013/30.html> (“The decision as to whether the plan or project has a significant effect on the integrity of the specific sites . . . is for the Minister subject to judicial review”).

from a plan or a project; it also extends to whether the mitigation measures proposed in the Screening Report are adequate to justify the judgment that no appropriate assessment needs to follow. Yet it is useful to point out that the inclusion of mitigation measures in the preliminary examination is a controversial issue.⁸⁷

3.2. The Appropriate Assessment

3.2.1. The Commission's approach and the ECJ case law

The European Commission stresses that “the purpose of the Appropriate Assessment (AA) is to assess the implications of the plan or project in respect of the site’s conservation objectives ... [and] [t]he AA must precede the approval decision and enable the competent authority to ascertain whether the plan or project would not adversely affect the integrity of the site.”⁸⁸ It also notes that “in contrast to the EIA or SEA, the outcome of the Appropriate Assessment is legally binding for the competent authority and conditions its final decision.”⁸⁹ The Commission further points out that the appropriate assessment is a detailed analysis, as it includes information regarding: (a) the conservation objectives of the site, (b) each species and habitat type for which the site is designated, (c) the evaluation of extent and quality of habitats and species in the site, (d) data on the usage of the site for activities such as foraging, breeding, resting, staging, or hibernating, by relevant species, (e) data on the representability and conservation status of habitats and species in the site and in general, (f) data on ecological structure and functioning of the site and its overall conservation state, (g) the role of the site within the biogeographical region and the Natura 2000 network, and (h) any other aspects of the site or its wildlife that is likely to have an influence on its conservation state and objectives.⁹⁰

As regards the conclusion of the appropriate assessment, the Commission notes that “whatever the results of the AA, they should be clearly recorded. In this respect, the Appropriate Assessment report should be sufficiently detailed to demonstrate how the final decision was reached, and on what scientific grounds the decision was made.”⁹¹

⁸⁷Paul Stookes, *The Habitats Directive: Nature and Law*, in *THE HABITATS DIRECTIVE: A DEVELOPER’S OBSTACLE COURSE?* 145–149 (Gregory Jones ed. 2012) (noting that mitigation measures in the preliminary assessment lead to the avoidance of the appropriate assessment and, consequently, to the non-participation of citizens in the decision-making process and to the non-application of the precautionary principle); *see also* N.de Sadeleer, *supra* note 10, at 11 (stressing that mitigation measures must be included in the appropriate assessment, not in the preliminary assessment).

⁸⁸Eur. Comm’n, *GUIDANCE ON AQUACULTURE AND NATURA 2000* 54 (2012) (emphasis in original).

⁸⁹*Id.*

⁹⁰*Id.* at 55.

⁹¹*Id.* at 65.

The Court also defined the meaning of the “Appropriate Assessment.” In particular, it ruled that it “is not a merely formal process of examination, but must allow a detailed analysis which satisfies the conservation objectives of the site in question, as set out in Article 6, particularly as regards the protection of natural habitats and priority species.”⁹² It also added that “such an assessment therefore implies that all the aspects of the plan or project which can, either individually or in combination with other plans or projects, affect those objectives must be identified in the light of the best scientific knowledge in the field.”⁹³

Furthermore, the Court found that “the assessment ... cannot have lacunae and must contain complete, precise and definitive findings and conclusions capable of removing all scientific doubt as to the effects of the works proposed on the protected site concerned”⁹⁴ and that the assessment is not appropriate when reliable and updated data are missing.⁹⁵ In any case, in view of the fact that Article 6(3) does not specify a method for the conduct of such an assessment,⁹⁶ it “must be organised in such a manner that the competent national authorities can be certain that a plan or project will not have adverse effects on the integrity of the site concerned, given that, where doubt remains as to the absence of such effects, the competent authority will have to refuse authorization”⁹⁷

In this respect, Advocate General E. Sharpston indicated that the purpose of the appropriate assessment “is that the plan or project in question should be considered thoroughly, on the basis of what the Court has termed ‘the best scientific knowledge in the field.’”⁹⁸ With regard to the role of the appropriate assessment, she stressed that “[t]he test which that expert assessment must determine is whether the plan or project in question has ‘an adverse effect on the integrity of the site,’ since that is the basis on which the competent national authorities must reach their decision. The threshold at this (the second) stage is noticeably higher than that laid down at the first stage.”⁹⁹ In addition, she noted “that the threshold laid down at this stage of Article 6(3) may not be set too high, since the assessment must be undertaken having rigorous regard to the precautionary principle.”¹⁰⁰

⁹²Case C-441/03, *Comm’n v. The Netherlands*, 2005 E.C.R. I-3043; Case C-304/05, *Comm’n v. Italy*, 2007 E.C.R. I-7495.

⁹³Case C-127/02, *Waddenzee v. Landbouw*, 2004 E.C.R. I-7405.

⁹⁴Case C-258/11, *Sweetman* 2013, *supra* note 14; Case C-404/09, *Comm’n v. Spain*, 2011 E.C.R. I-11856.

⁹⁵Case C-43/10, *Aitoloakarnanias v. Khorotaxias kai Dimosion Ergon*, 2012 ECLI:EU:C:2012:560.

