Halting the Loss of Biodiversity in the European Union: An Achievable Goal?

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Abstract

In 1998, the European Commission adopted a European Union (EU) biodiversity strategy as part of its commitment to the Convention on Biological Diversity. In 2001, it published four biodiversity action plans to implement the strategy. Also in 2001, the EU Heads of State and Governments agreed a target to halt the loss of biodiversity in the EU by 2010. The target became an environmental priority of the EU one year later in the Sixth Environment Action Programme.

Protecting biodiversity was not a new concept. In 1979, the EU had adopted legislation to protect birds, followed 13 years later by legislation to protect other species and natural habitats and to establish a network of protected areas across the EU. The legislation, however, only peripherally addressed the general loss of biodiversity that was taking place outside the network.

Member States were not directed to adopt the strategy; it was, instead, supplementary to strategies and action plans that they were developing. Further, the EU strategy was to be implemented using existing funding. Not surprisingly, therefore, in March 2010, despite the network of protected areas then covering about 17 per cent of the terrestrial EU, the European Council conceded that the EU had failed to meet the 2010 target. In 2011, the EU adopted a new target; to halt the loss of biodiversity in the EU by 2020.

This article examines the history of the EU biodiversity strategy and the likelihood that the EU will achieve the 2020 target.

Key words: Biodiversity; Natural 2000; ecosystem services; EU Birds Directive; EU Habitats Directive; payments for ecosystem services; nature conservation

Ⅰ. Introduction

The European Union (EU) is losing the biodiversity[1] on which its people depend for their survival. Fragmentation of the landscape by urban areas, infrastructure and other development is locking many species into areas which they cannot leave even when conditions in those areas can no longer sustain them. A network of sites which are especially rich in biodiversity, and in which it is protected, now covers about 18 per cent of the terrestrial EU. This achievement, however, has been marked by lengthy opposition. Extending protected sites much beyond this network is, therefore, unlikely to be feasible even if funding was to be available. Critically, establishing protected sites by itself cannot halt the massive loss of biodiversity that is taking place in the EU.

The EU has had a strategy to halt the loss of biodiversity for over 12 years but its implementation does not have a higher priority than the implementation of any other biodiversity strategy in the EU, including those of each Member State. In the face of multiple strategies, the target to halt the loss of biodiversity in the EU by 2010 inevitably failed.

It will be impossible to meet the new target of halting the loss of biodiversity in the EU by 2020 unless there is a new governance that includes better co-ordination between the strategies and action plans of the EU and Member States. Achieving the 2020 target not only means commitments by the EU and Member States, it means significant changes in people's lifestyles. Surveys indicate, however, that most people in the EU have not even heard of the term "biodiversity" or know what it means. The new governance, therefore, must include substantial measures to increase public awareness of the loss of biodiversity and its implications.

This article analyses whether the loss of biodiversity in the terrestrial EU[2] can be halted, not merely by 2020 but at all. Part II of the article describes the loss of biodiversity and the implications if the loss continues. Part III

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1 The United Nations (UN) CBD defines biological diversity as "the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems". CBD art. 2.

2. This article does not discuss the loss of biodiversity in marine waters or the inclusion of marine areas in the network of EU protected sites. Measures to include marine areas began later than measures in the terrestrial EU.

very briefly reviews the two main types of traditional nature conservation legislation and the more recent ecosystems approach.

Part IV examines EU nature conservation legislation and the network of sites to protect biodiversity in the EU. When EU legislation was first adopted in 1979 to protect birds and their natural habitats, the term "biodiversity, which means "biological diversity", had not been coined. Even when further EU legislation was adopted in 1992 to extend the protection of species to plants and animals and their natural habitats and to create a network of protected sites across the EU, the term "biodiversity" was still in its infancy. The legislation, in accordance with nature conservation legislation at that time, did not focus on protecting and conserving entire ecosystems but, rather, specified species and their critical natural habitats.

Part V discusses the EU biodiversity strategy and how it includes and supplements EU nature conservation legislation. The strategy also had its origins in 1992 when the EU and Member States signed the Convention on Biological Diversity (CBD) during the Earth Summit in Rio de Janeiro. This part traces the evolution of the EU biodiversity strategy and, in particular, the many difficulties encountered in its implementation.

Part VI examines traditional and innovative measures that are being used and studied to conserve biodiversity including the relatively recent payments for ecosystem services (PES) approach. The measures form part of the new governance of biodiversity that is beginning to be developed in the EU.

The article concludes that the loss of biodiversity in the EU cannot, and will not, be halted until the new governance is further developed and implemented and, in particular, the public are not only aware of the loss of biodiversity and its implications but are willing to change their behaviour in order to stop that loss.

Ⅱ. Loss of Biodiversity in the EU

Since the 1950s, global biodiversity has declined on a massive scale due to more rapid and extensive changes in ecosystems than during any other comparable period in human history.[3] In the EU, the changes have resulted

3. This conclusion was one of the main findings of the Millenium Ecosystem Assessment. *See* Millenium Ecosystem Assessment, What are the main findings of the MA?; available

in a loss of over half of the wetlands and most ecologically diverse farmland (high value farmland).[4] The effect on species has also been massive. By 2010, 14 per cent of terrestrial mammals native to Europe were threatened with extinction, as were 13 per cent of birds, nine per cent of butterflies, 23 per cent of amphibians and 19 per cent of reptiles.[5] Even in areas protected by EU nature conservation legislation, only 17 per cent of natural habitats and species and 11 per cent of ecosystems had a favourable conservation status,[6] that is, their natural range and distribution and populations within that range were stable or increasing. Overall, only 17 per cent of species other than birds in the EU-25 had a favourable conservation Status compared to 52 per cent having an unfavourable Status.[7] The decline in some Member States is even greater. There has been a decline, for example, of over 80 per cent of farmland birds in the United Kingdom (UK) since the 1960s, together with a decline of 93 per cent of habitat specialist butterflies and 76 per cent of all butterflies since the 1970s.[8]

The main causes of the loss are the intensification of agriculture and forestry and over-exploitation to satisfy ever increasing human demands for food,

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at http://www.maweb.org/en/About.aspx (accessed June 19, 2012).

4. *See* Directorate General Environment, Unit E.4. LIFE, Ex-Post Evaluation of Projects and Activities Financed under the LIFE Programme, Final Report, Part 4: Thematic analysis – Nature 5 (COWI, July 2009).

5. European Environment Agency, The European Environment, State and Outlook 2010, Biodiversity, 10-11 (2010) (hereinafter State and Outlook 2010, Biodiversity).

6. European Environment Agency, EU 2010 Biodiversity Baseline 17 (Technical Report No. 12/2010, 2010) (hereinafter EU 2010 Biodiversity Baseline). The conservation status for the remaining species was unknown. *Id.* at 12. The EU nature conservation legislation is the Birds and Habitats Directives which are discussed below. Agriculture covers 47% of the EU, of which one third has high nature value; 37% is covered by forests. Commission Staff Working Paper, The Added Value of the EU Budget, Accompanying the document Commission Communication, A budget for Europe 2020 26, § 6.2.1 (SEC(2011) 867 final, June 29, 2011).

7. State and Outlook 2010, Biodiversity, *supra* note 5, at 12.

8. Royal Commission on Environmental Pollution, Twenty-ninth Report, Demographic Change and the Environment 51, para. 3.58 (CM 8001, Feb. 2011). Between 1930 and 1984, England and Wales lost 97% of its flower-rich meadows and grassland. *See* John Lawton, *Making Space for Nature*, 13 Envtl. L. Rev. 1, 4 (2011). Sir John Lawton chaired the Royal Commission Report. For a discussion of the global loss of biodiversity, *see* Mary Christina Wood, *"You Can't Negotiate with a Beetle": Environmental Law for a New Ecological Age*, 50 Nat. Resources J. 167, 177-83 (Winter 2010).

fresh water, timber, fibre and fuel,[9] the spread of urban areas, the growth of transport infrastructure,[10] the spread of invasive species, pollution,[11] and climate change.[12] A recent study showed that out of 122 observed populations of bird species in the EU, 75 per cent were damaged by, and only 25 per cent benefitted from, climate change.[13]

The intensification of agriculture and forestry, spread of urban areas and growth of transport infrastructure have not only damaged or destroyed ecologically diverse areas; they have fragmented remaining areas, with moderate to very high fragmentation in nearly 30 per cent of the terrestrial EU. Fragmentation causes a loss in biodiversity because it results in ecosystems being more vulnerable to drainage, eutrophication, acidification and other pressures. In addition, it isolates populations of animal and plant species and, thus, threatens them with extinction because migration and other dispersal from such areas are disrupted.[14]

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9. European Commission Staff Working Document, Annex to the Communication from the Commission, Halting the Loss of Biodiversity by 2010 – and Beyond; Sustaining ecosystem services for human well-being, Impact Assessment, SEC(2006) 607 13, § 2.2.1 (May 22, 2006) (hereinafter SEC(2006) 607); Communication from the Commission to the Council and the European Parliament on a European Community Biodiversity Strategy 3, para. I(A)(3) (COM(1998) 42 final) (hereinafter COM(1998) 42 final), referring to the Dobris Assessment.

10. SEC(2006) 607, *supra* note 9, at 41, § 2.7.1. Since the mid 1990s, the built-up area of Europe has expanded by 20%. *See id.*

11. *Id.* at 24, § 2.3.1.

12. Global emissions of carbon dioxide, the main greenhouse gas, continued to rise in 2011 despite decreases in emissions in the EU, the United States of America (US) and Japan as well as the economic crisis, high oil prices and mild winter weather. *See* Jos G.J. Olivier, Greet Janssens-Maenhout, Jeroen A.H.W. Peters, Trends in Global CO2 Emissions; 2012 Report 6 (PBL Netherlands Environmental Assessment Agency & Institute for Environment and Sustainability of the European Commission's Joint Research Centre, 2012). Climate change in the EU is resulting in: shifts in mammal, bird, insect and plant species northwards and onto higher ground; changes in the timing in annual plant life cycles; changes in the timing in frog and fish spawning, bird nesting and phytoplankton blooming; and changes in the arrival times of migratory birds and butterflies. State and Outlook 2010, Biodiversity, *supra* note 5, at 23-24.

13. State and Outlook 2010, Biodiversity, *supra* note 5, at 24.

14. *Id.* at 18; *see generally* European Environment Agency, Landscape Fragmentation in Europe (Joint European Environment Agency and Swiss Federal Office for the Environment report (No. 2/2011, 2011) (quantitatively assessing degree of landscape fragmentation in 28 European countries). The global loss of biodiversity is equally massive. By 2010, only about 27% of the original global terrestrial biodiversity remained, with the largest declines

Some scientists have warned that if the world continues to lose biodiversity at the current rate, a massive change to the global biosphere is not only "highly plausible"; it may already be happening. In June 2012, 22 scientists published an article in which they concluded that the global ecosystem is approaching a planetary-scale tipping point as a result of human activities.[15] The tipping point, known as a critical transition, is a threshold-induced shift from one state to another. That is, incremental changes are accumulating which, if they exceed a critical threshold, the value of which we do not yet know, the global biosphere will be tipped into another state.

If, or when, that threshold is reached, a return to the previous state will be "extremely difficult or even impossible".[16] The scientists identified the reasons for approaching the tipping point as human population growth with the resulting growth in the consumption of natural resources, the transformation of habitats and their fragmentation, energy production and consumption and climate change. They stated that "[a]ll of these far exceed, in both rate and magnitude, the [forcing mechanisms] evident at the most recent global-scale state shift, the last glacial-interglacial transition."[17] Examples of direct forcing mechanisms include "the conversion of ~43% of Earth's land to agricultural or urban landscapes, with much of the remaining natural landscapes networked with roads"; a change that "exceeds the physical transformation

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having occurred where humans evolved, that is, in temperate and tropical grasslands and forests. If these trends continue, another 11% of the global terrestrial biodiversity will have disappeared by 2050, with the loss in some areas closer to 20%. *See* L. Braat & P. ten Brink (eds.), The Cost of Policy Inaction; The Case of Not Meeting the 2010 Biodiversity Target 6, 174 (May 2008) (study for DG Environment, ENV.G.1/ETU/2007/0044 (Official Journal Reference 2007 / S 95 – 116033).

15. Anthony D. Barnosky, Elizabeth A. Hadly, Jordi Bascompte, Eric L. Berlow, James H. Brown, Mikael Fortelius, Wayne M. Getz, John Harte, Alan Hastings, Pablo A. Marquet, Neo D. Martinez, Arne Mooers, Peter Roopnarine, Geerat Vermeij, John W. Williams, Rosemary Gillespie, Justin Kitzes, Charles Marshall, Nicholas Matzke, David P. Mindell, Eloy Revilla & Adam B. Smith, *Approaching a State-Shift in Earth's Biosphere,* 486 Nature 52, 57 (June 7, 2012) (hereinafter Anthony Barnosky *et al.); see also* Millenium Ecosystem Assessment 2005, *Ecosystems and Human Well-being: Synthesis* 1 (Island Press 2005) (hereinafter Ecosystems and Human Well-being: Synthesis) ("Over the past 50 years, humans have changed ecosystems more rapidly and extensively than in any comparable period of time in human history, largely to meet rapidly growing demands for food, fresh water, timber, fiber and fuel. This has resulted in a substantial and largely irreversible loss in the diversity of life on Earth").

16. Anthony Barnosky *et al., supra* note 15, at 52.

17. *Id.* at 53.

that occurred at the last global-scale critical transition, when ~30% of Earth's surface went from being covered by glacial ice to being ice free".[18] Modeling carried out by the scientists indicated that plant species may be unable to migrate fast enough to keep pace with projected climate change because the required migration rate would have to be greater than the rate during the global transition from a glacial to an interglacial climate. They further stated that plant species may be unable to migrate from some locations due to highly fragmented landscapes.[19]

Ⅲ. Nature Conservation Legislation

Legislation to conserve, or halt the loss of, biodiversity is not new. There are two main types of traditional legislation, neither of which has changed substantially. One type provides for the designation of specified areas to be protected or conserved. The second type provides for measures to protect vulnerable species and species threatened by extinction.

The reasons for designating specified areas in the first type of legislation are not limited to the conservation of biodiversity; they generally also include consideration of aesthetic, cultural and landscape criteria, with many areas

18. *Id.* at 54.

19. *Id.* The article echoes concerns expressed in a 1972 study by researchers at the Massachusetts Institute of Technology, entitled "The Limits to Growth", which was sponsored by an international think tank called the Club of Rome. Donella H. Meadows, Dennis l. Meadows, Jorgen Randers, William W. Behrens III, The Limits to Growth: A Report to the Club of Rome (Signet, 1972). The 1972 study used computer modelling to examine different scenarios based on five trends; natural resource depletion, world population, food production, industrialisation, and pollution. It concluded that if the trends continued, there would probably be a sudden and uncontrollable collapse in population and industrial capacity within 100 years. It further concluded that unlimited economic growth was possible if the ecological footprint of humanity was limited by governance and technological investment. A 2008 study, which examined 30 years of data since 1972, found they were consistent with key features of a business-as-usual scenario which would result in a collapse of the global economic system in the mid-2000s. The author concluded that "[u]nless the [Limits to Growth] is invalidated by other scientific research, the data comparison presented here lends support to the conclusion from [Limits to Growth] that the global system is on an unsustainable trajectory unless there is substantial and rapid reduction in consumptive behaviour, in combination with technological progress". Graham Turner, A Comparison of the Limits to Growth with Thirty Years of Reality 38 (CSIRO Working Paper Series, June 2008, ISSN 1834-5638).

having a primary focus on access and recreation.[20] Examples of protected areas are: national parks in the UK which were established, among other things, for their landscapes and cultural heritage as well as to conserve and enhance natural beauty and wildlife;[21] areas of outstanding natural beauty in the UK which were established for their scenic views, history and culture as well as to conserve flora and fauna;[22] national parks which were established in France to preserve their "natural environment and [their] fauna, flora, soil, subsoil, waters, atmosphere and – possibly cultural heritage";[23] and national parks which were established in Poland to protect areas unique for their scientific, natural, cultural and educational values.[24]

During the 1970s, the designation of protected areas assumed a regional and sometimes international scale rather than a purely national scale. Regional and international agreements[25] include: the Ramsar Convention, signed in 1971;[26] the World Heritage Convention, signed in 1972;[27] the Man and the

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20. *See* Protected Landscapes and Wild Biodiversity 8-9 (eds. Nigel Dudley & Sue Stolton, International Union for Conservation of Nature (IUCN) 2012) (primary aim of protected areas was access and recreation but nature conservation was also included).

21. National Parks and Access to the Countryside Act 1949 part II (England, Wales & Northern Ireland). Equivalent legislation was not enacted in Scotland until the National Parks (Scotland) Act 2000.

22. Countryside and Rights of Way Act 2000 part IV (England, Wales and Northern Ireland).

23. *See* http://www.parks.it/world/FR/Eindex.php (accessed Aug. 1, 2012).

24. *See* http://www.staff.amu.edu.pl/~zbzw/ph/pnp/pnp.htm (accessed Aug. 1, 2012).

25. The UN Environment Programme and the IUCN publish an international inventory of protected areas every 10 years. *See* 2003 United Nations List of Protected Areas (S. Chape, S. Blyth, L. Fish, P. Fox & M. Spalding (compilers), IUCN and UNEP-World Conservation Monitoring Centre, Jan. 2003); available at http://www.unep-wcmc.org/united-nations-list-of-protected-areas-2003_159.html (accessed July 20, 2012); *see also* Alexander Gillespie, *The Management of Protected Areas of International Significance*, 10 N.Z.J. Envtl. L. 93 (2006) (describing management of international protected areas).

26. Ramsar Convention on Wetlands of International Importance. The Ramsar Convention has 162 Contracting Parties. The parties designate wetlands of international importance in respect of their ecology, botany, zoology, limnology or hydrology for inclusion in the Ramsar List, which is managed by the IUCN. *See generally* Alexander Gillespie, *Obligations, Gaps and Priorities within the International Regime for Protected Areas*, 19 Geo. Int'l Envtl. L. Rev. 1 (2006) (describing Convention) .

27. The Convention concerning the protection of the world cultural and natural heritage is administered by the UN Educational, Scientific and Cultural Organization (UNESCO). The World Heritage Convention had been ratified by 189 parties by March 2012. *See* http://whc.unesco.org/en/statesparties/ (accessed July 2, 2012).

Biosphere programme, launched in 1976;[28] and the Bern Convention, signed in 1979.[29] Whereas these agreements include nature conservation objectives, they are not limited to them.[30]

The second type of traditional nature conservation legislation frequently includes prohibitions on the capture and sale of specified species and criminal liability for disturbing or damaging them.[31] It may also include some aspects of the first type of legislation in that it may provide for the establishment and conservation of a protected species' natural habitat. Such legislation has been enacted to protect a single species[32] as well as multiple species listed in the legislation or secondary legislation, with additions made to the lists as further vulnerable or threatened species are identified.[33]

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28. The UNESCO Man and Biosphere programme records sites, known as biosphere reserves, that are nominated by national governments.

29. Council of Europe, Convention on the Conservation of European Wildlife and Natural Habitats. *See* http://www.coe.int/t/dg4/cultureheritage/nature/bern/default_en.asp (accessed July 19, 2012). The Bern Convention entered into force on June 1, 1982 when it had been ratified by five signatories. *See* [http://www.conventions.coe.int/Treaty/Commun/ChercheSig.asp?NT=104&CM=8&DF=21/08/2012&CL=ENG] (accessed July 19, 2012)*; see also infra* note 48 (describing establishment of Emerald Network under Bern Convention). For a discussion of national, regional and global agreements to protect biodiversity, *see generally* John Charles Kunich, *Fiddling Around While the Hotspots Burn Out,* 14 Geo. Int'l Envtl. L. Rev. 179 (2002).

30. *See* s*upra* notes 20-24.

31. *See* Lynda M. Warren, *New Approaches to Nature Conservation in the UK,* 14(1) Envtl. L. Rev. 44, 44 (2012).

32. *See* Conservation of Seals Act 1970 (UK); Protection of Badgers Act 1992 (UK); Bald and Golden Eagle Protection Act 1940, 16 U.S.C. §§ 668 *et seq.* (US); Wild and Free-Roaming Horses and Burros Act 1971, 16 U.S.C. §§ 331 *et seq.* (US).

33. In 1973, for example, the US Congress enacted the Endangered Species Act (ESA) to protect and restore threatened and endangered species and to conserve natural habitats that are critical to their survival. 16 U.S.C. §§ 1531 *et seq.* The other purpose of the ESA was to implement the Convention on international trade in endangered species of wild flora and fauna (CITES). A threatened species is one that is "likely to become an endangered species within the foreseeable future throughout all or a significant part of its range". *Id.* § 1532(20). An endangered species is one that is "in danger of extinction throughout all or a significant part of its range". *Id.* § 1532(6). The ESA prohibits federal agencies from carrying out actions that would destroy or adversely modify critical habitats of listed species. *Id.* § 1536. The critical habitat is generally designated when a species is listed. Congress considered that such species should be protected, not only for their aesthetic value but also because they performed "'vital biological services'" and maintained "'a balance of nature'" in their ecosystems, together with the need for biodiversity for scientific purposes. *See* Frank Skillern, Environmental Protection Deskbook 506 (Shepard's, 2d ed. 1995)

Traditional nature conservation law in the EU and other jurisdictions has been undergoing a paradigm shift from the above types of legislation that tend to apply uniform rules regardless of the ecological system involved, to an ecosystem approach that considers and manages ecosystems holistically and that differs depending on the ecological context at issue. This shift is also resulting in a much more complex governance structure that includes not only legislation but other mechanisms. The ecosystem approach includes, among other things, incorporation of the approach into legislation and policies as well as the development and implementation of such legislation and policies at a national, regional and local level. The governance is dynamic and constantly evolving in recognition of the highly complex nature of ecosystems and the still limited understanding of them. [34]

Ⅳ. EU Nature Conservation Legislation and the Natura 2000 Network

The EU's nature conservation legislation consists of two Directives; the

(quoting S. Rep. No. 93-307, 93rd Cong., 1st Sess. (1973), reprinted in Legislative History of the Endangered Species Act of 1973, as amended in 1976, 1977, 1978, 1979 and 1980 301 (1982)). A broader goal of the ESA is the conservation of biodiversity. *See* Jason M. Patlis, *Biodiversity, Ecosystems and Species: Where Does the Endangered Species Act Fit In?*, 8 Tul. Envtl. L.J. 33, 44-45 (1994). The ESA's focus was, and still is, on individual listed species. If measures to protect or restore a species are successful (or if the threatened or endangered species becomes extinct), it is delisted, that is, deleted from the list and, thus, protection under the ESA. 16 U.S.C. § 1533(c)(2); *see* Greater Yellowstone Coalition, Inc. v. Servheen, 665 F.3d 1015 (9th Cir. 2011) (blocking US Fish and Wildlife Service from delisting Yellowstone grizzly bear population).

34. *See* Arie Trouwborst, *International Nature Conservation Law and the Adaptation of Biodiversity to Climate Change: a Mismatch*, 21 J. Envtl. L. 419, 424-25 (2009) (hereinafter Arie Trouwborst); see also Bradley C. Karkkainen, *Collaborative Ecosystem Governance: Scale, Complexity, and Dynamism*, 21 Va. Envtl. L.J. 189, 190-206 (2001-2002) (describing ecosystem governance); CBD, The Ecosystem Approach Advanced User Guide; link available at http://www.cbd.int/ecosystem/sourcebook/advanced-guide/ (accessed Aug. 28, 2012). The move towards an ecosystem approach in the EU is also evident in adoption of the Water Framework Directive, which provides for the management of entire river basins. Directive 200/60/EC establishing a framework for Community Action in the field of water policy. O.J. L 327/1 (Dec. 22, 2000). Another Directive with an ecosystem approach is the Marine Strategy Framework Directive. Directive 2008/56/EC establishing a framework for community action in the field of marine environmental policy. O.J. L 164/19 (June 25, 2008).

Birds Directive[35] and the Habitats Directive.[36] The Directives[37] are the "core"[38] or "backbone"[39] of the EU biodiversity strategy. Both are based on the traditional nature conservation law approach.

A. Birds Directive

In 1979, the EU adopted the Birds Directive to protect wild birds, in particular migratory birds that regularly occur in the national territory of Member States, and vulnerable birds. The main reason for the adoption of the Birds Directive was the trapping and killing of hundreds of millions of migratory birds and song birds each year in Southern Europe.[40] Accordingly, the Direc-

35. Directive 2009/147/EC on the conservation of wild birds (codified version) art. 4(2). O.J. L 20/7 (Jan. 26, 2010) (hereinafter Birds Directive).

36. Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora art. 2(1). O.J. L 206/7 (July 22, 1992) (hereinafter Habitats Directive).

37. The Directives apply to the European territories of Member States and the Spanish and Portuguese outermost regions (the Canary Islands, Madeira and the Azores). Spain voluntarily applies them to Ceuta and Melilla. They do not apply to the French outermost regions (French Guiana, Reunion, Guadeloupe and Martinique). SEC(2006) 607, *supra* note 9, at 53, § 5.1.1. The Habitats Directive applies to habitats and species in territorial waters. Such waters extend to a maximum of 12 nautical miles from the coastlines of Member States. Member States may also extend application of the Directive to their exclusive economic zone, which extends 200 nautical miles from their coastline. If a Member State grants a licence for offshore oil and gas operations in its exclusive economic zone, the Commission considered that the Habitats Directive applies to this area due to the Member State having exerted its sovereign rights over the area. Communication from the Commission to the Council and the European Parliament, Fisheries management and nature conservation in the marine environment 10, § 5.2.2 (COM(1999) 363 final, July 14, 1999); *see* R. v. Secretary of State for Trade & Industry *ex parte* Greenpeace Ltd (No.2) [2000] 2 C.M.L.R. 94, para. 79 (Q.B.D. 1999) (concluding that Habitats Directive applies to UK continental shelf and superjacent waters up to 200 nautical miles).

38. Fourth National Report of the European Community to the Convention on Biological Diversity 26 (May 2009) (hereinafter Fourth National Report of the EC).

39. Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, Options for an EU vision and target for biodiversity beyond 2010 4 (COM(2010) 4 final, Jan. 19, 2010) (hereinafter COM(2010) 4 final).

40. *See* Declaration of the Council of the European Communities and of the representatives of the Governments of the Member States meeting in the Council of 22 November 1973 on the programme of action of the European Communities on the environment. O.J. C 112/1, title II, ch. 1, para. B(f) (Dec. 20, 1973); Commission Recommendation to Member States concerning the protection of birds and their habitats para. 2. O.J. L 21/24 (Jan. 28,

tive contains prohibitions on the killing and capture of birds[41] and restrictions on hunting.[42]

In addition, the Directive requires Member States to take special conservation measures concerning the habitats of over 190 species and sub-species of vulnerable species listed in the Directive in order to ensure their reproduction and survival.[43] Further, it directs Member States to classify sites, called special protection areas (SPAs).[44] The sites must be classified on the basis of ornithological criteria (that is, criteria on the number of protected bird species and their relative importance in Member States), taking into account, among other things, the protection of wetlands including Ramsar sites.[45] Member States are not permitted to consider socio-economic criteria in classifying the areas.[46]

1975); *see also* Ludwig Krämer, *The Interdependency of Community and Member State Activity on Nature Protection Within the European Community*, 20 Ecology L.Q. 25, 30 (1993) (describing concerns about birds that led to Birds Directive). Birds are especially representative of biodiversity and the integrity of ecosystems. *See* Fourth National Report of the EC, *supra* note 38, at 31.

41. Birds Directive *supra* note 35, arts. 5-6.

42. *Id.* arts. 7-9. Annex II lists species of birds that may be hunted in compliance with domestic legislation provided that Member States ensure that such hunting does not jeopardise their conservation.

43. Birds Directive, *supra* note 35, art. 4(1). Annex I originally listed 74 species of birds. *See* Commission of the European Communities, Second report on the application of Directive No 79/409/EEC on the conservation of wild birds 4 (COM(93) 572 final, Nov. 24, 1993).

44. Birds Directive *supra* note 35, art. 4(1).

45. *Id.* art. 4(2).

46. Commission v. Spain para. 45 (ECJ, Case No. C-355/90, 1993) (Santoña marshes) (considerations of economic problems caused by decline in industrial and fishery sectors in region cannot justify derogation from duty to take appropriate measures to avoid pollution or deterioration of habitats); R. v. Secretary of State for the Environment *ex parte* Royal Society for the Protection of Birds paras. 39-42 (ECJ, Case No. C-44/95, 1996) (Lappel Bank) (economic considerations cannot be taken into account during listing stage). The prohibition on the consideration of such criteria is not unique to the EU; similar prohibitions are, for example, contained in the ESA. *See* 50 C.F.R. § 424.11(b) (listing and delisting determinations must be made "*solely* on the basis of the best available scientific and commercial information regarding a species' status, without reference to possible economic or other impacts of such determination") (emphasis original); Tennessee Valley Authority v. Hill, 437 U.S. 153, 184 (1978) ("plain intent of Congress in enacting [ESA] was to halt and reverse the trend toward species extinction, whatever the cost").

B. Habitats Directive

In 1992, the EU adopted the Habitats Directive to contribute towards ensuring biodiversity through the conservation of natural habitats and wild fauna and flora in the EU.[47] Similar to the Birds Directive, the focus of the Habitats Directive is the conservation of listed species, albeit greatly enlarged to include plant and animal species. Unlike the Birds Directive, however, the Habitats Directive also lists habitat types to be conserved.

The Habitats Directive called for the establishment of an ecological network of sites, known as European sites, called Natura 2000.[48] These sites are

47. One of the reasons for adoption of the Habitats Directive was implementation of the Bern Convention. *See* Eladio Fernández-Galiano, *The Emerald Network: Areas of Special Conservation Interest for the Whole of Europe,* 12(3) Parks 21, 23 (IUCN, 2002) (hereinafter Eladio Fernández-Galiano).

48. European sites are SPAs that are classified under the Birds Directive and sites that are designated under the Habitats Directive. The Natura 2000 network is part of a larger network of protected sites called the Emerald Network, which is being established under the Bern Convention, Bern Convention art. 4(1), in close co-operation with the Commission and the European Environment Agency. *See, e.g.,* Council of Europe, Convention on the Conservation of European Wildlife and Natural Habitats, Standing Committee, 31st Meeting, List of decisions and adopted texts 6, § 5.5 (thanking EU for financial support in setting up Emerald Network sites in Central and Eastern Europe and South Caucasus during 2009-2011). The Council of Europe agreed the creation of the Emerald Network in 1989. Resolution No. 16 (1989) on the Areas of Special Conservation Interest. Sites in the Emerald Network are known as areas of conservation interest (ASCIs); Resolution No. 5 (1998) of the Standing Committee to the Bern Convention concerning the rules for the Network of Areas of Special Conservation Interest (Emerald Network); *see* Council of Europe, Convention on the Conservation of European Wildlife and Natural Habitats, Group of Experts on Protected Areas and Ecological Networks, Criteria for assessing the National Lists of Proposed Areas of Special Conservation Interest (ASCIs) at biogeographical level and procedure for examining and approving Emerald candidate sites 2-3, § 1 (T-PVS/PA (2010) 12, Dec. 9, 2010); *see also* Eladio Fernández-Galiano, *supra* note 47, at 23. SPAs and SCIs automatically become part of the Emerald Network. The procedures for establishing ASCIs track those for establishing SCIs. In turn, ASCIs become part of the Pan-European Ecological Network, a natural infrastructure that will extend beyond the EU-27 to the territories of 20 other European countries and four countries in Africa. Establishment of the Emerald Network is proceeding much slower than the Natura 2000 network partly because it did not begin until 1998. Resolution No. 3 (1996) of the Standing Committee to the Bern Convention concerning rules concerning the setting up of a pan-European Ecological Network (encouraging "Contracting Parties and Observer States to designate ASCIs"); Resolution No. 5 (1998) of the Standing Committee to the Bern Convention concerning the rules for the Network of Areas of Special Conservation Interest (Emerald Network). The final designation of ASCIs is planned to take place between 2017 and 2019, with full

the most important, by number and area, to guarantee the conservation of species and habitats protected under the Birds and Habitats Directives and to ensure that vulnerable species and habitats are restored to, or maintained at, their favourable conservation status.[49]

The designation of sites under the Habitats Directive is more complex than the single stage for classifying an SPA. There are three stages. First, each Member State proposes a list of sites to the European Commission (Commission). The sites must appropriately represent natural habitat types (currently over 200 such types) and animal and plant species (currently over 700 species) listed in the Directive.[50] In order to select proposed sites, Member States must carry out a comprehensive assessment of the habitat types and species in their national territories.[51] The lists must indicate sites that host one or more priority natural habitat types (that is, natural habitats in danger of disappearance) and priority species (basically, endangered species).[52] As with the Birds Directive, Member States are prohibited from considering socio-economic factors in their selection of proposed sites.[53]

Second, the Commission evaluates the proposed sites in the context of the

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implementation, together with monitoring and reporting tools, compatible with those of the Natura 2000 network, by 2020. Council of Europe, Convention on the Conservation of European Wildlife and Natural Habitats Group of Experts on Protected Areas and Ecological Networks, Calendar for the implementation of the Emerald Network of Areas of Special Conservation Interest 2011-2020 3 (T-PVS/PA (2010) 8 rev, Dec. 9, 2010).

49. *See* Commission working document on Natura 2000 2; annex, 8-9 (Dec. 27, 2002) (hereinafter Commission Working Document 2002).

50. Habitats Directive, *supra* note 36, art. 4(1) and annex III; *see id.* annex I (natural habitat types), and annex II (animal and plant species). In 2007, 324 animal species and 587 plant species were listed in annex II. *See Europe's plants: status and threats*, 23 Natura 2000 6 (Dec. 2007). The Habitats Directive lists two-thirds of the natural habitats in the EU. *See* SEC(2006), *supra* note 8, at 13, § 2.2.1.

51. Habitats Directive, *supra* note 36, annex III, Stage 1. The selection must be carried out according to criteria that include the size and density of the population of species, the relationship of the habitat and species at the site to those within the national territory, and possibilities for restoring the habitat and species. *Id.*

52. *Id.* art. 4(2); *see id.* arts. 1(d), 1(h). Sites proposed by each Member State are those that contribute significantly to the maintenance or restoration at a favourable conservation status of natural habitat types listed in annex I or species list in annex II. *See* Commission v. Ireland para. 4 (ECJ, Case No. C-67/99, 2001).

53. R. v. Secretary of State for the Environment, Transport and the Regions *ex parte* First Corporate Shipping Ltd para. 25 (ECJ, Case No. C-371/98, 2000) (Severn Estuary).

terrestrial EU and its nine biogeographical regions[54] and prepares a draft list of sites of Community importance (SCIs) in agreement with relevant Member States.[55] The Commission then issues a Decision to adopt the SCIs,[56] following which Member States must designate them as special areas of conservation (SACs) as soon as possible and within a maximum of six years.[57]

C. Conservation and Management of Natura 2000 Sites

After a site has been designated as an SAC or classified as an SPA, the Member State must establish conservation measures and, if necessary, appropriate management plans, to avoid the deterioration of species and natural

54. The nine biogeographical regions are the Alpine, Atlantic, Black Sea, Boreal, Continental, Macaronesian, Mediterranean, Pannonian and Steppic regions. The Black Sea and Steppic regions were added when Bulgaria and Romania joined the EU in 2007.

55. Habitats Directive, *supra* note 36, art. 4(2). The Habitats Directive sets out criteria to be considered in the evaluation. *Id.* All sites that contain priority natural habitat types and/or species are considered to be SCIs. *Id.* annex III, Stage 2, para. 1; *see* Report from the Commission on the implementation of the Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora 9, § 2.2.1 (COM(2003) 845 final, Jan. 5, 2004) (hereinafter COM(2003) 845 final). The Commission may designate a site that is not included in a national list in "exceptional cases". Habitats Directive, *supra* note 36, art. 5(1). Criteria considered by the Commission in selecting its list include the relative value of the site in the national territory, its total area, number of natural habitat types and species in it, its ecological value on an EU and biogeographical level, its geographical location in relation to migration routes, and its presence (or not) in a continuous ecological system covering more than one Member State. *Id.* art. 4(2), annex III, Stage 2.

56. The Decision is issued in accordance with procedures set out in the Directive. Habitats Directive, *supra* note 36, art. 21. The Decision notes, among other things, whether Member States have proposed sufficient sites and, thus, whether the Natura 2000 network for the biogeographical region is complete. *See, e.g.*, Commission Implementing Decision adopting a third updated list of sites of Community Importance for the Pannonian biogeographical region recitals 12, 13, O.J. L 10/103, 10/104 (Jan. 13, 2012) (third updated list of SCIs for Pannonian biogeographical region necessary due to certain Member States not having previously proposed sufficient sites; should not be concluded that Natura 2000 network is complete or incomplete due to incomplete knowledge of existence and distribution of some natural habitat types); Commission Implementing Decision adopting a fifth updated list of sites of Community Importance for the Boreal biogeographical region recitals 10, 12, O.J. L 10/130, L 10/131 (Jan. 13, 2012) (adopting fifth updated list of sites which also identifies sites hosting priority natural habitat types or priority species; cannot be concluded that Natura 2000 is complete for Boreal biogeographical region due to certain Member States not having proposed sufficient sites).

57. Habitats Directive, *supra* note 36, art. 4(4).

habitats in the sites.[58] The conservation measures must ensure the survival and reproduction of listed species and regularly occurring migratory birds,[59] maintain or restore the habitat and species of fauna and flora at their favourable conservation status[60] and ensure that the structure and functions necessary for their long-term maintenance are likely to continue to exist for the foreseeable future.[61] These requirements generally mean active management of the sites. In some cases, they prohibit the owner or user of a site from carrying out former activities.[62]

If a proposed plan or project may have a significant effect on an SPA or an SAC, an appropriate assessment of its implications for the conservation of the site should be prepared.[63] If the assessment shows that the plan or project

58. *Id.* art. 6(2). The Habitats Directive does not specifically require Member States to prepare management plans for SACs or SPAs.

59. Birds Directive *supra* note 35, art. 4; *see* Commission v. France para. 51 (ECJ, Case No. C-166/97, 1999) (Seine estuary) (failure to classify sufficiently large area as SPA and failure to adopt adequate legal measures to protect it).

60. Habitats Directive, *supra* note 36, art. 3(1); *see* COM(2003) 845 final, *supra* note 55, at 8, § 2. Measures taken pursuant to the Directive should take into account "economic, social and cultural requirements and regional and local characteristics". Habitats Directive, *supra* note 36, art. 2(3).

61. Habitats Directive, *supra* note 36, art. 1(e).

62. *See* Jonathan M. Verschuuren, *Implementation of the Convention on Biodiversity in Europe: 10 years of Experience with the Habitats Directive*, 5 J. Int'l Wildlife L. & Pol'y 251, 255 (2002).

63. *See* Landelijke Vereniging tot Behoud van de Waddenzee v. Staatssecretaris van Landbouw, Natuurbeheer en Visserij para. 43 (ECJ, Case No. C-127/02, 2004) (Wadden Sea) (appropriate assessment required if there is a "probability or a risk" that a plan or project will have significant effects on the site); *see also* Commission v. Italy paras. 94-97 (ECJ, Case No. C-304/05, 2007) (failure to prepare appropriate assessment of implications of measures likely to have significant impact on SPA); Commission v. Portugal paras. 47-54 (ECJ, Case No. C-239/04, 2006) (failure to demonstrate absence of alternative solutions for motorway that crossed SPA); Commission v. United Kingdom para. 56 (ECJ, Case No. C-6/04, 2005) (failure properly to transpose Habitats Directive including failure to make land use plans subject to appropriate assessment of their implications for SACs). In addition, an environmental impact assessment must be prepared for any plan that may significantly affect an SPA or an SAC. Directive 2001/42/EC on the assessment of certain plans and programmes on the environment art. 5(1); annex I(d); *see also* Ludwig Krämer, EU Environmental Law 191 (Sweet & Maxwell, 7th ed. 2012) (hereinafter Ludwig Krämer) (Commission twice proposed legislation to require preparation of environmental impact assessment for all projects listed in annex II of Directive 85/337/ECC but Council rejected both proposals). *Id.* Directive 85/337/ECC is now codified as Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment. O.J. L

is likely to have a significant effect on an SAC, including cumulative effects, the plan or project may be carried out only if there are no alternative solutions and "imperative reasons of overriding public interest, including those of a social or economic nature" exist.[64] The only relevant considerations for an SAC that includes a priority habitat type or a priority species are those that relate "to human health or public safety, to beneficial consequences of primary importance for the environment or, further to an opinion from the Commission, to other imperative reasons of overriding public interest".[65] If the plan or project satisfies the above criteria and is carried out, the Member State must "take all compensatory measures necessary to ensure that the overall coherence of Natura 2000 is protected" and must notify the Commission of such measures.[66]

Consideration of socio-economic measures in the use of a designated site was specifically included in the Habitats Directive following a case in which the Court of Justice of the European Union (CJEU) concluded that the Birds Directive prohibited Member States from considering economic factors in proposed projects that damaged SPAs except in exceptional cases such as the protection of human life.[67] Also as a result of the case, the EU amended the Birds Directive so that socio-economic measures may be considered in determining whether a plan or project for which there is a negative appropriate assessment may proceed.[68]

26/1 (Jan. 28, 2012).