⁹⁶Case C-304/05, *Comm’n v. Italy*, 2007 *supra* note 92; Case C-43/10, *Aitoloakarnanias v. Khorotaxias kai Dimosion Ergon*, 2012, *supra* note 97.

⁹⁷*Id.*

⁹⁸Case C-258/11, *Sweetman*, 2013, *supra* note 14.

⁹⁹*Id.*

¹⁰⁰*Id.*

3.2.2. The concept of “the integrity of the site”

At the center of the appropriate assessment is the “integrity of the site”, as its object involves whether the latter is adversely affected or not. However, the exact meaning of the notion of the integrity of the site is fuzzy and indeterminate.¹⁰¹ Precisely for this reason, it is interpreted with reference to the other basic notion of the directive, the “favourable conservation status,” which is associated with ensuring the preservation of the constitutive characteristics of the relevant site. Both the Commission¹⁰² and the Court pursue this approach.

In particular, the Court ruled that “in order for the integrity of a site as a natural habitat not to be adversely affected for the purposes of the second sentence of Article 6(3) of the Habitats Directive the site needs to be preserved at a favourable conservation status; this entails ... the lasting preservation of the constitutive characteristics of the site concerned that are connected to the presence of a natural habitat type whose preservation was the objective justifying the designation of that site in the list of SCIs, in accordance with the directive.”¹⁰³

Then the Court determined the legal criteria of the integrity of the site, stressing that the integrity of the site concerned is adversely affected when the “plan or project will lead to the lasting and irreparable loss of the whole or part of a priority natural habitat type, whose conservation was the objective that justified the designation of the site concerned as an SCI ...”¹⁰⁴ Thus the integrity is adversely affected when the loss of a type of natural habitat, regardless of the size of such loss, is permanent and irreversible. This means that the temporary loss, which may be restored, does not damage the integrity of the site.¹⁰⁵

Furthermore, the examination of whether and to what extent the integrity of the site is adversely affected cannot be limited solely to legal criteria, but must be extended to the scientific ecological criteria.¹⁰⁶ It should be noted that there are two scientific approaches as regards the meaning of the integrity of the site or the biological integrity. According to the first one, biodiversity is a collective property of the elements of the system, while integrity is a synthetic property of the system. Contrary to biodiversity, which is expressed in numerical terms (especially for species and ecosystems), integrity refers to conditions that are slightly affected or not

¹⁰¹ Owen McIntyre, *The Appropriate Assessment Process and the Concept of Ecological “Integrity” in EU Nature Conservation Law*, 6 ENVTL. LIABILITY 203, 207 (2013).

¹⁰² Eur. Comm’n, *supra* note 18, at 39.

¹⁰³ C-258/11, *Sweetman v. Pleanála*, 2013 ECLI:EU:C:2013:220.

¹⁰⁴ *Id.*

¹⁰⁵ Brian Jack, *Protecting Natura 2000: Avoiding Adverse Impact Upon European Sites*, 16 ENVTL. L. REV. 129, 135 (2014).

¹⁰⁶ McIntyre, *supra* note 101, at 214.

affected at all by humans.¹⁰⁷ Biota with high integrity reflects natural, evolutionary, and bio-geographical processes.¹⁰⁸ Thus the objective of preserving biological integrity requires that it is not affected or that it is only slightly affected by human activities. In other words, the measure of the damage of biological integrity due to human intervention is the pristine nature, i.e., the area in which there are no human activities.¹⁰⁹

According to the second approach, the objective of preserving biological integrity does not require, as is the case with the first approach, the minimal or non-presence of humans in a protected area but, on the contrary, the presence of humans in it. Besides, according to this approach, it is generally acceptable that interactions between human and natural systems occur increasingly at the regional, continental, and global scales. Consequently, it is not effective to study human and natural systems separately when addressing social-ecological and human–environment interactions.¹¹⁰ Therefore, human presence and activities do not necessarily degrade nature, but, under certain circumstances, they contribute to the establishment and maintenance of the biological integrity.¹¹¹

It is evident that the manner in which the damage to the integrity of the site will be assessed is correlated with the approach chosen. However, in view of the fact that the choice of one or the other approach hinges primarily on value judgments, it follows that the determination of damage to the biological integrity is not exclusively based on scientific grounds.¹¹² This is the case because scientists, upon assessing the risk of harm, do not exclusively act on the basis of the measured actual data that they have at their disposal. They also are influenced by sociopolitical and other value-laden judgments in the same manner that lay people are affected.¹¹³

Moreover, because ecosystems are particularly complex and dynamic,¹¹⁴ they cannot be fully studied and evaluated.¹¹⁵ Thus, given the scientific

¹⁰⁷ Paul L. Angermeier & James R. Karr, *Biological Integrity versus Biological Diversity as Policy Directives*, 44 *BIOSCIENCE* 690, 692 (1994) (arguing that integrity that includes presence of all appropriate elements and occurrence of all processes at appropriate rates refers to conditions under little or no influence from human actions).

¹⁰⁸ Robert L. Fischman, *The Meanings of Biological Integrity, Diversity, and Environmental Health*, 44 *NAT. RESOURCES J.* 989, 998–999 (2004).

¹⁰⁹ Laura Westra et al., *Ecological Integrity and Aims of the Global Integrity Project*, in *ECOLOGICAL INTEGRITY: INTEGRATING ENVIRONMENT, CONSERVATION, AND HEALTH* 23–26 (David Pimental et al., eds., 2000).

¹¹⁰ Jianguo Liu et al., *Coupled Human and Natural Systems*, 36 *AMBIO* 639 (2007).

¹¹¹ David N. Cole & Laurie Yung, *Beyond Naturalness: Rethinking Park and Wilderness Stewardship in an Area of Rapid Change* 157 (David N. Cole & Laurie Yung eds., 2010).

¹¹² Robert L. Glicksman, *Bridging Data Gaps through Modelling and Evaluation of Surrogates: Use of the Best Available Science to Protect Biological Diversity Under the National Forest Management Act*, 83 *IND. L. J.* 465, 471 (2008).

¹¹³ Paul Slovic, *THE PERCEPTION OF RISK* 409 (2000).

¹¹⁴ S.T.A. Pickett & M.L. Cadenasso, *The Ecosystem as Multidimensional Concept: Meaning, Model, and Metaphor*, 5 *ECOSYSTEMS* 1 (2002) (noting that “far from being simple and straightforward, the ecosystem is in fact a subtle and complex concept. The multiple layers of its meaning and use can result in confusion . . . Furthermore, these layers of meaning and use have specific yet often unrecognized theoretical linkages.”).

¹¹⁵ Shrader-Frechette & McCoy, *supra* note 70, at 38–39, 101–04; Richard O. Brooks, Ross Jones, & Ross A. Virginia, *LAW AND ECOLOGY: THE RISE OF THE ECOSYSTEM REGIME* 264 (2002).

uncertainty, which is correlated with the above features of ecosystems, on the one hand, and the fuzziness of the notion of the integrity of the site, on the other hand, the assessment whether the integrity of the site is adversely affected is based not only on scientific data, but also on political or other value judgments.¹¹⁶ In respect to the intertwined scientific grounds and political or other values, there are multiple, historical accounts, spanning back centuries, over whether scientists on the one hand or politicians (and regulators) on the other should make the important choices needed to fill the cracks in scientific evidence, models, and predictions.¹¹⁷ So the view that the maintenance of the integrity of a site is equated with the lasting preservations of the constitutive characteristics of this site is based on scientific and political criteria and, consequently, is mostly subjective.

4. Article 6(4)

4.1. The Relationship between Article 6(3) and 6(4)

According to the foregoing, if the appropriate assessment reveals any adverse effects on the integrity of the site, or if a probability of such effects to exist is not excluded, the competent national authorities have the following options: (a) to reject the plan or project or, if it is feasible, to establish terms and set measures to ensure that there will be no adverse effects on the integrity¹¹⁸; or (b) to decide according to Article 6(4) of the Habitats Directive. In the latter case, they approve the plan or project on the conditions specified in the above provision, i.e., provided that there are no alternatives and provided that there are imperative reasons of overriding public interest. However, in view of the fact that Article 6(4) is an exception, it must be strictly interpreted.¹¹⁹

With regard to the relationship between Article 6(3) and 6(4), the Court ruled that “having regard to the particular characteristics of each of

¹¹⁶Kristen Carden, *Bridging the Divide: The Role of Science in Species Conservation Law*, 30 HARV. ENVTL. L. REV. 165, 190 (2006).

¹¹⁷Thomas F. Gieryn, *Boundary-Work and the Demarcation of Science from Non-Science: Strains and Interests in Professional Ideologies of Scientists*, 48 AM. SOC. REV. 781, 782 (1983); Oliver Todt & José L. Lujan, *Values and Decisions: Cognitive and Noncognitive Values in Knowledge Generation and Decision Making*, 39 SCI., TECH., & HUM. VALUES 720-743 (2014) (asserting that there is a large body of both empirical and theoretical studies showing that, on the one hand, knowledge generation involves values, while on the other, scientific knowledge has value implications, particularly when it plays a role in decision making).

¹¹⁸C-209/02, *Comm'n v. Austria*, 2004 E.C.R. I-1211. In this case, the Court found that Austria has failed to fulfill its obligations under Article 6(3) and (4) because the competent national authority approved the construction of golf courses in a special protection area despite the negative outcomes of the impact assessment. The measures that were proposed to mitigate the negative effects of the plan were judged to be inadequate for the maintenance of the integrity of the site and, thus, did not justify the approval.