64. Habitats Directive, *supra* note 36, art. 6(4); *see* Landelijke Vereniging tot Behoud van de Waddenzee v. Staatssecretaris van Landbouw, Natuurbeheer en Visserij para. 4 (ECJ, Case No. C-127/02, 2004) (Wadden Sea).

65. Habitats Directive, *supra* note 36, art. 6(4). A 2009 study of eight Member States reported that they did not always request the Commission's opinion. Directorate-General for Internal Policies, Policy Department C, Citizens' Rights and Constitutional Affairs, National Implementation of Council Directive Habitats, Study 50, § 8 (PE 410.698, 2009).

66. Habitats Directive, *supra* note 36, art. 6(4); *see* Niamh O'Sullivan, *Combating Biodiversity Loss: An Analysis of Compensatory Measures under the Habitats Directive*, 13 Trinity C.L. Rev. 33, 39-54 (2010) (hereinafter Niamh O'Sullivan) (analysing concept of compensatory measures).

67. *See* Commission v. Germany paras. 21-23 (ECJ, Case No. C-57/89, 1991) (Leybucht Dykes) (coastal defence project that included construction of dykes allowed to proceed despite reducing area of SPA on basis that need for coastal protection due to flooding danger was "superior to the general interest" represented by ecological objective of Birds Directive).

68. Birds Directive *supra* note 35, art. 2.

The Birds Directive directed Member States to classify SPAs by 1981,[69] with a further duty to continue to classify sites as SPAs if, or when, they meet the criteria for classification.[70] The Habitats Directive set the following deadlines for the designation of SACs: submission of national lists of proposed SCIs by Member States to the Commission by June 10, 1995; completion of the review of the list of SCIs, and its adoption, by the Commission by June 10, 1998; and designation of selected SCIs as SACs by Member States as soon as possible and no later than June 2004.[71]

D. Funding

It is expensive to establish and manage sites in the Natura 2000 network. In December 2011, the costs were estimated to be at least €5.8 billion annually, an average annual cost of €63 per hectare.[72] The cost of the network raises an

69. *Id.* art. 12(1).

70. Commission v. Austria para. 43 (ECJ, Case No. C-209/04, 2006) (Lauterachter Ried); *see* An Cliquet, Chris Backes, Jim Harris & Peter Howsam, *Adaptation to Climate Change; Legal Challenges for Protected Areas*, 5 Utrecht L. Rev. 158, 164 (2009). The designation of SPAs is independent of the timetable in the Habitats Directive. *See* Wouter P.J. Wils, *The Birds Directive 15 Years Later: A Survey of the Case Law and a Comparison with the Habitats Directive*, 6 J. Envtl. L. 219, 231 (1994) (hereinafter Wouter Wils).

71. Habitats Directive, *supra* note 36, art. 4. States that joined the EU on May 1, 2004 (Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia and Slovenia) were directed to submit their national lists of proposed SCIs to the Commission on the same day. Bulgaria and Romania were directed to submit their national lists on January 1, 2007, the date of their accession to the EU. *See* World Wildlife Fund, *Natura 2000 in the New EU Member States* 9 (June 2004) (commenting that by mid-May 2004, Estonia, Latvia, Lithuania, Poland and Slovakia had submitted lists of proposed SCIs, with lists for Malta and Slovenia to be submitted shortly afterwards; and expressing concern on submission of lists from Cyprus, the Czech Republic and Hungary). The deadlines for submission of proposed SCIs were also the deadlines for the new Member States to transpose the Birds and Habitats Directives into their national law. Member States submit a report on their implementation of the Birds Directive to the Commission every three years, following which the Commission prepares a composite report which is verified with Member States in respect of their national territories. Birds Directive *supra* note 35, art. 12. The first date for submission of national reports was April 7, 1981. *Id.* art. 12(1). As discussed below, however, designation – and consequently preparation of the reports – was slow. In a somewhat similar manner, Member States submit a report to the Commission on measures taken by them under the Habitats Directive every six years, following which the Commission publishes a summary of the measures. *Id.* art. 17.

72. Commission Staff Working Paper, Financing Natura 2000: Investing in Natura 2000;

obvious issue as to whether the EU, Member States, landowners and/or users of Natura 2000 sites should pay for its establishment and management because most of the sites are privately owned. This issue is much more difficult than applying the polluter pays principle to require persons who pollute the environment to pay a charge for the environmental permit that provides them with the right to do so or to pay for measures to remedy damage caused by them.

Whilst designation of a site in the Natura 2000 network is not intended to, and does not, result in the loss of all economic use of the site, persons who own such sites necessarily lose some of their rights concerning them. For example, they are barred from carrying out activities that damage the biodiversity in the sites. They may also need to carry out measures to restore the favourable conservation status of species and natural habitats at the sites or to maintain that status.

Due to this burden on the owners of Natura 2000 sites, the EU, therefore, considered that it should co-finance them. In particular, the EU recognised the burden on Member States that have many ecologically diverse areas in their national territories and, therefore, must designate a larger percentage of their national territory than other Member States.[73] The Habitats Directive thus provides for EU co-financing in "exceptional case[s]" in which there is an "excessive financial burden" on a Member State due to the location of priority natural habitats and priority species of Community importance in its national territory.[74]

A Member State may seek co-financing from the Commission when it submits its list of proposed SCIs. The Commission identifies measures that are essential to maintain or re-establish the priority natural habitat types and priority species at the sites at their favourable conservation status, together with

Delivering benefits for nature and people 4, § 3 (SEC(2011) 1573 final, Dec. 12, 2011) (hereinafter SEC(2011) 1573 final). The cost of managing the network in the then EU-15 between 2003 and 2013 was estimated between €3.4 billion and €5.7 billion annually. *See* COM(2003) 845 final, *supra* note 55, at 14-15, § 3.3.

73. *See infra* notes 140-41 and accompanying text.

74. Habitats Directive, *supra* note 36, recitals; *see* COM(2003) 845 final, *supra* note 55, at 14, § 3.3. Co-financing is dependent on available limits of financial resources. Habitats Directive, *supra* note 36, recitals. The Directive also recognises the limited application of the polluter pays principle to nature conservation. *Id.*

their costs.[75] It then assesses the necessary financing, including co-financing, to carry out such measures[76] and adopts a prioritised action framework for measures involving co-financing to be taken when the site has been designated as an SAC subject to available sources of EU funding.[77]

The level of funding varies substantially depending, in large part, on the conservation strategies of Member States. Some Member States enter into management agreements with landowners and rarely purchase land.[78] Other Member States consider that purchasing land is the most appropriate means to protect Natura 2000 sites.[79]

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75. Habitats Directive, *supra* note 36, arts. 8(1)-(2). The focus of co-financing on sites on which priority natural habitats and species are located is not an issue in most cases because approximately 75% of proposed SCIs include at least one such habitat or species and account for over 90% of the total land area covered by proposed SCIs. *See* Commission Staff Working Paper, Communication from the Commission to the Council and the Parliament on Financing Natura 2000, Extended Impact Assessment 13, § 2.1 (SEC(2004) 770, July 15, 2004) (hereinafter SEC(2004) 770) (July 2004 figures).

76. Habitats Directive, *supra* note 36, art. 8(3). In doing so, the Commission takes into account the concentration of priority natural habitat types and/or priority species on the Member State's national territory, together with related burdens. *Id.*

77. *Id.* art. 8(4). Member States are not precluded from requesting co-financing for SCIs that do not have a priority habitat or species. Funding for such sites is, however, discretionary as is funding for SPAs. SEC(2004) 770, *supra* note 75, at 13, § 2.1.

78. Sonja Gantioler, Patrick ten Brink, Samuela Bassi, Marianne Kettunen, Andrew McConville & Matt Rayment, Financing Natura 2000 – Financing needs and socio-economic benefits resulting from investment in the network, Background paper for the stakeholder conference on financing Natura 2000, 15th and 16th of July 2010 6, § 2(c) (DG Environment Contract ENV.B.2/SER/2008/0038, Institute for European Environmental Policy / GHK / Ecologic, 2010)) (hereinafter Sonja Gantioler *et al.)*. Examples are Bulgaria, the Czech Republic, France, Italy, Malta, Slovakia and the UK. *Id.*

79. *Id.* Examples are Cyprus, Lithuania, Luxembourg, Romania and Sweden. *Id.* One-third of the funding for the sites is for one-off investments such as acquiring a site or establishing payment for compensation for development rights, infrastructure costs to improve or restore habitats and species plus one-off management costs such as scientific studies, administration, consultation, preparing management plans and establishing management bodies. Sonja Gantioler, Matt Rayment, Samuela Bassi, Marianne Kettunen, Andrew McConville, Patrick ten Brink, Ruta Landgrebe & Holger Gerdes, Costs and socio-economic benefits associated with the Natura 2000 Network 8, § 2.1.1 (Final report to the European Commission, DG Environment on Contract ENV.B.2/SER/2008/0038, Institute for European Environmental Policy / GHK / Ecologic, revised final version Oct. 6, 2010). The remainder is for habitat management and monitoring including maintenance and improvement of the status of the favourable conservation status of habitats and species, implementation of management schemes, compensation for lost income and agreements and related measures. *Id.; see also* Commission Staff Working Paper, Annexes to the Impact Assessment Accom-

The Habitats Directive does not specify the sources of EU funding which can be used for co-financing.[80] The main sources of funding for the terrestrial Natura 2000 network since 2007 are the Structural Funds (that is, the European Fund for Rural Development (ERDF)[81] and the European Social Fund (ESF)),[82] the European Agricultural Fund for Rural Development (EAFRD),[83] the Cohesion Fund (to a lesser extent)[84] and the LIFE+ Fund.[85] The total

panying the document Proposal for a Regulation on the Establishment of a Programme for the Environment and Climate Change (LIFE) Annex 8, 121, table 1.4 (SEC(2011) 1543 final, vol, 2, Dec, 12, 2011) (hereinafter SEC(2011) 1543 final); SEC(2011) 1573 final, *supra* note 72, at 8, § 2.1.1. Recurrent costs include maintaining and improving the favourable conservation status of habitats and species, implementing land or water management schemes and agreements, mowing vegetation, providing compensation to landowners for restrictions on the use of their sites, monitoring, maintaining infrastructure, managing fire and flooding risks, and surveillance of the sites. One-off costs accounted for 43% of total annual costs in the late 2000s; the figure in the EU-15 was 30%. The difference is due to the earlier development of the Natura 2000 network in the EU-15. Sonja Gantioler *et al.*, *supra* note 78, at 5, § 2(b).

80. *See* Communication from the Commission to the Council and the European Parliament, Financing Natura 2000 7, § 3.1 (COM(2004) 431 final, July 15, 2004) (hereinafter COM(2004) 431 final).

81. The ERDF provides funding to strengthen competitiveness and innovation, create jobs and promote environmentally sound growth. *See* M. Kettunen, D. Baldock, S. Gantioler, O. Carter, P. Torkler, A. Arroyo Schnell, A. Baumueller, E. Gerritsen, M. Rayment, E. Daly & M. Pieterse, Assessment of the Natura 2000 Co-financing Arrangements of the EU Financing Instrument, A Project for the European Commission – Final Report 34-37, § 4.1.3 (Institute for European Environmental Policy, No. 070307/2010/567338/ETU/FI, Mar. 2011) (hereinafter M. Kettunen *et al.*).

82. The ESF provides funding to promote social inclusion, education and training. *See id*.

83. The EAFRD provides funding for agricultural competitiveness, land management, including agri-environment, other rural development and innovative initiatives in Member States that provide benefits for the sustainable development of rural areas. *See id.* at 23-31, § 4.1.1. The EAFRD is one of two funds that finance agriculture under the Common Agricultural Policy. The other fund is the European Agriculture Guarantee Fund (EAGF) which finances direct payments to farmers together with intervention and export refunds and other measures to regulate agricultural markets. *See, e.g.*, Angela Davies-Jones, *Implementing Sustainable Development for the Countryside: A Case Study of Agric-environment Reform in Wales*, 13 Envtl. L. Rev. 9, 9-14 (2011) (describing various funding schemes for agriculture in Wales). Most funding under the Common Agricultural Policy is targeted at farmland under intensive production. *See* European Environment Agency, The European Environment, State and Outlook 2010, Synthesis 58-60 (2010).

84. The Cohesion Fund provides funding to support large infrastructure projects. *See* M. Kettunen *et al.*, *supra* note 81, at 34, § 4.1.3.

85. The LIFE Fund was created at the same time as the adoption of the Habitats Directive

estimated funding for Natura 2000 from 2007 to 2013 is between €300 million and €1,100 million.[86] In order to assist attempts to integrate support for conserving biodiversity into other policy sectors, the "integrated co-financing model" was introduced for that funding period.[87]

The LIFE+ Fund provides dedicated support for many measures to implement the Natura 2000 network as well as to halt the loss of biodiversity.[88] By January 2012, the LIFE programme, which began in 1992 at the same time as the adoption of the Habitats Directive, had provided over €1.2 billion in funding towards the management and restoration of over 2,000 Natura 2000 sites.[89] The amount of funding from the LIFE+ Fund is, however, limited.[90] Further, it cannot provide funding for any activity eligible for funding under another EU fund.

The rate of applications for funding for Natura 2000 sites has been low.[91] Reasons include the co-financing nature of the funds, with the amount of the

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from the consolidation of several existing environmental funds. Its first phase, LIFE I, ran from 1992 to 1995. The second phase, LIFE II, ran from 1996 to 1999 and had three categories: LIFE-Nature, Life-Environment and LIFE-Third Countries. The third phase, LIFE III, ran from 2000 to 2004, with an extension to 2006. *See* http://ec.europa.eu/environment/life/about/index.htm#history (accessed July 29, 2012). The current fund is LIFE+, which runs from 2007 to 2013. It has three categories: LIFE+ Nature and Biodiversity, LIFE+ Environment Policy and Governance and LIFE+ Information and Communication. *See* http://ec.europa.eu/environment/life/about/index.htm#lifeplus (accessed July 29, 2012).

86. SEC(2011) 1543 final, *supra* note 78, Annex 8, 199, table 1.2. Amounts from the various funds are: between €600 million and €5,400 million from EAFRD for direct Natura 2000 payments plus agri-environment payments considered likely to contribute to the management of Natura 2000 sites; between €600 million and €1,300 million from ERDF for Natura 2000 and biodiversity; and €700 million from the LIFE+ Fund. EU funding for Natura 2000 for 2011 was estimated at €0.5 to €1.1 billion versus estimated annual costs of €5.8 billion. *See id.* Annex 8, 120, § 1.1.1. In the UK, 82% of terrestrial Natura 2000 sites have agri-environment agreements. *See* M. Kettunen *et al.*, *supra* note 81, at 181.

87. *See* M. Kettunen *et al.*, *supra* note 81, at 11-13, ch. 1. This model, a major purpose of which is to link the financing of Natura 2000 sites into the larger framework for the management of land and natural resources, entails using existing funds used to reach other EU targets for rural, regional and/or scientific development. *Id*.

88. The co-financing rate of the LIFE+ Fund is generally 50%. *See id.* at 75, § 6.1.4.

89. European Commission, Press release, Environment: Celebrating 20 years of EU nature protection (IP/12/488, May 21, 2012).

90. *See* M. Kettunen *et al.*, *supra* note 81, at 75, § 6.1.4.

91. SEC(2011) 1573 final, *supra* note 72, at 7, § 4.

contribution paid by the Member State, landowner or nature conservation non-governmental authority (NGO) varying depending on the fund.[92] The amount of funding for biodiversity between Member States varies significantly.[93]

Further, most funds provide each Member State with a specified allocation of the total available funding. The funding is not ring-fenced for Natura 2000 or measures to conserve biodiversity; a national authority may decide how it wishes to use funding from a selected fund for which it is eligible. For example, the authority may apply for funding from the EAFRD but use that funding for agriculture rather than nature conservation.[94] Still further, most funds do not pay costs incurred by national authorities in implementing EU legislation. Costs for implementing the Birds and Habitats Directives are often substantial.[95] Under the Habitats Directive, for example, national authorities must identify SCIs, notify and/or consult with landowners and users, which may entail lengthy and adversarial proceedings, establish management plans, monitor the status of protected species and habitats, as well as being involved in the designation and continued management of SACs.[96] In addition, they must ensure that existing activities do not damage SACs.[97]

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92. Co-financing in Member States that allocate EAFRD funds to measures for Natura 2000 sites averages 36%. *See* M. Kettunen *et al., supra* note 81, at 29, § 4.1.1.

93. *See* Sirini Withana, David Baldock, Andrew Farmer, Marc Pallemaerts, Peter Hjerp, Emma Watkins, Jonathan Armstrong, Keti Medarova-Bergstrom & Sonja Gantioler, Strategic Orientations of EU Environmental Policy under the Sixth Environment Action Programme and Implications for the Future, Final Report 61-62 (Report for the IBGE-BIM, Institute for European Environmental Policy, May 2010) (hereinafter Sirini Withana *et al.*).

94. Funding for agri-environment measures and dedicated payments for Natura 2000 sites through the EAFRD is a low priority in some Member States. *See* Sonja Gantioler *et al.*, *supra* note 78, at 18, § 5.

95. *See* M. Kettunen *et al., supra* note 81, at 13, § 1.

96. *See* i*d.* at 20, § 3.3.2.

97. For example, the Environment Agency (for England and Wales) and the Scottish Environment Protection Agency reviewed thousands of wastewater discharge consents, water abstraction licences, authorisations under the then integrated pollution control regime, flood defence measures and planning consents in order to ensure that activities controlled by them did not affect SACs. *See Industry in Limbo Under Habitats Directive*, 309 ENDS Rep. 3, 3-4 (Oct. 1, 2000) (hereinafter *Industry in Limbo*); *see also* Juha Hiedanpää & Daniel W. Bromley, *The Harmonization Game: Reasons and Rules in European Biodiversity Policy,* Envtl. Pol'y & Governance (2010) (Finnish environmental authorities did not have sufficient administrative and procedural means to comply with rulings and schedules

E. Development of the Network

The requirements on Member States to fund implementation of the Birds and Habitats Directives in their national territories, to co-finance the establishment of many SPAs and SCIs, together with factors such as restrictions on the owners and users of such sites, resulted in a lengthy and tortuous process in classifying SPAs and establishing the Natura 2000 network. By 1991, only Belgium and Denmark had finalised the classification of SPAs in their national territories. In 1998, they were still the only Member States to have done so.[98]

Some Member States classified a substantially lower number of SPAs than nature conservation NGOs[99] or governmental nature conservation bodies considered met the classification criteria. For example, by 1988 the UK had designated 32 SPAs compared to a further 188 sites considered by the then Nature Conservancy Council to have met the classification criteria.[100] By 1989, France had classified 20 SPAs compared to studies indicating that 150 should have been classified.[101]

In 1998, the CJEU ruled that the Netherlands had breached the Birds Directive by classifying only 23 SPAs.[102] The International Council for Bird Preservation, meanwhile, had concluded that 70 sites met the classification criteria, and the Netherlands Ministry of Agriculture and Fisheries had con-

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resulting from implementation of Natura 2000 network).

98. *See* Ludwig Krämer, *supra* note 63, at 188.

99. The Commission has acknowledged the role of NGOs in providing information about birds and their habitats. *See, e.g.*, Communication from the Commission to the Council and the European Parliament – Biodiversity Action Plan for the Conservation of Natural Resources vol. 2, 6, para. 16 (COM(2001) 162 final, Mar. 27, 2001) (hereinafter COM(2001) 162 final).

100. *See* Jenny Fairbrass & Andrew Jordan, National Barriers and European Opportunities: The Implementation of EU Biodiversity Policy in Great Britain 13 (Centre for Social and Economic Research, CSERGE Working Paper GEC 2000-15).

101. André Nollkaemper, *Habitat Protection in European Community Law: Evolving Conceptions of a Balance of Interests*, 9 J. Envtl. L. 271, 276 (1997) (citing Ludwig Krämer, Focus on European Environmental Law 199 (Sweet & Maxwell, 1992)); *see* Commission v. France para. 57 (ECJ, Case No. C-96/98, 1999) (failure to classify sufficient area in Poitevin Marsh as SPAs and to adopt appropriate measures to avoid deterioration of sites in there classified as SPAs).

102. Commission v. The Netherlands paras. 42, 63 (ECJ, Case No. C-3/96, 1998).

cluded that 53 sites were potential SPAs. [103]

The Commission continued bringing infraction proceedings against Member States that had failed to classify sites that satisfied the relevant criteria as SPAs. By 2004, the Commission had prevailed in such actions before the CJEU against France, Finland, Italy, and the Netherlands.[104]

The designation of SCIs was equally slow. By June 1995, not a single Member State had submitted a list of proposed SCIs to the Commission.[105] In 1996, following opposition by farmers, hunters, fishermen and others, France stopped work on its list of proposed SCIs for several months, stating that it was unclear which activities would be prohibited or who would fund the owners and users for the restrictions.[106] By the end of 1997, Belgium, France, Finland, Germany and Greece had not even transposed the Habitats Directive into their national law.[107]

Similar to its actions under the Birds Directive, the Commission countered the failure by Member States to comply with the Habitats Directive by bringing infraction proceedings against them. By 1997, the Commission had prevailed in the CJEU against Greece,[108] Germany[109] and France.[110] In addition, the Commission threatened to withhold payments for plans and programmes under the Structural Funds to some Member States because it stated that it could not evaluate and provide the funding without adequate lists of pro-

103. *Id.* paras. 28, 65-71.