¹¹⁹Eur. Comm'n, *supra* note 18, at 44; Eur. Comm'n, *Guidance Document on Article 6(4) of the 'Habitats Directive'* 92/43/EEC, at 4 (2007); C-182/10, *Solvay v. Région Wallonne*, 2012 ECLI:EU:C:2012:82. See Ludwig Kramer, *The European Commission's Opinions Under Article 6(4) of the Habitats Directive*, 21 J. ENVTL. L. 59 (2009).

the stages referred to in Article 6 of Directive 92/43, it must be held that the various requirements set out in Article 6(4) cannot constitute elements that the competent national authorities are obliged to take account of where they carry out an appropriate assessment provided for in Article 6(3).¹²⁰ Thus Article 6(4) cannot be applied unless the appropriate assessment of the plan or project has proceeded pursuant to Article 6(3).¹²¹

4.2. The Scope of Article 6(4)

Upon implementing Article 6(4) of the Habitats Directive, the first step of the competent authority is to examine if there are alternative solutions to the proposed plan, including the possibility to achieve the objective intended in a non-protected area. In the negative case, the competent authority examines if there are imperative reasons of overriding public interest for the plan or project to be carried out. In the affirmative case, the competent authority has to estimate whether the compensatory measures proposed by the project owner are adequate to “eliminate the negative effects of the plan and to provide a counterbalance to the infringement of the plan on species and habitats.”¹²²

As regards “the imperative reasons of overriding public interest,” it is important to note that they are not equated to strictly financial reasons. As the Court ruled, “the imperative reasons of overriding public interest which may, pursuant to Article 6(4) of the Habitats Directive, justify a plan or project which would significantly affect an SPA in any event include grounds relating to a superior general interest of the kind identified in Leybucht Dykes and may where appropriate include grounds of a social or economic nature.”¹²³ Moreover, the Court further specified the meaning of the above terms, stressing that “an interest capable of justifying, within the meaning of Article 6(4) of the Habitats Directive, the implementation of a plan or project must be both ‘public’ and ‘overriding,’ which means that it must be of such an importance that it can be weighed up against that directive’s objective of the conservation of natural habitats and wild fauna and flora.”¹²⁴ In a recent Guidance document, the Commission stressed

¹²⁰ C-441/03, *Comm’n v. The Netherlands*, 2005 E.C.R. I-3043.

¹²¹ C-404/09, *Comm’n v. Spain* 2011 E.C.R. I-11853 (“The Kingdom of Spain, which has invoked the importance of mining activities for the local economy, needs to be reminded that, whilst that consideration is capable of constituting an imperative reason of overriding public interest within the meaning of Article 6(4) of the Habitats Directive, that provision can apply only after the implications of a plan or project have been studied in accordance with Article 6(3) of that directive. Knowledge of those implications in the light of the conservation objectives relating to the site in question is a necessary prerequisite for application of Article 6(4) since in the absence thereof, no condition for application of that derogating provision can be assessed.”); see also Case C-304/05, *Comm’n v. Italy*, *supra* note 92.

¹²² Eur.n Comm’n, *Guidance Document on Article 6(4) of the ‘Habitats Directive,’ supra* note 119, at 11.

¹²³ Case C-44/95, *Lappel Bank*, 1996 E.C.R. I-3805, at ¶ 38.

¹²⁴ Case C-182/10, *Solvay*, 2012 E.C.R. I-3673, at ¶ 75.

that it is an obligation of the national competent authority to prove that the balance of interests between the conservation objectives of the Natura 2000 site affected by the plan or project and the imperative reasons weighs in favor of the latter.¹²⁵

In light of the foregoing, the construction of a road, for example, cannot be approved simply because it fulfills economic requirements (it offers jobs), but rather because it fulfills an overriding public interest (lifting the seclusion of a region). Therefore, strict interpretation of the financial reasons is required.¹²⁶ Besides, this is also the opinion of the Commission, which notes that “plans serving interests of companies or individuals are not covered by the provision.”¹²⁷ As regards the Court, in its effort to delimit the concepts, it held that works intended for the location or expansion of an undertaking satisfy the conditions of Article 6(4) only in exceptional circumstances.¹²⁸

In respect to compensatory measures, it is useful to say that compensating habitat loss raises some profound questions about commensurability and interchangeability, so that it seems doubtful whether compensation is effective.¹²⁹ Hence, the EU member states rarely implement Article 6(4) of the Habitats Directive. In case the compensation obligation applies, the compensatory measures, which are notified to the Commission, are only taken for purposes of counterbalancing the damage and not for the prevention or reduction thereof.¹³⁰ Compensatory measures may include the creation, restoration, or expansion of a site of ecological value, in an area that is usually much larger than the affected one. Actions within the affected area may also be deemed as compensatory measures.¹³¹ The time of implementation of such measures is particularly crucial. The Commission considers that “all necessary provisions, technical, legal or financial, necessary to implement the compensatory measures must be completed before the plan or project implementation starts, so as to

¹²⁵ EUR. COMM'N, GUIDANCE ON AQUACULTURE AND NATURA 2000, *supra* note 88, at 68.

¹²⁶ N. de Sadeleer, *Habitats Conservation in EC Law*, 5 Y.B. EUR. ENVTL L. 249 (2005).

¹²⁷ EUR. COMM'N, *Guidance Document on Article 6(4) of the 'Habitats Directive'*, *supra* note 119, at §1.3.2.

¹²⁸ Case C-182/10, *Solvay*, 2012 E.C.R. I-3673, at ¶¶ 76, 77.

¹²⁹ D. McGillivray, *Compensating Biodiversity Loss: The EU Commission's Approach under Article 6 of the Habitats Directive*, 24 J. ENVTL L. 415, 419 (2012).

¹³⁰ See Case C-239/04, *Castro Verde*, 2006 E.C.R. 10185, at ¶ 35 (“the adverse effects on a site must be strictly separated from the compensatory measures. Under the regulatory system of the Habitats Directive, adverse effects are to be avoided as far as possible. That is done preferably by eliminating any risk of harm or by taking appropriate damage mitigation and prevention measures. By contrast, compensatory measures can be considered only when adverse effects have to be accepted in the absence of any alternative, for overriding reasons of public interest”).

¹³¹ F. Haumont, *L'application des mesures compensatoires prévues par Natura 2000*, 10 ERA F. 616 (2009). It should be noted that some measures for the restoration of the environmental damage on protected species or natural habitats are included in Annex II of Directive 2004/35 on environmental liability. Thus the above provision could form a guide for the compensatory measures of Article 6(4) of the Habitats Directive.

prevent any unforeseen delays that may hinder the effectiveness of the measures.”¹³²

Thus for Article 6(4) to be properly implemented, it must be clarified what is considered a mitigation measure and what is considered a compensatory measure. According to Advocate General E. Sharpston, a mitigation measure is the one that lessens the negative effects of a plan or a project to secure “the integrity of the site concerned.” In contrast, a compensatory measure is a measure that does not achieve this goal within the narrower framework of the plan or project but seeks to counterbalance the failure to achieve this goal within a wider framework.¹³³ Therefore, due to their special function, mitigation measures must be taken into consideration at the stage of appropriate assessment, pursuant to Article 6(3), and compensatory measures must be taken into consideration at the stage of application of Article 6(4).¹³⁴

5. The Impact Assessment of Plans or Projects in the US Endangered Species Act: A Brief Outline

The main piece of legislation in the United States regarding the protection of biodiversity is the Endangered Species Act (ESA).¹³⁵ Its objective is to prevent the extinction of endangered or threatened animal and plant species and to promote their recovery. For the accomplishment of the above objective, it obliges the competent federal agencies to register the species threatened or in danger of extinction and to specify the critical (necessary) habitats for such species.¹³⁶

With regard to the assessment of the effects of plans and projects on habitats and species, the ESA provides for a special procedure, which is distinct from the assessment under the National Environmental Policy Act (“NEPA”).¹³⁷ While NEPA contains procedural provisions that must be complied with within the framework of environmental licensing, the ESA contains both procedural and substantial provisions.¹³⁸

¹³² Eur. Comm’n, *Guidance Document on Article 6(4) of the ‘Habitats Directive,’* *supra* note 119, at § 1.5.6.

¹³³ See Case C-521/12 T.C.Briels and others (2014), at ¶ 36 (Op. of AG Sharpston).

¹³⁴ *Id.*, at ¶¶ 28 & 33; see also *Id.* at ¶ 39 (“Article 6(3) of the Habitats Directive must be interpreted as meaning that a plan or project not directly connected with or necessary to the management of a site of Community importance, which has negative implications for a type of natural habitat present thereon and which provides for the creation of an area of equal or greater size of the same natural habitat type within the same site, has an effect on the integrity of that site. Such measures can be categorized as ‘compensatory measures’ within the meaning of Article 6(4) only if the conditions laid down therein are satisfied”).

¹³⁵ 16 U.S.C. § 1531-1544 (2018).

¹³⁶ 16 U.S.C. § 1533.

¹³⁷ 42 U.S.C. §§ 4321-4370H (2018). NEPA is the US piece of legislation that is the counterpart of the EIA Directive.

¹³⁸ D.M. Cooley & J.J. Monast, *Carbon Offsets and Environmental Impacts: NEPA, the Endangered Species Act, and Federal Climate Policy*, 28 PACE ENVTL. L. REV. 377, 405 (2011).

In particular, the ESA (Section 7) obliges the federal agencies to ensure that any action authorized, funded, or carried out by such agencies is not likely to jeopardize any endangered or threatened species or to destruct or adversely modify the habitat of such species.¹³⁹ Moreover, it obliges the federal agencies to consult an expert wildlife agency before funding or licensing projects that may negatively affect endangered or threatened species or their habitats. The above competent agencies submit to the expert agencies a written report known as “biological opinion.”¹⁴⁰ This includes a detailed examination of the effects of the plan or project on the registered species or the habitat that is considered to be necessary for their preservation, and the assessment involving whether and to what extent they are exposed to danger.¹⁴¹

If the biological opinion concludes that there may be significant negative effects, it must be examined whether there are reasonable alternative solutions, the implementation of which does not bear such effects. Then, after the federal agency has gained knowledge of the biological opinion, it makes decisions without being bound by the recommendations included in the biological opinion.¹⁴² In practice, the federal authority rarely continues the process, once the biological opinion includes a negative assessment.¹⁴³ Besides, the courts do not opt for the opinion of the acting federal agency in the case that is contrary to the scientific assessment of the expert agencies.¹⁴⁴ Indeed, the Supreme Court held that the biological opinions of FWA and NOAA Fisheries are “actually determinative.”¹⁴⁵

Furthermore, in order to deviate from a negative biological opinion, the federal agency must prove that this opinion is false. Otherwise, if it allows the continuation of the process, despite the negative assessment, it violates its essential statutory obligation to ensure that any action is not likely to jeopardize any endangered or threatened species or to destruct or adversely modify the habitat of such species.¹⁴⁶ It is worth noting that in the process established by ESA (Section 7), particular emphasis is placed on the

¹³⁹ 16 U.S.C. § 1536(a)(2). For an in-depth analysis of ESA, see R.V. PERCIVAL ET AL., ENVIRONMENTAL REGULATION: LAW, SCIENCE, AND POLICY 863–936 (5th ed., 2006).