104. Commission v. France (ECJ, Case No. C-202/01, 2002); Commission v. Finland (ECJ, Case No. C-240/00, 2003); Commission v. Italy (ECJ, Case No. C-378/01, 2003); *see also* 25 Years of the Birds Directive; Challenges for 25 Countries, Implementation Report 10 (Report from DG Environment based on earlier material produced by IEEP on Implementation of article 12 of Directive 79/409/EEC for the period 1999-2001, Ref. ENV.B4-3040 /2003/362176/MAR/B2, Oct. 2004).

105. Brigid Laffan & Jane O'Mahony, Multilevel Governance, Mis-fit, Politicisation and Europeanisation; the Implementation of the Habitats Directive 7 (OEUE Phase II, Occasional Paper 1.3-08.04) (hereinafter Brigid Laffan & Jane O'Mahony).

106. *See* Ludwig Krämer, *supra* note 63, at 191.

107. *See id.* at 190.

108. Commission v. Greece (ECJ, Case No. C-329/96, 1997) (failure to transpose Habitats Directive).

109. Commission v. Germany (ECJ, Case No. C-83/97, 1997) (failure to transpose Habitats Directive).

110. Commission v. France 41, 44 (ECJ, Case No. C-256/98, 2000) (failure to transpose Habitats Directive arts. 6(3) and 6(4)).

posed SCIs.[111]

The Commission also adopted other means to accelerate the slow rate of proposed SCIs. In 2000, for example, it held seminars in each biogeographical region at which representatives of Member States, NGOs and independent scientists discussed the partial lists. Seminars in 2001 also included representatives of landowners.[112]

By 2001, when the Commission had still not received complete lists of proposed SCIs from all Member States, it brought infraction proceedings against France, Finland, Denmark, Germany, Ireland, Luxembourg and the Netherlands.[113] By 2008, there were 16 ongoing infraction proceedings under the Birds Directive[114] and 17 ongoing infraction proceedings under the Habitats Directive.[115] The CJEU eventually ruled against 19 Member States for breaching the Birds Directive[116] and four Member States for proposing incomplete

111. *See* Commission Working Document 2002, *supra* note 49, at 3, § 2.2; *see also* Ludwig Krämer, *supra* note 63, at 190. In 2000, for example, the Commission notified the UK that if it did not submit a satisfactory list of proposed SCIs by January 2001, the Commission would withhold over £7 billion of funding for rural and structural development. The UK had submitted 340 sites in 1998 which the Commission subsequently concluded was inadequate. In August 2000, the UK submitted a further 236 proposed SCIs and altered the boundaries of some sites that it had already submitted. *See Industry in Limbo, supra* note 97, at 3-4.

112. COM(2003) 845 final, *supra* note 55, at 16, § 4.1.1.

113. *See e.g.*, Commission v. Ireland para. 38 (ECJ, Case No. C-67/99, 2001) (failure to submit full list of proposed SCIs to Commission); Commission v. Germany paras. 31, 38 (ECJ, Case No. C-71/99, 2001) (failure to submit full list of proposed SCIs and sufficient information on them).

114. *See* Commission Staff Working Document accompanying document to the Communication from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions, A mid-term assessment of implementing the EC biodiversity action plan, Consolidated profile 7, Target 1.1 (SEC(2008) 3044, Dec. 16, 2008) (hereinafter SEC(2008) 3044). The proceedings were against Austria, Bulgaria, the Czech Republic, Estonia, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Poland, Slovakia, Spain and the UK. *Id.* at 7, fn. 6.

115. The proceedings were against Austria, Bulgaria, the Czech Republic, Denmark, Estonia, France, Germany, Greece, Ireland, Lithuania, Malta, the Netherlands, Poland, Slovakia, Slovenia, Spain and the UK. *Id.*

116. The Member States were Austria, Bulgaria, Cyprus, the Czech Republic, Denmark, Finland, Greece, Hungary, Ireland, Latvia, Lithuania, Malta, Poland, Portugal, Romania, Slovakia, Slovenia, Spain and the UK. *Id.* at 8, fn. 7.

lists of SCIs.[117]

A major reason for the failure of Member States to classify or propose adequate lists of SPAs and SCIs, respectively, was strong opposition to the proposals by landowners and other users of the sites. Common concerns expressed by landowners for proposals to include their land in the Natura 2000 network, as well as its subsequent inclusion in it, included:

- respect for property rights, with some landowners only being informed, not consulted, about the designation of their sites and/or management plans for them;
- insufficient influence due, partly, to a lack of clarity concerning the degree to which their views and comments were taken into account in decisions regarding their land;
- inflexibility in managing their businesses due to the imposition, in some cases, of standardised management measures and fixed contract periods, especially in agri-environment schemes;
- increased administrative requirements to obtain agri-environment payments or permits to carry out activities such as the construction of forest roads;
- fear of restrictions in land use and what was considered to be insufficient compensation for restrictions on the economic use of their land;
- fear, in some Member States, on increased visits by the public and the consequent need to take measures to avoid damage or unlawful entry; and
- restrictions or bans on hunting in some Member States.[118]

The lack of consultation with landowners in some Member States resulted from a lack of provisions in the Birds or Habitats Directives concerning implementation procedures. Whereas Member States must provide the Commission with relevant information about classifications to enable it to ensure coherence across the EU; they do not have a duty to consult the Commission in their classification procedures.[119] Similarly, the Commission has no power

117. The Member States were Austria, Ireland, Poland and the UK. *Id.*

118. *See* Alterra Wageningen UR, Current Practices in solving multiple use issues of Natura 2000 sites; Conflict management strategies and participatory approaches 27 (DG Environment Contract 07.0310/2008/515147/SER/B2 as part of Preparatory Actions for Natura 2000 (ENV.B.2/SER/2008/0035, 2010) (hereinafter Conflict management strategies).

119. *See* Wouter Wils, *supra* note 70, at 230-31. The proposal to consult the Commission was replaced during the legislative history of the Directive with a duty to provide it with relevant information. *Id.* at 228.

to intervene in challenges by landowners to the proposed designation of their land as SCIs.[120]

Further, neither Directive requires national authorities to follow any specific consultation or public participation procedures in selecting proposed sites for inclusion in the Natura 2000 network or in developing management plans for them. As a result, there is a wide variation of procedures; some national authorities consulted widely with owners and users of proposed sites; others did not.[121] For example, until 1999, in Sweden, authorities could not submit proposals to designate sites until they had received approval from landowners.[122] In contrast, formal consultation in the UK exists only in Scotland for sites of special scientific interest (SSSIs), a national designation that includes SCIs and SPAs, although informal consultations generally occur in the rest of the UK.[123]

Landowners and users of proposed SCIs in Austria, Denmark, Finland, Germany, Ireland, the Netherlands and Spain strongly opposed the proposals.[124] Opposition in Ireland was particularly strong.[125] By November 2001, 756 appeals had been made to the national authority that implemented the Directives.[126] A particularly contentious issue was the prohibition to cut turf from peatlands, a traditional source of fuel in western Ireland. The Irish Government eventually agreed to purchase the right from individuals in some areas who had cut it for their own use and to pay compensation to businesses

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120. Commission Working Document 2002, *supra* note 49, at 4, § 4.2. The Commission was necessarily involved when it received complaints that Member States had failed to transpose the Directive due to delays in the designation process. Over 80% of complaints made by 2002 were resolved by informal discussions with Member States, even though they involved issues over which the Commission had no powers. *Id.* at 4, § 4.3.

121. *Id.* at 4, § 4.2.

122. *See* COM(2003) 845 final, *supra* note 55, at 19, § 4.1.1. The procedure was then changed to asking for landowners' opinions. *Id.*

123. *See* Colin Reid, *The Privatisation of Biodiversity? Possible New Approaches to Nature Conservation Law in the UK*, 23 J. Envtl. L. 203, 227-28 (2011) (hereinafter Colin Reid).

124. *See* COM(2003) 845 final, *supra* note 55, at 19, § 4.1.1.

125. *See* Brigid Laffan & Jane O'Mahony, *supra* note 105, at 9. Some landowners compared the proposals to Irish people being forced from their land by Oliver Cromwell (a hated figure in Ireland) between 1649 and 1650. *Id.*

126. *Id.* at 18. The authority was the Dúchas (the Department of Arts, Heritage and the Gaeltacht). In addition, 754 parliamentary questions were raised on implementation of the Directive between 1992 and 2003. *Id.* at 10.

for the ban against further cutting.[127] In Finland, approximately 1,600 judicial actions were brought by landowners who challenged the designation of their land and environmentalists who challenged the failure to include land within designations.[128] The opposition included a week-long hunger strike in 1997 by four landowners in Karvia, Southwestern Finland.[129]

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127. *See* Brigid Laffan & Jane O'Mahony, *supra* note 105, at 18. Ceasing the use of peat for fuel has also been an issue in other Member States. Approximately 20% of terrestrial Europe consists of peatlands including 22.5% of Estonia, 32% of Finland and substantial areas in Sweden. The LIFE-Natura programme, which began in 1992, has co-financed projects to restore peatlands. *See* H. Vasander, E.-S. Tuittila, E. Lode, L. Lundin, M. Ilomets, T. Sallantaus, R. HeikkiläM.-L. Pitkänen & J. Laine, *Status and Restoration of Peatlands in Northern Europe*, 11 Wetlands Ecology & Mgt. 51, 51-60 (2003). The loss of peatlands in Ireland is an ongoing issue. *See* European Commission Press release, Environment: Commission urges Ireland to act swiftly to improve protection of peat bogs (IP/11/730, June 16, 2011). Conservation of peatlands has also been an issue in Finland. For example, in May 2012, the Finnish Government purchased peatlands in Natura 2000 sites in order to conserve and restore them. *See* UPM and the Ministry of the Environment have agreed on peatland nature conservation in Central Finland; available at http://www.ymparisto.fi/default.asp?contentid=411304&lan=en&clan=en (accessed July 16, 2012). In Ireland, landowners' other main demands were notification of the designation of their land, an independent board to hear appeals and objections; and an independent arbitrator to hear disputes concerning the level of compensation. *See* Brigid Laffan & Jane O'Mahoney, *supra* note 105, at 12. A particularly contentious issue in Ireland was the level of payment a landowner would receive to compensate for restrictions on the use of his land; an issue on which the national authority and landowners did not reach agreement until July 2004. *Id.* at 20-21. Even in Member States that made good progress in implementing management plans, agreeing the level of funding has been a problem. *See* R.W. Kruk, G. De Blust, R.C. Van Apeldoorn, I.M. Bouwma & A.R.J. Sier, Natura 2000; Information and Communication on the Designation and Management of Natura 2000 sites; Main Report 2: Organizing the management in 27 EU Member States 67-68, § 6.3 (2007) (DG Environment Contract No. 070307/2007/484411/MAR/B.2).

128. *See* Brigid Laffan, Multilevel Governance, Bears, Birds and Bogs, EU Nature Conservation Policy in Six States 16-17 (OEUE Phase II, Occasional Paper 0.3-08.04). Opposition to designating Natura 2000 sites subsequently continued in Accession States. In Poland, for example, some local governments resisted proposed designations due, among other things, to restrictions on infrastructure and other economic development. Individuals were concerned about restrictions on their use of the sites, in particular plans to build houses. *See* Malgorzata Grodzinska-Jurczak & Joanna Cent, *Expansion of Nature Conservation Areas: Problems with Natura 2000 Implementation in Poland?*, 47(1) Envtl. Mgt. 11, 11-29 (Nov. 25, 2010). As in Ireland, history influenced people's opinions. In Poland, some people compared the proposed designations to the post World War II acquisition of private land by the then government to create national parks at a loss or "outlandishly" low prices. *See id.*

129. Juha Hiedanpää, *European-wide Conservation Versus Local Well-Being: the Reception of*

In 2001, against this backdrop of infraction proceedings and widespread opposition, the Commission announced a target for completion of lists of SCIs for all biogeographical regions in the then EU-15 by the end of 2002.[130] By that time the Natura 2000 network, including proposed sites, covered nine per cent of the terrestrial EU.[131] The target was not met. The network, however, continued slowly to increase both in the number of sites and its area. By the beginning of 2004, over 14 per cent of the terrestrial EU had been proposed for, or included in, the Natura 2000 network.[132]

In May 2004, in an attempt to spur the growth of the network, delegates at a EU stakeholders conference in Malahide, Ireland, called for its completion by 2005, with management objectives for all sites to be agreed and implemented by 2010.[133] In December 2005, the Commission proposed a target date of 2006 for the adoption of all terrestrial Natura 2000 sites, reiterating the target of 2010 for their designation and effective management.[134]

By 2006, approximately 17 per cent of the land area of the EU-27 had been included in, or proposed for, the network.[135] By 2007, many Member States

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the Natura 2000 Reserve Network in Karvia, SW-Finland, 61 Landscape & Urb. Planning 113, 113 (2002).

130. *See* COM(2001) 162 final, *supra* note 99, at 7-8, para. 21.

131. The numbers of SPAs and SCIs are printed in the Natura 2000 Barometer, which appears in each issue of the EU newsletter entitled Natura 2000 (ISSN No 1026-6151).The designations frequently overlap. The number of sites cannot, therefore, be derived simply by adding the number of SPAs and SCIs. In addition, some sites are designated under various regional and international conventions and agreements. *See* Jeremy Harrison, *International Agreements and Programmes on Protected Areas,* 12(3) Parks 2, 3 (IUCN, 2002). Thus, a single site may be a World Heritage site under the World Heritage Convention, a wetland of international importance under the Ramsar Convention, a Biosphere Reserve under UNESCO's Man and the Biosphere programme, a Natura 2000 site, and a designated site under national law. *See id.* (one site in Europe is recognised under seven international agreements and programmes).

132. COM(2003) 845 final, *supra* note 55, at 16, § 4.1.1.

133. Final Message from Malahide; Halting the decline of biodiversity – Priority objectives and targets for 2010, Objective 1.1 (MALAHIDE/MP/Message-final-rev2, final version, May 27, 2004) (hereinafter Message from Malahide).

134. Communication from the Commission to the Council and the European Parliament on the review of the sustainable development strategy; A platform for action, annex 2, § 4 (COM(2005) 658 final, Dec. 13, 2005) (hereinafter COM(2005) 658 final).

135. COM(2006) final 7, § 4.2.1. The accession of 10 new Member States on May 1, 2004 and two on January 1, 2007 resulted in substantial increases in the number of SPAs and SCIs. *See* SEC(2008) 3044, *supra* note 114, at 6, Target 1.1.

had nearly completed the network in their national territories or were close to doing so.[136] By 2008, the Commission stated that the network was on target to be completed by 2010.[137] Although the target was missed, by August 2011, the terrestrial Natura 2000 network, which by then covered about 17.5 per cent of the land area of the EU, was largely complete.[138]

The Natura 2000 network is not uniform across the EU. There are substantial variations in the terrestrial areas of Member States included in the network.[139] Some variations are due to the uneven spread of protected species and natural habitats across the EU. For example, 60 per cent of plant species listed in the Habitats Directive in 2004 was in the Mediterranean and Macaronesian biogeographical regions.[140]

There is also a wide variation in the size of Natura 2000 sites. The smallest sites are under one hectare; the largest are over 5,000 km²;[141] 90 per cent are under 1,000 hectares.[142] Natura 2000 sites in some Member States consist of

136. Communication from the Commission to the Council and the European Parliament, Progress Report on the Sustainable Development Strategy 2007 8, § 3.4 (COM(2007) 642 final, Oct. 22, 2007) (hereinafter COM(2007) 642 final).

137. Communication from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions, A mid-term assessment of implementing the EC biodiversity action plan 4, § A(1) (COM(2008) 864 final, Dec. 16, 2008) (hereinafter COM(2008) 864 final).

138. Natura 2000 Barometer, 31 Natura 2000 8-9 (Jan. 2012). In November 2011, the land area had increased by nearly 18,800 square kilometres. European Commission, Press release, Environment: Major expansion of Europe's protected natural area (IP/11/1376, Nov. 21, 2011).

139. In 2011, the percentages of national land areas covered by Natura 2000 sites were as follows: Austria 14.96%; Belgium 12.74%; Bulgaria 34.34%; Cyprus 28.37%; Czech Republic 14.03%; Denmark 8.94%; Estonia 17.82%; Finland 14.42%; France 12.56%; Germany 15.43%; Greece 27.30%; Hungary 21.44%; Ireland 13.17%; Italy 19.17%; Latvia 11.53%; Lithuania 12.07%; Luxembourg 18.15%; Malta 13.37%; the Netherlands 13.82%; Poland 19.52%; Portugal 20.92%; Romania 22.66%; Slovakia 29.58%; Slovenia 35.52%; Spain 27.24%; Sweden 13.77%; and the UK 8.55%. Natura 2000 Barometer, Update June 2012, 32 Natura 2000 8-9 (July 2012).

140. *See Europe's plants: status and threats*, 23 Natura 2000 3, 6 (Dec. 2007).

141. *See* European Commission, Nature and Biodiversity Cases, Ruling of the European Court of Justice 7 (2006).

142. State and Outlook 2010, Biodiversity, *supra* note 5, at 14. The terrestrial Natura 2000 network consists of over 50% of forests, over 34% of agricultural lands and grassland ecosystems, and nearly 10% of wetland ecosystems including peatlands. Parts of rivers, including 40% of the River Danube, are also included. *See* SEC(2011) 1574 final, *supra* note 90, at 3, § 2.

only the core area of protected natural habitat, whilst sites in other Member States include buffer zones.[143]

F. Future of the Network

Completion of the Natura 2000 network does not ensure the conservation of an SPA or an SCI. SCIs must still be designated as SACs[144] and management plans must be put in place and implemented.[145] By 2010, most SCIs had still not been designated as SACs.[146]

Member States have also been slow to complete management plans.[147] Plans were still incomplete in many Member States when this article went to print.[148] In order to assist them, the Commission has, among other things, examined conflicts with landowners concerning the plans in order to promote

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143. Natura 2000 Barometer, 31 Natura 2000 8 (Jan. 2012). There are also substantial variations within some Member States. For example in the UK, SSSIs cover 7% of England; 12% of Wales; 13% of Scotland; and 6.6% of Northern Ireland (in which they are known as areas of special scientific interest (ASSIs)). Approximately 75% of SSSIs and ASSIs are Natura 2000 sites.

144. Some Member States such as the UK provide full protection to SCIs before their designation as SACs. Such sites are known as Candidate SACs.

145. Member States may decide whether they wish to develop management plans or use other mechanisms. There are three main approaches. Italy, Portugal and Slovenia have developed a national management plan that sets out requirements to be included in other planning documents. The Czech Republic, Finland, Hungary, Germany and Poland have an organisation that is responsible for the development of the plans. Denmark, Estonia, Finland, France, Romania, Slovakia and Sweden require management plans to be developed prior to designation of the sites. *See* Conflict Management Strategies, *supra* note 118, at 19, § 3.1.

146. Report from the Commission to the Council and the European Parliament, The 2010 assessment of implementing the EU Biodiversity Action Plan 3, § A(1) (COM(2010) 548 final, Oct. 8, 2010).

147. Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, Mainstreaming sustainable development into EU policies: 2009 Review of the European Union Strategy for Sustainable Development 8, § 3 (COM(2009) 400 final, July 24, 2009). The Commission's comments were contained in a second progress report requested by the Council in December 2007. *Id.* at 3, § 1.

148. In January 2010, in Germany, for example, management plans had been completed for 20.9% of Natura 2000 sites; plans for 30.4% were being prepared and no plans had been prepared for the remaining 48.7% of the sites. *See* M. Kettunen *et al.*, *supra* note 81, at 148.

best practice in achieving a balance between potentially conflicting interests.[149] In some Member States, information on the designation process and management plans is not made public because national law does not require it.[150]

Further, the designation of a Natura 2000 site does not necessarily mean that Member States ensure its protection. Adequate appropriate assessments are not always carried out for proposed plans or projects;[151] compensatory measures for approved plans or projects are sometimes implemented badly and, in some cases, are not implemented until after a project has been carried out.[152]

Critically, many habitats and species in Natura 2000 sites do not have a favourable conservation status. A study of 27 habitat types and species protected under the Habitats and Birds Directives in 2006 concluded that only six per cent had a favourable conservation status.[153] In 2008, 50 per cent of species and up to 80 per cent of habitat types in the EU had an unfavourable conservation status, as did over 40 per cent of European bird species.[154]

In July 2009, the Commission published the first systematic assessment of the conservation status of each of the 216 habitat types and 1,182 species

149. *See* I.M. Bouwma, R. van Apeldoorn, A. Çil, M. Snethlage, N. McIntosh, N. Nowicki & L.C. Braat, Natura 2000 – Addressing conflicts and promoting benefits (Alterra Wageningen, UR, Eurosite & European Centre for Nature Conservation, commissioned by DG Environment, Contract No. 07/0310/2008/515/47/SER/B2, Jan. 2009).