¹⁴⁰ 16 U.S.C. § 1536(b). It must be noted that the formal consultation laid down by Section 7 of ESA is the counterpart of the appropriate assessment process enshrined in Article 6(3) of the Habitats Directive. In particular, the formal consultation begins with the “biological assessment” that describes the proposed action and evaluates its potential effects and concludes with the issuance of a “biological opinion.”

¹⁴¹ 50 C.F.R. § 402.14(g).

¹⁴² 50 C.F.R. § 402.15(a).

¹⁴³ D. Owen, *Critical Habitat and the Challenge of Regulating Small Harms*, 64 FLA. L. REV. 141, 151 (2012); H. Doremus, *The Purposes, Effects, and Future of the Endangered Species Act’s Best Available Science Mandate*, 34 ENVTL. L. 397, 403–404 (2004).

¹⁴⁴ A. Sinden, *The Economics of Endangered Species: Why Less Is More in the Economic Analysis of Critical Habitat Designations*, 28 HARV. ENVTL. L. REV. 129, 141 (2004).

¹⁴⁵ *Bennett v. Spear*, 520 U.S. 154, 169–170 (1997).

¹⁴⁶ 16 U.S.C. § 1536(a)(2).

need to use the best scientific and commercial data available.¹⁴⁷ However, the history of its application in the US shows that, as a rule, scientific knowledge is closely intertwined with value-laden judgments (political, cultural, etc.), which result in the federal agencies having wide discretion, although quite the opposite should be the case.¹⁴⁸

6. Judicial review, its limits, and the protection of Habitats

To begin with, the judicial review in the EU must be focused on the fulfillment of procedural requirements laid down by Article 6(3) and (4). In particular, it must be examined whether the screening, the appropriate assessment, the quest of alternative solutions, and the designation of compensatory measures have been conducted.¹⁴⁹ It should be noted that, in view of the fact that the core of Article 6(3) is to not adversely affect the integrity of the site, for which there is an obligation as to the result to be achieved, judicial review is more intense than usual.¹⁵⁰

Within this framework, the courts are not limited to the review of compliance with the procedural requirements, but they expand to the examination as to whether the scientific assessment of the effects is the “appropriate assessment.” This means that the judicial review extends to all the elements comprising the concept of appropriate assessment, as it was construed by the ECJ,¹⁵¹ and it was clarified in the Commission’s guidance documents (e.g., the completeness of the assessment, the methodology and the scientific references used, the certainty that the plan or project will not adversely affect the integrity of the site concerned). In particular, according to case law, judicial review includes the process and the manner of generation of scientific knowledge.¹⁵²

It is common that scientific knowledge is a key element in the decision-making process regarding the environment and health protection. However,

¹⁴⁷ 16 U.S.C. § 1533(b).

¹⁴⁸ Holly Doremus & A. Dan Tarlock, *Science, Judgment, and Controversy in Natural Resource Regulation*, 26 PUB. LAND & RESOURCES L. REV. 1, 3–6 (2005); H. Gosnel, *Section 7 of Endangered Species Act and the Art of Compromise: The Evolution of a Reasonable and Prudent Alternative for the Animas-La Plata Project*, 41 NAT. RESOURCES J. 561, 562 (2001).

¹⁴⁹ Review for the stages under (c) and (d) is conducted only in the case of a negative assessment of the implications for the site.

¹⁵⁰ EU Courts, based on the general principles of diligence and impartiality, move on the edge between process and substance, which entails review of increased intensity. See Case T-13/99 *Pfizer Animal v. Council* (2002) E.C.R. II-3305; Case C-77/09 *Gowan* (2010) E.C.R. I-13533. For the Habitats Directive, see Case C-43/10 *Acheloos* ECLI:EU:C:2012:560, at ¶ 127: “In any event, it is for the referring court to assess whether the project at issue in the main proceedings does in fact adversely affect of one or more SCIs hosting a priority natural habitat type and/or a priority species.” A similar approach exists in International Law. See *Pulp Mills on the River Uruguay* (Argentina v. Uruguay), Judgment, 2010 I.C.J. Rep. 25, 62–63 at ¶ 168, available at <https://www.icj-cij.org/files/case-related/135/135-20100420-JUD-01-00-EN.pdf>. In more detail on the issue, see P. Sands, *Water and International Law: Science and Evidence in International Litigation*, 22 ENVTL. L. & MGMT. 151 (2010).

¹⁵¹ Case C-127/02 *Waddenzee*, 2004 ECR I-7405, at ¶ 54.

¹⁵² Joined cases T-74/00, *Artegodan and others*, 2002 ECR II-4945.

this scientific knowledge is limited because of the complexity and the dynamics of environmental systems.¹⁵³ In particular, as has been stressed previously, in the field of biodiversity there is scientific uncertainty, even ignorance.¹⁵⁴ Therefore, the decisions made are based mainly on assumptions and assessments that do not constitute definitive and indisputable scientific conclusions. Moreover, these conclusions are also based on political or other value-laden judgments, which are intertwined with scientific opinions to such an extent that it becomes extremely difficult to discern the one from the other.¹⁵⁵ Note that the battles over this vague point of demarcation have a name in the social studies of science: “boundary work.”¹⁵⁶

Against this background, the judicial review must scrutinize whether scientific data constitute the appropriate and the best scientific knowledge in the field of biodiversity.¹⁵⁷ In particular, judicial review must concentrate as far as possible on the identification of scientific evaluation on the one hand and value-laden judgments on the other hand (the two components of a decision taken by the competent administrative authority), so that the legality thereof will be judged in an appropriate manner.¹⁵⁸ This identification is particularly important because scientific opinion, in contrast to political or other value-laden judgments, limits the administration’s discretion,¹⁵⁹ and, thus, its acknowledgment as such will determine

¹⁵³ On this issue there is extended literature. See, e.g., E. Biber, *Which Science? Whose Science? How Scientific Disciplines Can Shape Environmental Law*, 79 U. CHI. L. REV. 471, 477 (2012); W. Wagner, *The Science Charade in Toxic Risk Regulation*, 95 COLUM. L. REV. 1613, 1619 (1995); B. Wynne, *Reconceiving Science and Policy in the Preventive Paradigm*, 2 GLOBAL ENVTL. CHANGE 111 (1992); J. Lubchenco, *Entering the Century of the Environment: A New Social Contract for Science*, 279 SCI. 491 (1998).

¹⁵⁴ Scientific uncertainty does not only pertain to the lack of data, but it also includes the methodological, scientific, and ontological problems that have risen within the scientific community for a particular issue. See R. von Schomberg, *Controversies and Political Decision Making*, in SCIENCE, POLITICS AND MORALITY, SCIENTIFIC UNCERTAINTY AND DECISION MAKING 7–26 (1993); L. Maxim & J.P. van der Sluijs, *Quality in Environmental Science for Policy: Assessing Uncertainty as a Component of Policy Analysis*, 14 ENVTL. SCI. & POL’Y 482 (2011) (stating different typologies of uncertainty in environmental science for policy, as uncertainty related to the content of knowledge, uncertainty related to the process of knowledge, and uncertainty related to the context of knowledge production); COMM. ON DECISION MAKING UNDER UNCERTAINTY, ENVIRONMENTAL DECISIONS IN THE FACE OF UNCERTAINTY, *supra* note 63, at 38 (indicating a classification of “uncertainty in two categories: (1) statistical variability and heterogeneity (also called aleatory or exogenous), and (2) model and parameter uncertainty (also called epistemic uncertainty),” adding further “a third category of uncertainty, referred to as deep uncertainty (uncertainty about the fundamental processes or assumptions underlying a risk assessment)”).

¹⁵⁵ There is also rich literature on this subject. See, e.g., H. Doremus, *Scientific and Political Integrity in Environmental Policy*, 86 TEX. L. REV. 1624 (2008); H. Doremus, *Science Plays Defense: Natural Resources Management in the Bush Administration*, 32 ECOLOGY L. Q. 254. (2005); K. Carden, *supra* note 117, at 201–204; M.S. Carolan, *The Politics in Environmental Science: The Endangered Species Act and the Preble’s Mouse Controversy*, 17 ENVTL. POL. 449, 451 (2008); N. Morar et al., *Biodiversity at Twenty-Five Years: Revolution or Red Herring?*, 18 ETHICS POL’Y & ENV’T 16, 25 (2015).

¹⁵⁶ T.F. Gieryn, *supra* note 117, at 781.

¹⁵⁷ D. Edwards, *Judicial Review, the Precautionary Principle and the Protection of Habitats: Do We Have a System of Administrative Law Yet?*, in THE HABITATS DIRECTIVE. A DEVELOPER’S OBSTACLE COURSE? 225 (G. Jones QC ed., 2012).

¹⁵⁸ D.M. Kahan, *Two Conceptions of Emotion in Risk Regulation*, 156 U. PA. L. REV. 741, 763 (2008) (stressing that we would recognize how dependent risk regulation is on moral, as well as scientific, expertise).