150. *See* Colin Reid, *supra* note 123, at 227-28.

151. A study of eight national reports by the European Parliament in 2009 concluded that several assessments were deficient in that they did not assess the cumulative effect of plans or projects or alternatives to them. Directorate-General for Internal Policies, Policy Department C, Citizens' Rights and Constitutional Affairs, National legislation and practices regarding the implementation of Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora, in particular Article 6, Study 49, § 8 (PE 410.698, 2009). The Member States were Belgium, France, Germany, Poland, Spain, Sweden, Romania and the UK. *Id.* at 3.

152. *Id.* at 51, § 8. Further, there are no express requirements to submit periodic reports on implementation of the measures, their failure or success, or contingency plans in the event of failure. *See* Niamh O'Sullivan, *supra* note 66, at 54.

153. Christopher Walder, Gerald Dick, Andreas, Baumüller & Janice Weatherley, Towards European Biodiversity Monitoring: Assessment, monitoring and reporting on conservation status of European habitats and species, Results, comments and recommendations of a NGO consultation within the European Habitats Forum 3 (IUCN, Birdlife European Division & WWWF European Policy Office, June 2006).

154. COM(2008) 864 final, *supra* note 137, at 2.

listed in the Habitats Directive. The report showed, despite some successes, a failure to achieve favourable conservation status for many of the habitat types and species, in particular, grassland, wetland and coastal habitat types.[155]

In May 2011, the Commission adopted a target date of 2020 to halt the deterioration in the status of species and habitats covered by the Birds and Habitats Directives and to achieve a significant and measurable improvement in their status. More precisely, the Commission stated that, by 2020, compared to their status in 2011, "100% more habitat assessments and 50% more species assessments under the Habitats Directive [should] show an improved conservation status; and … 50% more species assessments under the Birds Directive [should] show a secure or improved status".[156] The Commission was, however, more nebulous in the deadline for developing and implementing management plans or their equivalent for all Natura 2000 sites, stating that they should be "developed and implemented in a timely manner".[157]

Despite the lengthy delays described above, Natura 2000 has been successful in protecting nearly one-fifth of the land area of the EU and the natural habitats and species within that area.[158] There is much work still to be done,

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155. Report from the Commission to the Council and the European Parliament, Composite Report on the Conservation Status of Habitat Types and Species as required under Article 17 of the Habitats Directive 2-3, 12 (COM(2009) 358 final, July 13, 2009). The disappearance of grassland habitats was due mainly to intensive agriculture or abandonment of the land. The loss of wetland habitats was due mainly to its conversion to other land use plus the effects of climate change, which included negative impacts on the conservation of 19% of the habitats and 12% of the species. The loss of coastal habitats was due mainly to an increase in urban development. *Id.; see also* Defra, A Strategy for England's wildlife and ecosystem services, Biodiversity 2020 Indicators: 2012 Assessment Summary 11, § 1 (May 2012) (area of land in SSSIs in England in favourable condition declined from 44% in September 2003 to 37.2% in March 2012).

156. Communication from the Commission to the European Parliament, the Council, the Economic and Social Committee and the Committee of the Regions, Our life insurance, our natural capital: an EU biodiversity strategy to 2020, Target 1 at 5, § 3.1 (COM(2011) 244 final, May 3, 2011) (hereinafter COM(2011) 244 final).

157. *Id.* at 11, Annex II, Action 1c)

158. A 2007 study concluded that species protected by the Birds Directive showed more positive trends within the EU-15 than outside it. Paul F. Donald, Fiona J. Sanderson, Ian J. Burfield, Stijn M. Bierman, Richard D. Gregory & Zoltan Waliczky, *International Conservation Policy Delivers Benefits for Birds in Europe*, 317 Science 810, 812 (Aug. 10, 2007). The study was limited to the EU-15 due to its basis on trends between 1990 and 2000, before enlargement in 2004. *Id.* at 811; *but see* Rolando Rodríguez-Muñoz, Alfredo F. Ojanguren & Tom Tregenza, *Comment on "International Conservation Policy Delivers Benefits for Birds in Europe"*, 319 Science 1042b (Feb. 22, 2008) (referring to conclu-

however. Since January 2011, the Commission has brought infraction proceedings against Hungary, Romania,[159] Poland,[160] Sweden,[161] Ireland[162] and the UK[163] for breaching the Habitats Directive; Italy[164] and Hungary[165] for breaching the Birds Directive, and against Greece for breaching both Directives.[166]

Ⅴ. EU Biodiversity Strategy

Establishment of the Natura 2000 network, whilst essential, cannot halt the loss of biodiversity in the EU by itself.[167] Halting the loss of biodiversity requires an ecosystem approach which necessarily involves adoption of

sions as "overstatements based on unsuitable data and inappropriate analyses").

159. *See* European Commission Press release, Environment: Hungary and Romania asked to ensure protection of their wildlife habitats (IP/12/539, May 31, 2012)

160. *See* European Commission Press release, Environment: Commission urges Poland to comply with nature protection rules (IP/12/70, Jan. 26, 2012); European Commission Press release, Environment: Commission takes Poland to Court over failure to comply with EU nature protection law (IP/11/171, Feb. 16, 2011).

161. *See* European Commission Press release, Environment: Commission urges Sweden to respect EU nature legislation and protect endangered wolves (IP/11/732, June 16, 2011).

162. See European Commission Press release, Environment: Commission urges Ireland to act swiftly to improve protection of peat bogs (IP/11/730, June 16, 2011).

163. *See* UK Department for Environment, Food and Rural Affairs, Explanatory Memorandum to the Offshore Marine Conservation (Natural Habitats, &c.) (Amendment) Regulations 2012, SI 2012/1928, para. 8.1 ("proposals [to amend Birds and Habitats Directives] have not been subject to public consultation as the measures to ensure clearer transposition of the Wild Birds Directive are an urgent response to formal correspondence instigated by the European Commission") (hereinafter Explanatory Memorandum to UK Amendments to Birds and Habitats Directives).

164. *See* European Commission Press release, Environment: Commission urges Italy to comply with court rulings on nature protection (IP/11/1435, Nov. 24, 2011).

165. *See* European Commission Press release, Environment: Commission urges Hungary to comply with European nature protection legislation (IP11/437, Apr. 6, 2011).

166. *See* European Commission Press release, Environment: Commission takes Greece to Court for failing to protect Lake Koroneia (IP/11/89, Jan. 27, 2011).

167. *See, e.g.*, Luigi Maiorano, Alessandra Falcucci, Edward O. Garton & Luigi Boitani, *Contribution of the Natura 2000 Network to Biodiversity Conservation in Italy*, 21(6) Conservation Biology, 1433, 1433 (2007) (hereinafter Luigi Moiorano *et al.)* ("if Natura 2000 is taken to represent the final point of all the EU conservation policies, it will inevitably fail").

a strategy to conserve biodiversity that applies, not only to the Natura 2000 network, but also to areas outside it.

Member States implement the Natura 2000 network within their national territories[168] without, in most cases, co-ordinating the implementation with other Member States.[169] Even more critically, there is no single EU biodiversity strategy. Instead, there is the EU biodiversity strategy, the strategies of 27 Member States and, in some Member States, yet more strategies for regions within them.

The existence of many strategies is due, in large part, to legal and political systems. Land law in the EU is governed by the national legislation of Member States and not the EU as a whole. It is basic law that the EU can act only within the field of its competence.[170] Whilst Member States may have greater knowledge of ecosystems in their national territories, the large number of biodiversity strategies makes it difficult, if not impossible, to co-ordinate measures to achieve a single target. In addition, many natural habitats and wide-ranging species cross Member State boundaries, in particular, migratory birds and animals.

In December 1995, the Council of Ministers directed the Commission to identify gaps in its nature conservation policy and to promote biodiversity in order to complement the strategies, programmes and plans of Member States. The Council's direction to the Commission was based, in large part, on the EU's commitment to conserve biodiversity under the CBD,[171] which has been ratified by the EU and most Member States.[172] A major gap identified by the

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168. COM(2004) 431 final, *supra* note 80, at 7, § 3.2; Commission Working Document 2002, *supra* note 49, at 3, § 2.3.

169. Neither the Birds nor the Habitats Directive requires such co-ordination. *See* Arie Trouwborst, *supra* note 34, at 439. The lack of a requirement to co-ordinate policies is surprising in the Birds Directive, in particular, due to its application to migratory species. *Id.*

170. *See* COM(1998) 42 final, *supra* note 9, at 2, para. I(B)(9) (noting Council's conclusion "that 'with regard to matters within the field of its competence and in close co-operation with its Member States, the Community should elaborate a Community Strategy to identify gaps in the European Community conservation policy, and to promote biological diversity into the policies of the Community, complementary to strategies, programmes and plans of the Member States, in order to ensure the full implementation of [the CBD]'"); *see also* SEC(2006) 607, *supra* note 9, at 44-45, § 2.8 (noting that EU has responsibility to act as a party in its own right to CBD, but that much of the responsibility for implementation lies at Member State level).

171. COM(1998) 42 final, *supra* note 9, at 1, para. I(B)(9).

172. *See* http://www.cbd.int/information/parties.shtml (accessed June 18, 2012); COM(1998)

Commission was the impact on biodiversity outside the Natura 2000 network.[173] Although the Birds and Habitats Directives apply to species outside the network and to activities outside it that impact on the network itself; their main focus is the network itself. In respect of areas outside the network, the Birds Directive directs Member States to strive to avoid pollution and any deterioration of habitats outside SPAs[174] and to take "requisite measures to preserve, maintain or re-establish a sufficient diversity and area of habitats for all the species of birds" listed in the Directive.[175] The Habitats Directive recognises the need for ecological connectivity between Natura 2000 sites.[176]

The Commission has enforced the Birds Directive to require Member States to avoid pollution or deterioration of bird habitats outside Natura 2000

42 final, *supra* note 9, at para. I(B)(10). The CBD was signed in 1992 at the Earth Summit in Rio de Janeiro. Article 26 states that "Each Contracting Party shall, at intervals to be determined by the Conference of the Parties, present to the Conference of the Parties, reports on measures which it has taken for the implementation of the provisions of this Convention and their effectiveness in meeting the objectives of this Convention". The progress of the EU and Member States towards the conservation of biodiversity and halting its loss in their territories is set out in their national reports, the submission date for the fourth of which was March 30, 2009. COP 8 Decision VIII/14 art. 4. The fourth national reports are available at: http://www.cbd.int/reports/search/ (accessed June 18, 2012). The fifth national reports are due by March 31, 2014. COP 10 Decision X/10, National Reporting; review of experience and proposals for the fifth national report art. 2; available at http://www.cbd.int/decision/cop/?id=12276 (accessed July 3, 2012).

173. COM(1998) 42 final, *supra* note 9, at 4, para. II(3) .

174. Birds Directive *supra* note 35, art. 4(4).

175. *Id.* art. 3; *see* Commission v. Spain paras. 57-58 (ECJ, C-355/90, 1993) (Santoña marshes) (failure to classify site as SPA and to take appropriate measures to avoid pollution or deterioration of habitats at site).

176. Habitats Directive, *supra* note 36, art. 3(3). It states that Member States should, "[w]hen they consider it necessary, endeavour to improve the ecological coherence of Natura 2000 by maintaining, and where appropriate developing, features of the landscape which are of major importance for wild fauna and flora; *see also id.* art. 10 ("Member States shall endeavour, where they consider it necessary, in their land-use planning and development policies and, in particular, with a view to improving the ecological coherence of the Natura 2000 network, to encourage the management of features of the landscape which are of major importance for wild fauna and flora. Such features are those which, by virtue of their linear and continuous structure (such as rivers with their banks or the traditional systems for marking field boundaries) or their function as stepping stones (such as ponds or small woods) are essential for the migration, dispersal and genetic exchange of wild species"). *Id.*

sites.[177] Further, it is promoting connectivity between the sites[178] and has established criteria for establishing green infrastructure (also known as green corridors or greenways).[179] Due to the lack of a specific requirement in the Directives to develop green infrastructure,[180] however, a Member State may decide not to develop it. For example, in 2010, the new government of the Netherlands blocked financing for the continued development of ecological corridors between Natura 2000 sites that had begun in 1990 because it considered that doing so was "gold plating" the Directives.[181]

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177. *See, e.g.,* Explanatory Memorandum to UK Amendments to Birds and Habitats Directives, *supra* note 163, para. 7.5 (amending UK legislation transposing Birds and Habitats Directives to "place a duty on competent authorities to use all reasonable endeavours to avoid pollution or deterioration of bird habitat").

178. *See, e.g.,* Towards a Green Infrastructure for Europe, Developing new concepts for integration of Natura 2000 network into a broader countryside (ATECMA, ECOSYSTEMS, RIKS, TERSYN, EEZA-CSUC, EC Study ENV.B.2/SER//2007/0076).

179. *Id.*, at 21, para. 74. Green infrastructure is "an interconnected network of natural areas, including agricultural land, greenways, wetlands, parks, forest reserves, native plant communities and marine areas that naturally regulate storm flows, temperatures, flood risk and water, air and ecosystem quality". *See* Council of the European Union, Biodiversity – Post 2010; EU and global vision and targets and international ABS regime, Council conclusions, annex 6, § 6 fn. 3 (7536/10, Mar. 16, 2010).

180. *See* Arie Trouwborst, *supra* note 34, at 439; *see also* Andrew Dodd, *EU Nature Directives: Rights, Responsibilities and Results – Are We Striking the Right Balance*?, 20 Envtl. L. & Mgt. 237, 238 (2008) (Birds and Habitats Directives recognise that favourable conservation status for species and habitats cannot be achieved solely by establishment of Natura 2000 network; creation and management of habitats outside SPAs and SACs are essential but neglected complementary measures); Andrew Dodd, Alice Hardiman, Kate Jennings & Gwyn Williams, *Protected Areas and Climate Change; Reflections from a Practitioner's Perspective,* 6 Utrecht L. Rev. 141, 148 (2010) (climate change will require further interpretation and implementation of Birds and Habitats Directives but concluding that "their fundamental construction is as sound today as it was when they were adopted"); An Cliquet, Jim Harris, Peter Howsam & Chris Backes, *Response to "Protected Areas and Climate Change; Reflections from a Practitioner's Perspective,* 6 Utrecht L. Rev. 149, 150 (2010) (Directives provide necessary tools for short-term challenges but an Ecosystem Services Directive could be useful in future to supplement Birds and Habitats Directives) (hereinafter An Cliquet *et al.*).

181. *See* L. Squintani, *The Development of Ecological Corridors: Member States' Obligation under the Habitats and Birds Directives?,* 9 J. European Envtl. & Planning L. 180, 181-84 (2012). The 2010 Government Coalition had adopted a policy that "gold plating must be 'tracked down and eliminated'". *Id.* at 185 (quoting Government Coalition Agreement 13-14 (Sept. 30, 2010)).

A. Development of the Strategy and Action Plans

In February 1998, the Commission adopted a Communication on an EU biodiversity strategy.[182] The aim of the strategy was "to anticipate, prevent and attack the causes of significant reduction or loss of biological diversity at the source" in order to halt biodiversity loss and to ensure that species and ecosystems, including agro-ecosystems, were in a satisfactory conservation state.[183] A key component was the conservation and sustainable use of biodiversity including measures to protect it inside and outside the Natura 2000 network as well as measures to integrate biodiversity concerns into liability mechanisms.[184] Integrating biodiversity measures into agriculture was to be accomplished, in part, under the Common Agricultural Policy.[185]

The EU biodiversity strategy was not developed solely as a stand-alone strategy; the conservation of biodiversity is included in the EU sustainable development strategy, launched in 2001.[186] By that time, sustainable development was also enshrined as a key objective of EU policies by its addition to the Amsterdam Treaty, which entered into force in 1999.[187]

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182. COM(1998) 42 final, *supra* note 9, at 3, para. I(C)(16).

183. *Id.* at 3, para. I(C)(13).

184. *Id.* at 4-5, paras. II(2)-(9). The other three themes in the strategy are sharing benefits from the use of genetic resources, *id.* at 6-7, paras. II(10)-(13), research identification, monitoring and exchange of information, i*d.* at 7-9, paras. II(14)-(22), and education, training and awareness. *Id.* at 9, paras. II(23)-(26).

185. *Id.* at 14, para. III(13). Such measures were proposed in Agenda 21, the action plan of the UN Conference on Environment and Development which set out actions needed to halt and reverse deterioration of the environment and to follow sustainable development on a global level.

186. The term "sustainable development" has various definitions, the most frequently used being that of the Brundtland Commission, namely "Development that meets the needs of the present without compromising the ability of future generations to meet their own needs". Report of the World Commission on Environment and Development, Our Common Future ch. IV Conclusion, para. 1 (A/42/427, 1987).

187. Treaty on European Union art. 3. Article 3 states, in pertinent part, that the EU "shall work for the sustainable development of Europe based on balanced economic growth and price stability, a highly competitive social market economy, aiming at full employment and social progress, and a high level of protection and improvement of the quality of the environment". Article 21 provides, in pertinent part, that the EU "shall define and pursue common policies and actions, and shall work for a high degree of cooperation in all fields of international relations, in order to … help develop international measures to preserve and improve the quality of the environment and the sustainable management of global

The sustainable development strategy, which was adopted by the Council in June 2001,[188] included the target of halting the decline of biodiversity in the EU by 2010,[189] as did the Sixth Community Environmental Action Programme, adopted by the Council and the European Parliament on July 22, 2002.[190]

In late August and early September 2002, at the World Summit on Sustainable Development at Johannesburg, the Contracting Parties to the CBD, including the EU and Member States, committed to the less ambitious target of reducing the rate of global biodiversity loss significantly from the 2002

natural resources, in order to ensure sustainable development". *Id.* art. 21(2)(f).

188. Presidency conclusions, Göteburg European Council, 15 and 16 June 2001 8, § 31 (SN200/1/01 REV 1); *see* Communication from the Commission, A Sustainable Europe for a Better World: A European Union Strategy for Sustainable Development (Commission's proposal to the Gothenburg European Council), COM(2001) 264 final at 12 (May 15, 2001) (hereinafter 2001 Communication); Communication from the Commission to the Council and the European Parliament, The World Summit on Sustainable Development one year on: implementing our commitments, COM(2003) 829 final 8, § 3.2 (Dec. 23, 2003). The Commission subsequently explained that its commitment did not mean halting the loss of biodiversity in absolute terms but, rather, "keeping key attributes above the baseline". COM(2010) 4 final, *supra* note 39, at 8.

189. Commission; A Sustainable Europe for a Better World: A European Union Strategy for Sustainable Development (Commission's proposal to the Gothenburg European Council) 12 (COM(2001) 264 final, May 15, 2001). Other objectives of the strategy include breaking links between economic growth, the use of natural resources and the generation of waste, improving fisheries management to reverse the decline in fish stocks, and having legislation on strict environmental liability in place by 2003. *Id.*

190. Decision No. 1600/2002/EC laying down the Sixth Community Environmental Action Programme O.J. L 242/1 (Sept. 10, 2002). One of the four priorities in the programme is "protecting, conserving, restoring and developing the functioning of natural systems, natural habitats, wild flora and fauna with the aim of halting desertification and the loss of biodiversity, including diversity of genetic resources, both in the European Union and on a global scale." *Id.* art. 2(2). Objectives to achieve this aim include halting biodiversity loss by 2010, conserving species and habitats, especially to prevent habitat fragmentation, and "establishing the Natura 2000 network and implementing the necessary technical and financial instruments and measures required for its full implementation and for the protection, outside the Natura 2000 areas, of species protected under the Habitats and Birds Directives". *Id.* art. 6. The other three priorities are climate change, providing an environment in which pollution does not cause harm to human health and by encouraging sustainable urban developments, and better resource efficiency and resource and waste management to decouple the use of resources and generation of waste from economic growth. *Id.* art. 2(2).

level by 2010.[191] Adoption of this target, however, did not reduce the need for an effective EU strategy. Nothing in the CBD requires Contracting Parties to take action to halt the loss,[192] which has led one commentator to refer to CBD targets as "optional aspirations".[193] Much, if not all, depends on the political will in each Contracting Party to adopt the necessary measures. That political will is lacking in many, if not most, Member States.

In order to measure progress towards the EU target, the Commission proposed a system of biodiversity indicators, which have subsequently been prepared and extended.[194] Member States, and regions of Member States,

191. COP Decision VI//26, Strategic Plan for the Conference on Biological Diversity para 11; *see* UN, Report of the World Summit on Sustainable Development, Johannesburg, South Africa, 26 August – 4 September 2002, Annex, Plan of implementation of the world summit on sustainable development 26, art. 44 (A/CONF.199/20). In a more pro-active stance, UNECE adopted a resolution at its fifth ministerial conference in Kiev in May 2003 to "reinforce our objective to halt the loss of biological diversity at all levels by the year 2010". Kyiv Resolution on Biodiversity, Fifth Ministerial Conference, Environment for Europe, submitted by the Council of the Pan-European Biological and Landscape Strategy through the Ad Hoc Working Group of Senior Officials, UN Economic Commission for Europe 3 (ECE/CEP/108, May 21-23, 2003).

192. In addition, article 8 of the CBD, which sets out the obligations for Contracting Parties to halt the loss of biodiversity, including the establishment and management of protected areas, the sustainable management of biological resources, the protection of ecosystems and natural habitats and the restoration of threatened ecosystems and species, qualifies the obligation with the phase "as far as possible and as appropriate". CBD art. 8. This phrase prevents verification of the provisions and turns them into options. *See* Rachelle Adam, *Missing the 2010 Biodiversity Target: A Wake-up Call for the Convention on Biodiversity?*, 21 Colo. J. Int'l Envtl. L. & Pol'y 123, 138, 144 (2010).

193. Stuart R. Harrop, *"Living in Harmony with Nature"? Outcomes of the 2010 Nagoya Conference of the Convention on Biological Diversity*, 23 J. Envtl. L. 117, 128 (2011) (hereinafter Stuart R. Harrop).

194. 2001 Communication, *supra* note 188, at 12. The Commission also proposed establishing legislation on strict environmental liability for environmental damage. *Id.* The biodiversity indicators have been prepared under several EU and international programmes. The European Environment Agency programme, called Streamlining European 2010 Biodiversity Indicators (SEBI 2010), is used by the Commission to support its assessment of progress in implementing the EU biodiversity action plan. European Environment Agency, Assessing Biodiversity in Europe – the 2010 Report 9 (EEA Report No. 5/2010, 2010); *see* European Environment Agency, Progress Towards the 2010 Biodiversity Target (EEA Report No. 4/2009, 2009). The UN Environment Programme under the CBD is carried out by the UN Environmental Programme World Conservation Monitoring Centre. Both approaches, which are carried out in tandem, have adopted, adapted and strategically supplemented existing data. The indicators are complex due to the need to measure the status of biodiversity in different biomes, ecosystems and habitats and changes in the status of threatened

are also continuing to develop their own indicators.[195] In order to determine overall trends, however, policies must be based on an understanding of the relationship between the various indicators and monitoring results based on them.[196]

Meanwhile in 2001, the Commission had published four biodiversity action plans to support the EU biodiversity strategy. The plans are: the conservation of natural resources; agriculture; fisheries; and the integration of biodiversity into policies, programmes and projects implemented through economic and development co-operation.[197] The Commission recognised the "ethical respon-

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species, trends in the genetic diversity of domestic animals, cultivated plants, and so on. *See* Georgina M. Mace & Jonathan E.M. Baillie, *The 2010 Biodiversity Indicators, Challenges for Science and Policy*, 21(6) Conservation Biology 1406, 1406-13 (2007).

195. *See, e.g.*, Department for Environment, Food and Rural Affairs, Statistical Release: 24 July 2012; Informal Consultation on Sustainable Development Indicators; available from http://www.defra.gov.uk/consult/2012/07/24/sus-dev-indicators/ (accessed Aug. 1, 2012); Scotland's Biodiversity Indicators; available at http://www.scotland.gov.uk/Publications/2007/10/08091435/1 (accessed July 18, 2012).

196. *See* Stuart H. M. Butchart, Matt Walpole, Ben Collen, Arco van Strien, Jörn P. W. Scharlemann, Rosamunde E. A. Almond, Jonathan E. M. Baillie, Bastian Bomhard, Claire Brown, John Bruno, Kent E. Carpenter, Geneviève M. Carr, Janice Chanson, Anna M. Chenery, Jorge Csirke, Nick C. Davidson, Frank Dentener, Matt Foster, Alessandro Galli, James N. Galloway, Piero Genovesi, Richard D. Gregory, Marc Hockings, Valerie Kapos, Jean-Francois Lamarque, Fiona Leverington, Jonathan Loh, Melodie A. McGeoch, Louise McRae, Anahit Minasyan, Monica Hernández Morcillo, Thomasina E. E. Oldfield, Daniel Pauly, Suhel Quader, Carmen Revenga, John R. Sauer, Benjamin Skolnik, Dian Spear, Damon Stanwell-Smith, Simon N. Stuart, Andy Symes, Megan Tierney, Tristan D. Tyrrell, Jean-Christophe Vié, Reg Watson, *Supporting Online Material for Global Biodiversity Declines Continue*, available at http://www.ebcc.info/wpimages/other/Butchart_Science2010_SOM.pdf (accessed Aug. 2, 2012) (supporting online data for Stuart H.M. Butchart, *et al.*, *Global Biodiversity: Indicators of Recent Declines*, 328 (5982) Science 1164-68 (DOI: 10.1126/science.1187512); European Bird Census Council; available at http://www.ebcc.info/index.php?ID=476 (accessed Aug. 2, 2012); s*ee also* R. Billeter, J. Liira, D. Bailey, R. Bugter, P. Arens, I. Augenstein, S. Aviron, J. Baudry, R. Bukacek, F. Burel, M. Cerny, G. De Blust, R. De Cock, T. Diekötter, H. Dietz, J. Dirksen, C. Dormann, W. Durka, M. Frenzel, R. Hamersky, F. Hendrickx, F. Herzog, S. Klotz, B. Koolstra, A. Lausch, D. Le Coeur, J.P. Maelfait, P. Opdam, M. Roubalova, A. Schermann, N. Schermann, T. Schmidt, O. Schweiger, M.J.M. Smulders, M. Speelmans, P. Simova, J. Verboom, W.K.R.E. Van Singerden, M. Zebel & P.J. Edwards, *Indicators for Biodiversity in Agricultural Landscapes: a Pan-European Study*, 45(1) J. Applied Ecology 141, 141-50 (Feb. 2008) (reliable, easy-to-use indicators are needed to assess biodiversity at a large spatial scale in order to improve environmental management and policy); available at http://onlinelibrary.wiley.com/doi/10.1111/j.1365-2664.2007.01393.x/full (accessed July 20, 2012).

197. COM(2001) 162 final, see *supra* note 99, at 4, para. 1. The action plans for Agriculture

sibility to preserve biodiversity for its intrinsic value"[198] as well as the necessity to human life of maintaining it.[199] The plans necessarily apply to areas outside the Natura 2000 network.[200]

The action plans referred to what would become the Environmental Liability Directive (ELD)[201] as an instrument to impose liability for damage to biodiversity, considering that this was "an important additional step forward".[202] Because liability for preventing and remedying damage to natural resources was new in the vast majority of member states' law, the Commission proposed limiting the scope of the liability system "in a first instance to natural resources that are already protected by … the Birds and Habitats directives and the Natura 2000 Network …".[203]

By 2003, concerns about meeting the 2010 target for halting the loss of biodiversity in the EU had been voiced. In March of that year, the Council urged the Commission to accelerate measures to meet the target, commenting that the trend in the degradation of natural resources had not been reversed.[204]

In order to maximise the likelihood that the EU would meet the target, the Commission was actively involving stakeholders. In 2003, it held a wide-ranging stakeholder review to assess the implementation, effectiveness and appropriateness of the strategy and biodiversity action plans. The review noted, in particular, the absence of "a clear sense of priority which has broad-based agreement among key stakeholders".[205]

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and Fisheries are in separate documents. *Id.* at 5, § I(6); *see* Communication from the Commission to the Council and the European Parliament – Biodiversity Action Plan for Agriculture (52001DC0162(03)); Communication from the Commission to the Council and the European Parliament – Biodiversity Action Plan for Fisheries (52001DC0162(04)).

198. Communication from the Commission to the Council and the European Parliament – Biodiversity Action Plans in the Areas of Conservation of Natural Resources, Agriculture, Fisheries, and Development and Economic Co-operation 1, para. 2 (COM(2001) 162 final, 52001DC0162 (01)).

199. *Id.*

200. COM(2001) 162 final, *supra* note 99, at 4, para. 3.

201. *See infra* text accompanying notes 206-11.

202. *See* COM(2001) 162 final, *supra* note 99, at 4, para. 5.

203. *Id.* at 22, para. 76.

204. Council of the European Union, Brussels European Council 20 and 21 March 2003, Presidency Conclusions, 25, para. 54 (8410/03).

205. *See* Message from Malahide, *supra* note 133, § 3. The culmination of the review was a stakeholder conference, entitled "Biodiversity and the EU – Sustaining Life, Sustaining

In April 2004, following a lengthy legislative process, the EU adopted the ELD.[206] Under the ELD, the operator of an activity that is carried out under EU environmental legislation listed in annex III of the ELD is strictly liable, subject to thresholds and various exceptions and defences, for carrying out measures to prevent or remedy damage to species and natural habitats protected by the Birds and Habitats Directives as well as to water and land (collectively, natural resources) if the operator's activity causes an imminent threat of, or actual, damage to them.[207] The operator of any other activity, except a purely private activity, is liable for measures to prevent or remedy environmental damage if the operator is negligent and the activity threatens or damages a protected species or natural habitat.[208] Environmental damage to protected species and natural habitats occurs if there is a significant adverse effect on its favourable conservation status.[209] Fourteen Member States have also extended liability for preventing and remedying environmental damage to species and habitats protected under their domestic nature conservation legislation.[210]

Livelihoods", in Malahide, Ireland, on May 25-27, 2004 under the Irish Presidency. Consensus was reached between the 230 participants on many priority objectives and targets in order to halt the decline of biodiversity by 2010 and to assist in the EU's contribution to reduce significantly the 2002 rate of loss of biodiversity at a global level, as set out in the "Message from Malahide". *Id.*

206. Directive 2004/35/CE of the European Parliament and of the Council on environmental liability with regard to the prevention and remedying of environmental damage, as amended. O.J. L 143/56 (Apr. 30, 2004).

207. Legislation listed in annex III includes the Integrated Pollution Prevention and Control Directive, waste management operations, authorised discharges into surface and ground water, water abstraction, manufacture, storage and use of various substances, transportation of dangerous goods, operations that cause air pollution, contained use of genetically modified micro-organisms and deliberate release of genetically modified organisms.

208. ELD, *supra* note 206, art. 3(1)(b). More precisely, the ELD applies to regularly occurring migratory birds and bird species listed in Annex I to the Birds Directive and species listed in annexes II and IV of the Habitats Directive. *Id.* art. 2(3)(a).

209. *Id.* art. 2(1)(a). Water damage occurs if there is a significant adverse effect on the ecological, chemical and/or quantitative status and/or ecological potential of water defined in the Water Framework Directive. *Id.* art. 2(1)(b); *see* Directive 2000/60/EC of the European Parliament and of the Council of establishing a framework for Community action in the field of water policy art. 1, OJ L 327, p 1 (Dec. 22, 2000), as amended. Land damage occurs if there is a significant risk of an adverse effect on human health. ELD, *supra* note 206, art. 2(1)(c).

210. This extension of liability is specifically permitted by the ELD. ELD, *supra* note 206,

Three types of remediation apply if a protected species or natural habitat or water is damaged. Primary remediation is restoration of the natural resource and services rendered by it to its baseline condition, that is, its condition before the environmental damage. Services that must be restored include services to other natural resources as well as to the public. Complementary remediation is any remedial measure that is carried out to compensate for the inability to restore a natural resource to its baseline condition by providing a similar level of natural resources or services at another site. This type of remediation is supplementary to the partial restoration of the damaged site and is designed to ensure that there is no net loss of biodiversity. Compensatory remediation are improvements and other measures to a natural resource to compensate for interim losses, that is, the loss of the resource or services rendered by it from the time of the damage to its restoration to the baseline condition.[211]

Adoption of the ELD means that persons whose activities damage Natura 2000 sites and species outside those sites protected under the Birds and Habitats Directives are now required, subject to various exceptions and defences, to remedy and restore them and, thus, halt the loss of biodiversity from such activities. The ELD does not apply to biodiversity that deteriorates through the failure to restore or maintain its favourable conservation status.

In June 2004, the Council, in the continued face of the loss of biodiversity, reiterated the need to proceed quickly with actions to meet the 2010 target.[212]

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art. 2(3)(c). The Member States are Austria, Belgium, Cyprus, Czech Republic, Estonia, Greece, Hungary, Latvia, Lithuania, Poland, Portugal, Spain, Sweden and UK. *See* Report from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions Under Article 14(2) of Directive 2004/35/CE on the environmental liability with regard to the prevention and remedying of environmental damage (COM(2010) 0581 final, Oct. 12, 2010).

211. ELD, *supra* note 206, annex II.

212. Council of the European Union, Brussels European Council 17 and 18 June 2004, Presidency Conclusions 10, para. 47 (10679/2/04, REV 2, June 19, 2004). The Council linked progress in activities concerning biodiversity and other environmental protection measures to the Lisbon Strategy, which it had launched in March 2000. *Id.* at 9, para. 43. The Lisbon Strategy established "a new strategic goal for the next decade" to become the most competitive and dynamic knowledge-based economy in the world capable of sustainable economic growth with more and better jobs and greater social cohesion". Lisbon European Council 23 & 24 March 2000; Presidency Conclusions; available at http://www.europarl.europa.eu/summits/lis1_en.htm (accessed June 19, 2012). A "vital strand" of the Lisbon Strategy is "the importance of the objective of halting the loss of biodiversity be-

In 2005, in its review of the EU sustainable development strategy, the Commission concluded, among other things, that growing pressure on natural resources and biodiversity was unsustainable, stating that it would carry out a review to reinforce a "new approach to policy making" as a central means of placing sustainable development at the core of EU policymaking.[213] In December 2005, the Commission submitted its revised sustainable development strategy in which it reiterated the 2010 target for halting the loss of biodiversity in the EU. The strategy also emphasised the need to ensure sufficient EU and Member State funding, management of the Natura 2000 network, and the integration of biodiversity concerns into internal and external policies.[214] On June 2006, the EU heads of state and government adopted the revised strategy.[215]

By mid-2006, it had become increasingly clear that the EU would not meet its target of halting the loss of biodiversity by 2010. The Commission stated that, whilst important progress had been made and the first signs of slowing rates of loss had begun to appear, the target could only be met if there was accelerated implementation at EU and Member State levels.[216] The Commis-

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tween [2005] and 2010, in particular by incorporating this requirement in other policies given the importance of biodiversity for certain economic sectors". SEC(2006) 607, *supra* note 9, at 46, § 3.3. For an overview of similarities between the Lisbon Strategy and the EU Sustainable Development Strategy, *see* Reinhard Steurer & Gerald Berger, The Lisbon Strategy and Sustainable Development Strategies across Europe: How Different Governance Arrangements Shape the European Coherence of Policy Documents 6 (Institute of Forest, Environmental, and Natural Resource Policy, Discussion Paper 1-2010, Jan. 2010).

213. Communication from the Commission to the Council and the European Parliament, The 2005 Review of the EU Sustainable Development Strategy: Initial Stocktaking and Future Orientations 3; 19, § 5.2 (COM(2005) 37 final, Feb. 9, 2005). The Commission subsequently published a declaration of guiding principles for sustainable development, which the Council adopted in June 2005. COM(2005) 658 final, *supra* note 134, at 4, § 1.

214. *See* COM(2007) 642 final, *supra* note 136, at 8, § 3.4. The revised strategy has seven priorities. The 2010 target, call for funding for Natura 2000 and integration of biodiversity are part of the conservation and management of natural resources priority. The other priorities are: climate change and clean energy; sustainable transport, sustainable consumption and production; public health, social inclusion, demography and migration; and global poverty. *Id.* at 4-11, §§ 3.1-.7.

215. *See* Council of the European Union, Note from the General Secretariat to Delegation, Review of the EU Sustainable Development Strategy (EU SDS) – Renewed Strategy 1 (10917/06, June 26, 2006).

216. *See* Communication from the Commission, Halting the loss of biodiversity by 2010 – and beyond; Sustaining ecosystem services for human well-being 3, § 1 (COM(2006) 216 fi-

sion reiterated that Member States had the same responsibility to implement the CBD as did the EU, commenting that the Commission's role "should be to provide a supportive policy framework, provide guidance, facilitate, monitor and enforce where necessary".[217]

The Commission noted two factors in particular. First, land use and development, which are controlled at Member State level, were not being reconciled with conserving biodiversity and maintaining services provided by ecosystems.[218] Second, climate change was having an increasing impact on biodiversity.[219] The Commission stated that the EU must do more than merely halt the loss of biodiversity by 2010 and that it would start a debate on a vision that recognised people's interdependence with nature and the need "for a new balance between development and the conservation of the natural world".[220] It warned against relying on technology to provide a solution to the loss of biodiversity, stating that ecosystems are often difficult or impossible to restore after they have deteriorated past a certain point and, even if they can be restored, restoration costs often exceed the cost of preventive measures.[221]

The Commission also joined the groundswell towards valuing services provided by ecosystems (known as ecosystem services) as a means to ensure their consideration in economic policies and decisions. The Commission stated that it was difficult to put precise monetary values on ecosystem services, but commented that estimates suggested worldwide services had an annual value of hundreds of billions of Euros.[222]

Later in 2006, the Commission submitted a Communication that set out a new plan to supplement, not supersede, the EU biodiversity strategy and action plans.[223] This time the Commission took a stronger stance. In an annex to the plan, Commission staff stated that there had been "no concerted effort

nal, May 22, 2006) (hereinafter COM(2006) 216 final).

217. *See* SEC(2006) 607, *supra* note 9, at 45, § 2.8.

218. *Id.* at 13, § 2.2.1.

219. *Id.* at 50, § 4.2.6.

220. *Id.* at 45, § 3.1.

221. COM(2006) 216 final, *supra* note 216, at 4-5, § 2. The Commission mentioned declines in fish stocks, loss of soil fertility, crashes in pollinator populations and the reduced floodwater capacity of rivers as examples of such losses. *Id.*

222. *Id.* at 4, § 2. The term "ecosystem services" was introduced in the UN Millennium Ecosystem Assessment; *see* Ecosystems and Human Well-being: Synthesis, *supra* note 15, at v.

223. SEC(2006) 607, *supra* note 9, at 47-48, § 4.2.2.

to ensure coherence and complementarity" and further stated that the plan applied to Member States as well as the EU due to it being a single plan for both to follow to meet their commitments under the CBD.[224] The Commission cannot, of course, require Member States to comply with the CBD in the absence of applicable EU legislation. The CBD is soft law that depends on a Contracting Party to implement it; there is no governmental authority to ensure its enforcement.

The Commission's plan, which stated that it was still possible to meet the 2010 target for halting the loss of biodiversity,[225] has four policy areas:

- biodiversity in the EU;
- the adoption of a more coherent approach in respect of global biodiversity;
- support for the adaptation of biodiversity to climate change; and
- strengthening substantially the knowledge base for the conservation and sustainable use of EU and global biodiversity.[226]

In respect of biodiversity in the EU, the Commission stated that Member States needed to adopt a greater commitment to proposing, designating, protecting and effectively managing Natura 2000 sites. It further stated that they must carry out measures outside such sites in order to strengthen the coherence, connectivity and resilience of the network and to conserve and restore ecosystem services.[227] The main measures to support the plan were:

- adequate financing for Natura 2000 and biodiversity outside it;
- strengthening EU decision-making to ensure existing and new policies and budgets take account of biodiversity needs;
- building partnerships between government, academia, conservation practitioners, landowners and users, the private, finance and educational sectors, and the media; and
- increasing public education, awareness and participation.[228]

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224. *Id.* at 47, § 4.2.1.

225. COM(2006) 216 final, *supra* note 216, at 3, § 1.

226. *Id.* at 11-14, § 5.2.

227. *Id.* at 11, § 5.2.1. The objectives were: safeguarding the EU's most important habitats and species; conserving and restoring biodiversity and ecosystem services in the wider EU countryside and marine environment; reinforcing compatibility of regional and territorial development with biodiversity in the EU; substantially reducing the impact on biodiversity of invasive species. *Id.* at 11-12, § 5.2.1.