¹⁵⁹ The EU courts ruled that the competent administrative entity may make a decision that may deviate from standard scientific knowledge, but it must justify this deviation with arguments that “must be of a scientific level at least commensurate with that of the opinion in question.” See Case T-13/99, *Pfizer Animal v. Council*, 2002 ECR II-3305, at ¶ 199.

whether there is excess of its margin of appreciation. Hence, judicial review regarding the extent to which scientific data are the appropriate and updated scientific information requires a heightened scrutiny of the challenged decision.¹⁶⁰ However, this review must not acquire the characteristics of a *de novo* assessment, replacing that of the administrative fact finder.¹⁶¹

7. Conclusion

Even though 25 years have passed since the enactment of the Habitats Directive, the erosion of biodiversity in the EU continues dramatically. Despite the fact that, first, the provisions of the Habitats Directive are substantial and establish an obligation as to the result to be achieved, and, second, the interpretation of the provisions of Article 6 by the ECJ reinforced its protective features, only 17 percent of the habitats and species and 11 percent of the critical ecosystems protected under this directive are in a satisfactory state.¹⁶² In addition, a significant proportion of habitats and species covered by the Natura 2000 network are deteriorating still further.¹⁶³

There are numerous reasons explaining this indubitable failure.¹⁶⁴ First, the important tool of the appropriate assessment, whose objective is to ensure the integrity of the Natura 2000 network sites, has not been used as it should have. This is due either to the omission of the distinct procedure and the conduct of the appropriate assessment, or to the absence of guarantees and mechanisms that the assessment will be the appropriate one.¹⁶⁵ Second, many member states have repeatedly amended the national measures of transposition of Article 6, resulting in an unstable regulatory framework. Third, Article 6 uses highly technical (and vague) terms (“integrity of

¹⁶⁰ A. Biondi & K. Hamer, *Scientific Evidence and the European Judiciary*, in *SCIENTIFIC EVIDENCE IN EUROPEAN ENVIRONMENTAL RULE-MAKING* ¶2.1 (2003) (noting that the Union Courts exercise high-intensity review on decisions relating to the environment, and thoroughly examine the scientific documentation); D. Edwards, *supra* note 157, at 225.

¹⁶¹ R. Moules, *ENVIRONMENTAL JUDICIAL REVIEW* 16 (2011); A.H. Turk, *Oversight of Administrative Rulemaking: Judicial Review*, 19 EUR. L. J. 141 (2013) (noting that the judge upon exercising the review for an obvious assessment error extended and enhanced the review of the assessment of data on the part of the administration, ensuring not to substitute its decision with his); E. Hammond Meazell, *Super Deference, The Science Obsession, and Judicial Review as Translation of Agency Science*, 109 MICH. L. REV. 733 (2011) (discussing extensively the Supreme Court's and the Federal Appeal Courts' approach with regard to the intensity of review of environmental cases, which remains fluctuating between deference and hard look).

¹⁶² Eur. Comm'n, *Our Life Insurance, Our Natural Capital: An EU Biodiversity Strategy to 2020*, COM 244 final, at 1 (2011).

¹⁶³ Eur. Comm'n, *The State of Nature in the European Union*, COM 219 final, at 19 (2015).

¹⁶⁴ R. Ciutlen & I. Tafur, *Are Imperative Reasons Imperiling the Habitats Directive? An Assessment of Article 6(4) and the IROPI Exception*, in *THE HABITATS DIRECTIVE*, *supra* note 157, at 182; G. Wandesforde-Smith & N.S.J. Watts, *Wildlife Conservation and Protected Areas: Politics, Procedure and the Performance of Failure Under the EU Birds and Habitats Directives*, 17 J. INT'L WILDLIFE L. & POL'Y 62, 64 (2014).

¹⁶⁵ R. Beunen, *European Nature Conservation Legislation and Special Planning: For Better or for Worse?*, 49 J. ENVTL. PLAN. & MGMT. 605, 616 (2006).

the site,” “conservation objectives,” “favourable conservation status,” “implications for the site,” etc.), which have not been adequately clarified. Moreover, because the meaning of these terms is determinable both by scientific evaluations and value-laden judgments, the non-recognition of this interface renders the provision in question less effective. Fourth, the prevalence of the growth imperative led, to a large extent, to the reversal of the objective of the appropriate assessment, namely the biodiversity conservation. Thus, although the insurance of the integrity of the site should have precedence, as is expressly stipulated in the relevant provision, its position was taken by the unrestrained use of natural resources.

Nevertheless, another rationale is suitable to achieve the conservation objectives in an ecologically successful and politically viable way. Hence, we must realize that while science remains the cornerstone of any conservation effort, it cannot always provide us with the appropriate or definitive answers.¹⁶⁶ Thus this incomplete knowledge must be reflected in nature conservation and, more generally, in environmental legislation. Furthermore, scientists must inform lawmakers how best to incorporate scientific knowledge (even sparse and inconclusive) in the policy-making process. This educative effort needs to occur in the courts and in our communities. For the latter, it is worth noting that if people are well informed and, consequently, more capable of understanding the fundamentals of science, they can participate more effectively in the conservation debate.¹⁶⁷ The courts also, if adequately informed, could demarcate the scientific opinions from the political or other value-laden judgments and, thus, control more effectively whether the administrative fact finders exceeded the bounds of their discretion.

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¹⁶⁶W.E. Wagner, *The “Bad Science” Fiction: Reclaiming the Debate over the Role of Science in Public Health and Environmental Regulation*, 66 L. & CONTEMP. PROBS. 63, 64 (2003).

¹⁶⁷See K. Carden, *supra* note 116, at 259.