228. COM(2006) 216 final, *supra* note 216, at 14-15, § 5.3.

Attached to the Communication was a technical annex that set out a detailed biodiversity action plan to be followed by the EU and Member States[229] and an impact assessment.[230]

The impact assessment discussed, albeit briefly, payments for ecosystem services.[231] It also stated that most Member States had developed their national biodiversity strategies and action plans without considering their relationship with the EU strategy or action plans, commenting that "[c]omplementarity, where it exists, is largely incidental". The Commission stated that the EU could not meet the 2010 target unless this relationship changed.[232] The Commission further stated that as a result of the Council's request for accelerated measures to meet the 2010 target for halting the loss of biodiversity in developing the new strategy, it had rejected introducing new legislation because, not only would this process take several years and, therefore, could not have a significant impact on halting biodiversity loss by 2010, but "there is as yet insufficient evidence to suggest that the existing legal framework is inadequate".[233]

The Council welcomed the Communication.[234] It did not, however, formally

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229. Commission Staff Working Document; Annexes to the Communication from the Commission; Halting the loss of biodiversity by 2010 – and beyond; Sustaining ecosystem services for human well-being; Technical annex (COM(2006) 216 final, SEC(2006) 621, May 22, 2006).

230. Commission Staff Working Document; Annex to the Communication from the Commission; Halting the loss of biodiversity by 2010 – and beyond; Sustaining ecosystem services for human well-being; Impact Assessment (COM(2006) 216 final, SEC(2006) 607, May 22, 2006).

231. *Id.* at 28, § 2.4.3. The impact statement referred to a project by New York City for its public water supply. *See infra* text accompanying notes 331-42. The assessment stated that it was more difficult to value and market ecosystem supporting services such as pollinators. It considered that they rendered a service with a value of $65 billion to $70 billion each year, commenting that crop yields in parts of Europe and the US had decreased due to declines in insect populations. SEC(2006) 607, *supra* note 9, at 28, § 2.4.3. It further commented that a country that cut its forests and depleted its fisheries would show an increase in gross domestic product because the degradation of ecosystems is not included in valuing GDP. *Id.* at 29, § 2.4.6.

232. SEC(2006) 607, *supra* note 9, at 36, § 2.6.1.6. The Commission noted that many Member States were reviewing their national strategies and action plans in light of the target. *Id.*

233. *Id.* at 47, § 4.1.

234. 2006/2233(INI) - 18/12/2006 Resolution/conclusions adopted by Council; *see* Council of the European Union, Press Release, 2773rd Council Meeting, Environment 8 (16164/06 (Presse 349, Dec. 18, 2006).

adopt the detailed biodiversity action plan annexed to the Communication. As a result of the lack of formal adoption and the focus of the action plan on EU environmental bodies, the new plan has had a largely voluntary status that has failed to gain the recognition or support of non-environmental EU bodies or Member States.[235]

The European Parliament adopted a resolution welcoming the Communication. It commented among other things, that it was "a good starting point for a more focused approach to achieving the 2010 biodiversity target",[236] and recognised "the potential importance of the emerging concept of ecosystem services … as a tool for incorporating the economic value of biodiversity into other policy areas." The Parliament warned, however, "against reducing the value of biodiversity to the benefits humans can derive from it, or viewing the loss of biodiversity as only an economic concern".[237] The Committee of the Regions was less welcoming, commenting on the "divergence between the considerable ambitions of the Communication and the [financial] resources made available to achieve these goals".[238]

The European Economic and Social Committee (EESC), meanwhile, was scathing. Whilst it welcomed the presentation of the action plan and the advisability of the measures set out in it, the EESC criticised the lack of an explanation for the "tremendous discrepancies" between the action that should be taken, the action announced by the Commission, and "what actually happens in reality in respect of maintaining biodiversity",[239] referring to this as

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235. European Commission Biodiversity Knowledge Base, Assessment of the EU Biodiversity Action Plan as a Tool for Implementing Biodiversity Policy 26, § 2.5.2 (June 2010) (Service Contract No. 09/543261/B2); *cf.* Secretariat of the Convention on Biological Diversity, Global Biodiversity Outlook 3, 83 (2010) ("key lesson from the failure to meet the 2010 biodiversity target is that the urgency of a change of direction must be conveyed to decision-makers beyond the constituency so far involved in the biodiversity convention").

236. European Parliament resolution of 22 May 2007 on halting the loss of biodiversity by 2010 art. 1. O.J. C 102 E/117 (Apr. 24, 2008).

237. *Id.* at C 102 E/118, art. 8.

238. Opinion of the Committee of the Regions on the Communication from the Commission: Halting the loss of biodiversity by 2010 – and beyond 6, § 6.2 COM(2006) 216 final (DEVE-IV-009, CdR 159/2006 fin, Dec. 6, 2006).

239. Opinion of the European Economic and Social Committee on the Communication from the Commission on halting the loss of biodiversity by 2010 – and beyond – Sustaining ecosystem services for human well-being COM(2006) 216 final 2, paras. 1.6-.7 (NAT/334 – CESE 205/2007 fin DE/Ho/Hn, Feb. 15, 2007).

a "yawning gap".[240] The EESC also commented on the lack of political will to implement measures acknowledged as being necessary,[241] stating that the Communication joined "a long list of political documents announcing measures to stem the loss of biodiversity", whilst commenting that "[p]olitical promises to this effect have been made repeatedly".[242] It also criticised annexation of the action plan to the Communication instead of being issued as a separate document as well as it being available only in English.[243]

In December 2008, the Commission stated that it was "highly unlikely" that the EU would even come close to meeting the 2010 target for halting the loss of biodiversity in the EU unless the EU and Member States made intensive efforts to do so.[244]

In July 2009, the Commission reiterated that the EU was unlikely to meet the target and that there was no sign of a reversal or slowing of the global decline of biodiversity.[245]

In March 2010, inevitably, the Council conceded that the EU had failed to

240. *Id.* at 6, para. 3.5.

241. *Id.* at 1, para. 1.3.

242. *Id.* at 6, para. 3.4. The EESC also commented that the threat to biodiversity is a result of legal policy decisions, technical decisions and value judgements, which are often supported or initiated by decisions and instruments of the EU, Member States, or municipalities. *Id.* at 5, para. 3.2.

243. *Id.* at 3, para. 1.11.

244. COM(2008) 864 final, *supra* note 137, at 2. The Commission identified crucial gaps as measures to address invasive species and to establish a legal framework to protect soil biodiversity. *Id.* at 6. The Commission was even more pessimistic about the global loss of biodiversity, concluding that it was "disastrous". *Id.* at 12*; see also* Fourth National Report of the EC, *supra* note 38, at 79 (repeating that it was "highly unlikely" that biodiversity loss would be halted in EU by 2010 or even come close to doing so). The evaluation of Member State actions under the biodiversity action plan was accompanied by proposed measures to determine whether progress had been made and outcomes had been achieved. The analysis, however, did not identify measures of progress for all actions although it did result in a baseline that could be used to evaluate future progress. European Commission Biodiversity Action Plan as a Tool for Implementing Biodiversity Policy 31-35, §§ 3.2, 3.3 (June 2010) (Service Contract No. 09/543261/B2). The Commission further stated that a crucial gap was the integration of biodiversity considerations into other sectoral policies. Fourth National Report of the EC, *supra* note 38, at 69.

245. *See* Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, Mainstreaming sustainable development into EU policies: 2009 Review of the European Union Strategy for Sustainable Development 7-8, § 3 (COM(2009) 400 final, July 24, 2009).

reach the target.[246] Reasons subsequently given by the European Parliament for the failure include: "the failure to recognise and deal with the driving forces behind the reduction in biological diversity; incomplete implementation of legislation; incomplete and poor integration into sectoral policies; insufficient scientific knowledge and data gaps; lack of political will; insufficient funding; [and] lack of additional efficiently-targeted instruments to tackle specific problems such as invasive alien species".[247] The European Parliament also noted that conservation measures funded by the EU do not always continue after the funding ends.[248]

In lieu of the failed strategy, the Commission had meanwhile submitted a new strategy in January 2010 to halt the loss of biodiversity in the EU. The strategy set out four options, all with a deadline of 2020. The options were:

- significantly reducing the rate of loss of biodiversity and ecosystems in the EU by 2020;
- halting the loss of biodiversity and ecosystem services in the EU by 2020;
- halting the loss of biodiversity and ecosystem services in the EU by 2020 and restoring them as far as possible; and
- halting the loss of biodiversity and ecosystem services in the EU by 2020, restoring them as far as possible, and increasing the EU's contribution to avert global biodiversity loss.[249]

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246. Council of the European Union, Biodiversity: Post 2010; EU and global vision and targets and international ABS regime – Council conclusions, Annex 3, § e) (7536/10, Mar. 16, 2010). Meanwhile, the UN had acknowledged that it had failed to meet its goal of significantly reducing biodiversity by 2010. Secretariat of the Convention of Biological Diversity, Global Biodiversity Outlook 3 17 (2010). In 2010, at the Tenth Conference of the Parties of the CBD, the Contracting Parties adopted the Aichi 2020 targets, which include conserving at least 17% of terrestrial and inland water areas and 10% of coastal and marine areas by means of well-managed, ecologically representative and well connected systems of protected areas, COP 10 Decision X/2, Strategic Plan for Biodiversity 2011-2020, target 11, preventing the extinction of known threatened species by 2020 and improving and sustaining their conservation status, *id.* target 12, and at least halving the rate of loss of all natural habitats, including forests, and where feasible bringing the loss close to zero, as well as significantly reducing degradation and fragmentation. *Id.*, target 5; *see* Stuart R. Harrop, *supra* note 193, at 128.

247. European Parliament resolution of 21 September 2010 on the implementation of EU legislation aiming at the conservation of biodiversity art. D (2009/2108(INI)).

248. *Id*, General remark 75.

249. *See* COM(2010) 4 final, *supra* note 39, at 7-8, § 3.2.

Regardless of the option to be selected, the Commission concluded that they all required establishment of a scientific baseline of the state of biodiversity and ecosystem services in the EU.[250] The Commission considered that "any new target must factor in the role of ecosystems and ecosystem services".[251] Further, it recognised the need for a new governance framework to address the main pressures on biodiversity and ecosystem services at four levels: international; EU; national; and sub-national.[252]

In March 2010, the Environment Council committed the EU to the most ambitious target in the new strategy, that is, halting the loss of biodiversity and ecosystem services in the EU by 2020, restoring them as far as possible, and increasing the EU's contribution to avert global biodiversity loss.[253]

In June 2010, the European Environment Agency published the EU 2010 Biodiversity Baseline which, among other things, establishes a reference point to develop sub-targets that must be met to achieve the 2020 target as well as to measure and monitor progress towards achieving sub-targets.[254]

In September 2010, the European Parliament expressed its concern about the continuing loss of biodiversity, agreeing with the European Environment Agency that the EU should not "focus all our efforts on preserving islands of

250. *See id.* at 8, § 3.2.

251. *Id.* The Commission had funded the RUBICODE (Rationalising Biodiversity Conservation in Dynamic Ecosystems) project in 2006 to gather existing research on biodiversity and to assess its relevance to ecosystem services. *See* http://www.rubicode.net/rubicode/approach.html (accessed July 1, 2012); *see also The EU Biodiversity Action Plan: 2010 assessment*, 29 Natura 2000 3, 5 (Dec. 2010) (setting out figures showing status and trends in ecosystem services in EU).

252. COM(2010) 4 final, *supra* note 39, at 10.

253. Council of the European Union, Press release, 3002nd Council meeting, Environment 2, 7 (7522/10 (Presse 67, Mar. 15, 2010); available at http://www.consilium.europa.eu/uedocs/cms_data/docs/pressdata/en/envir/113373.pdf (accessed June 5, 2012); *see* Council of the European Union, Information note, Biodiversity: Post 2010, EU and global visions and targets and international ABS regime – Council conclusions (7536/10, Mar. 16, 2010); available at http://register.consilium.europa.eu/pdf/en/10/st07/st07536.en10.pdf (accessed June 5, 2012). The 2020 biodiversity strategy also satisfied the EU's commitment under the CBD, in particular, the global strategic plan for biodiversity 2011-2020, as agreed at the Tenth Conference of the Parties in Nagoya, Japan in 2010. COM(2011) 244 final , *supra* note 156, at 2, § 2.1.

254. EU 2010 Biodiversity Baseline, *supra* note 6, at 10. The major ecosystems are: agro-ecosystems, grasslands, heath and scrubs, forests, wetlands, lakes and rivers, coastal and marine ecosystems, and soil biodiversity. *Id.* at 27-86, 104-08.

biodiversity, while losing nature everywhere else".[255] The Parliament urged the Commission to focus on ecosystem services both in its biodiversity strategy and in the context of Natura 2000 as well as strengthening efforts to achieve favourable conservation status for species and habitats.[256]

The ecosystem services approach had become prominent although, as the European Environment Agency noted, the approach was still in its infancy in the EU and had had only a limited influence on formulating policy and making decisions, possibly due to the limited understanding of ecological systems and the role of biodiversity in providing ecosystem services.[257]

B. Current EU Strategy

In May 2011, in the first EU strategy to highlight the value of ecosystem services,[258] the Commission increased its warnings about the loss of biodiversity, stating that "biodiversity loss [is] the most critical global environmental threat alongside climate change – and the two are inextricably linked".[259] The Commission set out a vision to protect, value and appropriately restore biodiversity by 2050.[260]

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255. European Parliament resolution of 21 September 2010, General remark 27.

256. *Id.* General remark 36.

257. EU 2010 Biodiversity Baseline, *supra* note 6, at 113, § 14.4. The report also stated that more knowledge is needed on the interdependence of ecological and social systems for human well-being including the way that ecosystems function, how they respond to human pressure and their relationship to biodiversity. *Id.*

258. *See The EU 2020 Biodiversity Strategy*, 30 Natura 2000 3, 3 (June 2011).

259. COM(2011) 244 final , *supra* note 156, at 1, § 1. The Communication states, in more detail: "Biodiversity – the extraordinary variety of ecosystems, species and genes that surround us – is our life insurance, giving us food, fresh water and clean air, shelter and medicine, mitigating natural disasters, pests and diseases and contributes to regulating the climate. Biodiversity is also our natural capital, delivering ecosystem services that underpin our economy. Its deterioration and loss jeopardises the provision of these services: we lose species and habitats and the wealth and employment we derive from nature, and endanger our own wellbeing. This makes biodiversity loss the most critical global environmental threat alongside climate change – and the two are inextricably linked". *Id.*

260. *Id.* at 2, § 2.1. The Contracting Parties to the CBD also set out a new vision in a strategic plan for biodiversity as follows: "By 2050, biodiversity is valued, conserved, restored and wisely used, maintaining ecosystem services, sustaining a healthy planet and delivering benefits essential for all people". COP 10 Decision X/2, Strategic plan for biodiversity 2011-2020, annex, para. 11. The plan also specified the following: "take effective and urgent action to halt the loss of biodiversity in order to ensure that by 2020 ecosystems are

The Commission stated that, by 2020, it would promote the use of innovative financial and market-based instruments, possibly including the establishment of a biodiversity financing facility and payments for ecosystem services, in particular, in co-operation with the European Investment Bank[261] and the use of public / private partnerships. The Commission again emphasised the development of green infrastructure.[262] Further, it stated that Member States, with the assistance of the Commission, should map the state of ecosystems and their services by 2014, assess their economic value and promote the integration of such values into accounting and reporting systems at EU and national level by 2020.[263] The Commission commented that studies had found that about 16.8 per cent of jobs in the EU are indirectly linked to natural assets, giving the example of the estimated value of €22 billion annually by insect pollination to agriculture.[264]

The provision of ecosystem services was also to be included in agriculture and forestry policies in order that, by 2020, biodiversity measures under the Common Agriculture Policy would result in a measurable improvement "in the conservation status of species and habitats that depend on or are affected by agriculture and in the provision of ecosystem services" compared to their status in 2010.[265] Also by 2020, forest management plans were to be introduced in all publicly-owned and forest holdings above a specified size that

resilient and continue to provide essential services, thereby securing the planet's variety of life, and contributing to human well-being, and poverty eradication." *Id.* annex, para. 12; available at http://www.cbd.int/decision/cop/?id=12268 (accessed July 3, 2012).

261. The European Investment Bank finances capital investment projects, mainly in the EU, to promote EU economic policy objectives. *See* European Investment Bank, Biodiversity; available at http://www.eib.org/projects/topics/environment/biodiversity/index.htm (accessed Aug. 16, 2012).

262. COM(2011) 244 final, *supra* note 156, at 5, § 3.2 and 12, Action 6b). The restoration of 15% of degraded ecosystems by 2010 was agreed by the EU and Member States at the Tenth Conference of the Parties to the CBD in Nagoya, Japan, in 2010. *See id.* at 5, § 3.2.

263. *Id.* at 12, action 5). This action point was set out pursuant to the recommendation in the Economics of Ecosystems and Biodiversity study. *See The EU Biodiversity Strategy*, 30 Natura 2000 3, 4 (June 2011).

264. Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, Regional policy contributing to sustainable growth in Europe 2020 8, § 3.1 (COM(2011) 17 final, Jan. 26, 2011) (hereinafter COM(2011) 17 final).

265. COM(2011) 244 final, *supra* note 156, at 6, § 3.3.

receive funding under the Rural Development Policy.[266]

The Commission stated that, by 2012, it would develop a green infrastructure strategy for urban and rural areas. This strategy would involve public/private partnerships as well as EU funding and would include incentives to encourage up-front investments in green infrastructure projects and maintenance of ecosystem services.[267] Further, the Commission would continue developing an initiative, through compensation or offsetting, to ensure no net loss of ecosystems or their services.[268] The focus on ecosystem services was not intended to end financing for biodiversity. The Communication also identified the need for adequate financing to implement the Natura 2000 network.[269]

In June 2011, the Environment Council endorsed the new EU biodiversity strategy.[270] The Council emphasised the importance of further work to implement the no net loss objective in respect of areas and species not covered by the Birds and Habitats Directives in order to ensure there was no further loss or degradation of ecosystems and their services.[271] Further, it noted the need to integrate the biodiversity strategy into other project areas, including the Common Agriculture Policy,[272] calling "on the Commission to address exist-

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266. *Id.* The purpose of the plans is to result in a measurable improvement "in the conservation status of species and habitats that depend on or are affected by forestry and in the provision of related ecosystem services as compared to the EU 2010 Baseline." *Id.*

267. *Id.* at 12, action 6b).

268. *Id.* at 12, action 7b); *see infra* text accompanying notes 312-19.

269. *Id.* at 9, § 4.2. The other key funding requirement is an increase for effective implementation of the outcomes of the Tenth Conference of the Parties in 2010, with discussions on funding targets to take place at the Eleventh Conference of the Parties. *Id.*

270. Council of the European Union, EU Biodiversity Strategy to 2020 – Council conclusions – 3103rd Environment Council Meeting, Luxembourg, 21 June 2001, para. 9; available at http://www.consilium.europa.eu/uedocs/cms_data/docs/pressdata/en/envir/122950.pdf (accessed Aug. 20, 2012) (hereinafter Council conclusions of June 2011); *see also* Council of the European Union, EU Biodiversity strategy to 2020, - Council conclusions, Corrigendum to Information note (11978/11, COR 1, June 23, 2011).

271 Council conclusions of June 2011, *supra* note 270, at 3, para. 9. The Environment Council stated that a preliminary definition of the concept of no net loss "is that conservation losses in one geographically or otherwise defined area are balanced by a gain elsewhere provided that this principle does not entail any impairment of existing biodiversity as protected by EU nature legislation". *Id.* at 3, fn. 1.

272. *Id.* at 2, para. 6.

ing policy or legislative gaps in a proportionate and cost-effective manner."[273]

The EESC was, again, scathing about the new strategy, considering that it contained "nothing substantially new"[274] and did not represent real progress.[275] The EESC further stated that the strategy was "to a large extent a 'copy-paste' of old, well-known facts, proposals and measures" that lacked any answer on measures to act in a focused way to halt the loss of biodiversity.[276] Still further, it regarded "the fact that the [Birds and Habitats Directives] have still not been fully implemented 19 or even 32 years after their adoption as the greatest problem facing biodiversity policy in Europe. This provides convincing proof that, when it comes to maintaining biodiversity, it is the political will which is missing rather than legal bases or strategies".[277]

In September 2011, the Commission submitted a "Roadmap to a Resource Efficient Europe" (Roadmap).[278] It reiterated the target of halting the loss of biodiversity in the EU by 2020,[279] commenting that the value of biodiversity was only beginning to be taken into account in decision making at the operational level.[280] The Commission further stated that tackling the challenges and changing them into opportunities, including halting the loss of biodiversity, would require the EU economy to undergo "a fundamental transformation within a generation – in energy, industry, agriculture, fisheries and transport systems, and in producer and consumer behaviour".[281]

This is a remarkable statement. It presupposes, among other things, that the

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273. *Id.* at 3, para. 12. The Council mentioned a dedicated legislative instrument on invasive species in this context. *Id.*

274. Opinion of the European Economic and Social Committee on the "Communication from the Commission: Our life insurance, our natural capital: an EU Biodiversity Strategy to 2020", O.J. C 24/111, C 24/111, para. 1.3 (Jan. 28, 2012) (hereinafter EESC Opinion 2012).

275. EESC Opinion 2012, *supra* note 274, at C 24/111, para. 1.6.

276. *Id.* at C 24/113, para. 3.3.

277. *Id.* at C 24/114, para. 4.2.1.

278. Communication from the Commission to the European Parliament, the Council, the European Economic and Society Committee and the Committee of the Regions, Roadmap to a Resource Efficient Europe 11-17, § 4 (COM(2011) 571 final, Sept. 20, 2011). The Roadmap covers many areas including minerals and metals, water, air, land and soils and marine resources.

279. *Id.* at 12, § 4.2.

280. *Id.*

281. *Id.* at 2, § 1.

public will change their attitudes to the loss of biodiversity in the EU and adopt life-changing measures to halt that loss within a generation. Persuading the public to change their lifestyles, however, requires not only political will; it requires substantial levels of funding from the EU and Member States. The Commission acknowledged in August 2011 that both were lacking. [282]

Most crucially, such a change requires the public to want to halt the loss of biodiversity. Many people in the EU, however, have not even heard of biodiversity and most have not heard of Natura 2000. A Eurobarometer opinion poll carried out by the Commission in 2010 showed that 34 per cent of respondents had not heard the term "biodiversity"; thirteen per cent who had heard the term did not know what it was; and only eight per cent had heard the term and knew what it was. Further, 78 per cent of people who responded to the poll had never heard of Natura 2000.[283]

Surveys carried out in the UK in 2007, 2009 and 2011 show that views have not changed substantially in recent years. The surveys found that: in 2011, although 18 per cent of respondents were familiar with the term "biodiversity", 33 per cent had a little knowledge of it, 18 per cent had only heard the name, and 28 per cent had never heard it; and in 2009, although 20 per cent of respondents were familiar with the term; 24 per cent had a little knowledge of it, 21 per cent had only heard the name and 32 per cent had never heard of it.[284]

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282. Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, The Sixth Community Environment Action Programme, Final Assessment 5, § 3.1 (COM(2011) 531 final, Aug. 31, 2011).

283. European Commission, Flash Eurobarometer, Attitudes of Europeans towards the issue of biodiversity, Analytical report Wave 2, 42 (Mar. 2010) (Flash EB Series No. 290). The remaining 1% did not know. *Id*. The EESC suggested that the terminology of "biodiversity" and the concept of "species" and "ecosystem services" may need to be re-examined because of the lack of understanding of the terms by many people. Opinion of the European Economic and Social Committee on the Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions – Options for an EU vision and target for biodiversity beyond 2010 COM(2010) 4 final 8, § 5.9 (NAT.471-CESE 1178/2010, Sept. 15, 2010).

284. Defra, A Strategy for England's wildlife and ecosystem services, Biodiversity 2020 Indicators: 2012 Assessment 85, Tables 13.3 & 13.4 (May 2012). In 2009 and 2011, 6% and 5% of respondents, respectively, answered that they did not know. *Id.* The percentages of people who had thought about the loss of biodiversity in the UK are as follows: in 2011, 6% had given it a great deal of thought, 17% had given it a fair amount of thought, 4% had given it a little thought, and 33% had not given it any thought; in 2009, 7% had given

It is not surprising that public perception of the impacts from the loss of biodiversity is largely unknown. Many people live in urban areas and are not aware of the threat caused by the loss that is taking place outside those areas. Whereas air and water pollution and the unlawful dumping of waste on land are readily apparent in many cases; the loss of biodiversity tends to be invisible. Further, whilst many people recognise that their lives have benefitted from improved air and water quality as a result of EU legislation, the loss of biodiversity is often associated only with the loss of exotic species far beyond the EU.[285]

In addition, the public in the EU has grown accustomed to cheap food and year-round availability of fruit and vegetables, made possible by globalised markets that involve large scale food production and long-distance transport. It will be difficult to persuade the public to change these eating patterns, which are destroying localities that depend on the continued viability of small agro businesses whose management of land conserves biodiversity.[286]

Ⅵ. Future Measures to Halt the Loss of Biodiversity

Key mechanisms that are being studied and adopted to halt the loss of biodiversity in the EU are:

• raising public awareness;

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biodiversity a great deal of thought, 14% had given it a fair amount of thought, 25% had given it a little thought, and 49% had not given it any thought; and in 2007, 6% had given it a great deal of thought, 25% had given it a fair amount of thought, 36% had given it a little thought, and 32% had not given it any thought. *Id.*

285. *See U.N.: Tiger on 'verge of extinction'*, NBC News (Mar. 15, 2010); available at http://www.msnbc.msn.com/id/35873771/ns/world_news-world_environment/t/un-tiger-verge-extinction/ (accessed Aug. 2, 2012)*; Animal Extinction – the greatest threat to mankind*, The Independent (Apr. 30, 2007) ("[w]hen we hear of extinction, most of us think of the plight of the rhino, tiger, panda or blue whale"); available at http://www.independent.co.uk/environment/animal-extinction--the-greatest-threat-to-mankind-397939.html?printService=print (accessed Aug. 2, 2012); *see also Biodiversity is not just about saving exotic species from extinction*, The Guardian (Jan. 11, 2010); available at http://www.guardian.co.uk/environment/cif-green/2010/jan/11/biodiversity-year-of-international-biodiversity (accessed Aug. 2, 2012).

286. *See* Protected Landscapes and Seascapes, vol. 1, Protected Landscapes and Agrobiodiversity Values 17 (eds. Thora Amend, Jessica Brown, Ashish Kothari, Adrian Phillips & Sue Stolton, IUCN & GTZ, 2008).

- legislative controls;
- acquisition of land;
- management agreements;
- non-governmental acquisition of interests in land to restrict its use;
- biodiversity offsetting and habitat banking; and
- PES.

Some of the measures, such as raising public awareness and legislative controls, are relevant on an EU level. Other measures, such as the acquisition of land and management agreements, depend on individual regions and localities. The following is a brief review of the measures, the application and adaptation of which, together with other measures such as the reform of sectoral policies and subsidies that are causing a loss of biodiversity, are crucial to the new governance.

A. Raising Public Awareness

Massive efforts are needed to increase public awareness. Unless the public wishes to halt the loss of biodiversity, they will not change their lifestyles to do so. There is no economic gain for the changed behaviour and no sanctions if behaviour is not changed.[287]

Raising public awareness includes changing the perception that halting the loss of biodiversity threatens economic development.[288] The conversion of land to agriculture, forestry and other economic uses has improved the living standards of millions of people in the EU. Although the continuing loss of biodiversity threatens to undermine these improvements,[289] the current level of public awareness of the effects of the loss indicates that persuading people that biodiversity – and their standard of life – is decreasing will be most difficult.

The Commission is promoting public awareness of the implications of the

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287. *See* Louise Fromond, Jukka Simila & Leila Suvantola, *Regulatory Innovations for Biodiversity Protection in Private Forests: Towards Flexibility,* 21 J. Envtl. L. 1, 10 (2009) (hereinafter Louise Fromond *et al.*).

288. *See, e.g.*, Message from Malahide, *supra* note 133, at 7, § 4.4 ("Until the person in the street understands that biodiversity provides for his/her wellbeing and that decisions he/she makes and actions he/she takes impact on biodiversity's ability to do so, the 2010 targets will simply not be achieved").

289. *See* M. Kettunen *et al.*, *supra* note 81, at 58, § 5.1.

loss of biodiversity by, among other things, calling for funding to promote awareness of environmental matters including biodiversity in the LIFE programme for January 2014 to December 2020[290] and developing a major communication campaign, with Member States, to be launched in 2013.[291] Awareness raising by Member States will be crucial because they, not the EU, are responsible for education and training curricula.[292]

B. Legislative Controls

The legislation to halt the loss of biodiversity in the EU is the Birds and Habitats Directives (to protect specified species and natural habitats) and the ELD (to impose liability on an operator who damages such species and habitats and other natural resources). This legislation is not command and control legislation that is generally adopted to change behaviour that harms the environment. The Birds and Habitats Directives do not require owners of Natura 2000 sites to carry out specified actions to conserve biodiversity at their own cost; landowners are generally compensated for the restrictions on their land. The ELD is liability legislation; not regulatory legislation.

There is, of course, the argument that landowners should not be compensated for restrictions on the use of their land because ownership of land is already subject to many restrictions ranging from nuisance, planning legislation and other controls that limit its development.[293] Command and control legislation, which would require landowners to bear the cost of conserving biodiversity for the public at large, however, is generally perceived as unfair[294] and

290. *See* Proposal for a Regulation of the European Parliament and of the Council on the Establishment of a Programme for the Environment and Climate Action (LIFE) 11, recital 11; 22, art. 12 (COM(2011) 874 final, Dec. 12, 2011) (hereinafter COM(2011) 874 final)

291. *See* COM(2011) 244 final, *supra* note 156, at 11, action 3a).

292. Communication from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions, Thematic Strategy on the Sustainable Use of Natural Resources 9, § 5.3 (COM(2005) 670 final, Dec. 21, 2005).

293. *See* Joseph L. Sax, *Using Property Rights to Attack Environmental Protection,* 14 Pace Envtl. L. Rev. 1, 3 (1996).

294. *See* James Boyd, Kathryn Caballero & R. David Simpson, *The Law and Economics of Habitat Conservation: Lessons from an Analysis of Easement Acquisitions,* 19 Stan. Envtl. L.J. 209, 217-19 (2000) (hereinafter James Boyd *et al*.).

is rarely used.[295] Also, the beneficiaries of ecosystem services are owners and users of land outside the land providing the services.

As indicated in this article, the Birds and Habitats Directives are weak in protecting species and areas outside the Natura 2000 network. It would, however, be difficult for the EU to amend the Directives (or to adopt new legislation) to facilitate the extension of the network to include green infrastructure and other areas. Whilst the Commission suggested, in 2009, that it may be necessary to consider establishing a permeable, that is, less fragmented, landscape so as to enhance the connectivity of Natura 2000 sites,[296] it has not proposed legislation to protect additional areas. The long history of opposition to the establishment of the Natura 2000 network indicates that further opposition would inevitably result and such an option is not feasible.

Further, even if additional funding was available (which is unlikely), extension of the Natura 2000 network could result in a substantial loss of biodiversity. A predictable effect would be that landowners in areas being considered for designation would develop their land before their right to do so was restricted or prohibited.[297] Such an approach could thus result in the loss of the most biologically diverse land; there is no priority system in development consents that assesses whether proposed development results in a greater loss to biodiversity than other land.[298]

In addition, some landowners could destroy the habitat value of their land so that it would not be included in the network.[299] An infamous incident in the US concerned a man called Ben Cone, who had improved the environmental quality of his land due to his interest in wildlife. One species that

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295. *See* Jamison Colburn, *Habitat Reserve Problem-Solving: Desperately Seeking Sophisticated Intermediaries*, 41 Envtl. L. 619, 622 (2011) (possessory stewardship, not regulatory controls, is used for most conservation in US).

296. European Commission, White Paper, Adapting to climate change: Towards a European framework for action 11, § 3.2.3 (COM(2009) 147 final, Apr. 1, 2009).

297. *See* Jonathan Remy Nash, *Trading Species: A New Direction for Habitat Trading Programs*, 32 Colum. J. Envtl. L. 1, 10-11 (2007).

298. *See id.*

299. *See* Joseph L. Sax, *Land Use Regulation: Time to Think About Fairness*, 50 Nat. Resources J. 455, 466 (Spring 2010) (commenting that "endangered species situation provides the ultimate example [of no good deed going unpunished]; we wait until the species is about to become extinct, with the predictable result that the only regulated party will be the rare owner who has not destroyed the habitat value of his land, while everyone else has made their land useless for that purpose through use").

benefitted from the improvements was the red-cockaded woodpecker, which was listed as endangered under the ESA. Pursuant to the listing, the US Fish and Wildlife Service prohibited logging over 1,000 acres of Mr Cone's land, decreasing its value by about $2 million. Mr Cone commented that "I cannot afford to let those woodpeckers take over the rest of the property. … I'm going to start massive clearcutting", which he proceeded to do.[300]

This does not mean that further legislation should not be considered. Establishment of the Natura 2000 network, however successful, cannot by itself prevent the continued loss of biodiversity in the EU. Also, neither the Birds nor the Habitats Directive incorporates the ecosystem approach.

Measures to consider could include placing restrictions on the use of land outside the Natura 2000 network in order to allow the migration of species and habitats from the network and to halt the loss of species and habitats that are not protected by the Directives. The nature and extent of such restrictions would need to be carefully considered and should be accompanied by market-based instruments to prevent them resulting in the de facto designation of further Natura 2000 sites by another name that do not benefit from the funding available for Natura 2000 sites. Another measure to consider is ensuring that the overall favourable conservation status of protected species is considered in management plans.[301]

A further crucial issue that must be considered and resolved relates to the difference between a Natura 2000 site and a site outside the Natura 2000 network. The owner of a Natura 2000 site commits a criminal offence if he unlawfully damages or destroys a protected species or natural habitat on his land. The landowner, therefore, cannot benefit from biodiversity offsetting (described below). In contrast, the owner of a site outside the Natura 2000 network is less likely to be subject to the same liability.

There are also substantial further differences between the ownership of a

300. *See* Jonathan H. Adler, *Money or Nothing: The Adverse Environmental Consequences of Uncompensated Land Use Controls*, 49 B.C. L. Rev. 301, 321 (2008) (citing Lee Ann Welch, *Property Rights Conflicts Under the Endangered Species Act: Protection of the Red-Cockaded Woodpecker*, in Land Rights: The 1990's Property Rights Rebellion 151, 173-85 (Bruce Yandle, ed., 1995)); *see also id.* at 321-22 (describing similar instances of landowners destroying or damaging their land to avoid listing).

301. *See* Luigi Maiorano *et al., supra* note 167, at 1443; *see also* An Cliquet *et al., supra* note 179, at 150 (Directives provide necessary tools for short-term challenges but an Ecosystem Services Directive could be useful in future to supplement Birds and Habitats Directives).

Natura 2000 site and the ownership of adjacent sites. These include a decrease in the value of a Natura 2000 site due to restrictions on its use versus an increase in the value of adjacent land due, in some cases, to its proximity to undeveloped land.[302] An extension of controls to include adjacent land could well lead to widespread opposition due to the potential for a reduction in its value.

C. Acquisition of Land

The most protective way to conserve biodiversity has been, and still is, purchasing the property or properties that have land uses that conserve biodiversity. This measure, whilst widespread and successful, is expensive. It may also result in the cessation of activities compatible with conservation.[303]

Further, experience has shown that purchases of land for conservation purposes should be voluntary; compulsory purchase tends to result in widespread opposition.[304] Current economic conditions may also mean that the ability of governmental entities to continue purchasing land for conservation purposes is limited, at least for the foreseeable future.

D. Management Agreements

Management agreements have been, and still are, widely used to halt the loss of biodiversity. As discussed in this article, these are contracts between a governmental authority and a landowner that restrict the landowner's use of his land and, in some instances require him to carry out works to conserve biodiversity in exchange for compensation.

Management agreements have frequently been used in tandem with the purchase of land to establish a network of landscapes used to protect biodiversity.[305] The agreements are typically for a specified period of time. In Ger-

302. *See* SEC(2004) 770, *supra* note 75, 11, § 1.5.

303. *See* James Boyd *et al.*, *supra* note 294, at 214-15.

304. *See infra* text accompanying notes 337-38.

305. A recent example is the purchase by the Centre for Economic Development, Transport and the Environment for Central Finland and the Ministry of the Environment of 795 hectares of peatland from UPM, a large forestry company, together with entering into agreements to establish peatland conservation areas on 323 hectares with UPM in 2012 in order to restore the peatland. UPM and the Ministry of the Environment have agreed on peatland

many, for example, they are generally for periods of five to seven years.[306]

E. Non-Governmental Acquisition of Interests in Land to Restrict its Use

Voluntary agreements to acquire an interest in land for conservation purposes have also been, and continue to be, widely used. The agreements are market-based instruments that compensate landowners for restrictions on the use of their land. There is a wide variation in the agreements including paying a landowner for the restriction in the use of his land or providing him with the right to develop land in another, less sensitive, area.

One type of agreement that is increasingly being used is a conservation easement. This is a voluntary agreement by which a landowner sells or donates interests in his land to a nature conservation organisation or other person. The agreement restricts the use and management of the land so as to further its conservation. Conservation easements are usually granted in perpetuity. They differ from management agreements in that they are entered into by a private person and a landowner rather than by a governmental authority and a landowner.[307]

There are many variations of conservation easements to tailor them to individual sites. For example, some allow the holder of the easement to enter the land to carry out specified actions such as monitoring the landowner's compliance with the terms of the agreement or to carry out biological assessments of the status of the species and natural habitats on the land. They also differ in the activities that the landowner is permitted to carry out.[308]

Conservation easements are not limited to purchases of interests in land to be conserved. They also include agreements in which the holder of the easement is granted a tax reduction, depending on the relevant legislation recogn-

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nature conservation in Central Finland (May 11, 2012); available at http://www.upm.com/EN/MEDIA/All-news/Pages/UPM-and-the-Ministry-of-the-Environment-have-agreed-on-peatland-nature-conservat-001-Fri-11-May-2012-13-00.aspx (accessed July 22, 2012).

306. *See* M. Kettunen *et al.*, *supra* note 81, at 150.

307. *See* Colin Reid, *supra* note 123, at 211.

308. *See* Josh Eagle, *Notional Generosity: Explaining Charitable Donors' High Willingness to Part with Conservation Easements*, 35 Harv. Envtl. L. Rev. 47, 52-53 (2011) (hereinafter Josh Eagle).

ising such reductions.[309] In large part due to the availability of tax deductions for the donation of conservation easements in the US, the easements have been particularly successful, with the amount of land protected under them increasing from approximately 500,000 acres in 1990 to over 30 million acres by 2011.[310] A predictable problem, of course, is the potential for their abuse.[311]

F. Biodiversity Offsetting and Habitat Banking

Biodiversity offsetting is a mechanism by which the loss of biodiversity at a site to be developed is offset by enhancing biodiversity at another site. Whilst biodiversity offsetting is a market-based instrument, unless it is purely voluntary it is invariably accompanied by legislation that specifies a cap, such as no net loss of biodiversity.[312] This means that a person who wishes

309. US federal law, for example, has specific provisions to allow tax deductions for conservation easements. 26 U.S.C. § 170(h); *see also* Land Trust Alliance, Conservation Donation Rules at http://www.landtrustalliance.org/policy/tax-matters/rules/conservation-donation-rules/ (accessed July 28, 2012); Josh Eagle, *supra* note 308 at 56-57 (discussing US federal scheme for donated conservation easements; James Boyd *et al.*, *supra* note 294, at 244-46 (same).

310. *See* Logan Yonavjak & Todd Gartner, *Gaining Ground, Increasing Conservation Easements in the U.S. South*, World Resources Institute Issue Brief 7 (Aug. 2011); available at http://pdf.wri.org/gaining_ground.pdf (accessed July 29, 2012).

311. *See* Internal Revenue Service, Conservation Easements at http://www.irs.gov/charities/article/0,,id=137244,00.html (accessed July 28, 2012).

312. *See* Arild Vatn, David N. Barton, Henrik Lindhjem, Synne Movik, Irene Ring & Rui Santos, Can Markets Protect Biodiversity?; An Evaluation of Different Financial Mechanisms 55-57 (Department of International Environment and Development Studies, Norwegian University of Life Sciences, Noragric Report No. 60, June 2011) (hereinafter Arild Vatn *et al.*). The origin of biodiversity offsetting began in the US in the 1970s when the US Army Corps of Engineers (Corps of Engineers), which grants permits under section 404 of the Clean Water Act allowing wetlands to be dredged or filled subject to specified conditions, authorised compensatory mitigation under which a person who received a so-called section 404 permit could compensate for the loss of aquatic environment by providing a "compensation site". 33 C.F.R. § 332.3; *see* J.B. Ruhl, *Ecosystem Services and the Clean Water Act: Strategies for Fitting New Science into Old Law,* 40 Envtl. L. 1381, 1391-93 (2010). The Corps of Engineers had been reluctant to deny applications for the permits. In turn, the US Environmental Protection Agency (EPA) had resisting vetoing them. The US Congress agreed a compromise between damaging the aquatic environment and the Clean Water Act's principal aim of "'restor[ing] and maintain[ing] the chemical, physical, and biological integrity of the Nation's waters'" in the 1977 amendments to the Clean

to develop a site must obtain quantified "credits" to equal the loss of biodiversity on his land, which is calculated as quantified "debits". The credits, sometimes known as tradable development rights, may be purchased from a qualified person or a "bank", sometimes known as a conservation or habitat bank. The purchase of credits from a conservation bank is known as habitat banking, bio-banking, mitigation banking or conservation banking.

Habitat banking allows credits to be "banked" in advance."[313] This is achieved by purchasing the same value of credits from a conservation bank in the form of permanently dedicated land either where the project is located or an ecologically relevant area. The agreement with the bank includes details such as a management plan for the land, funding to carry out the plan in perpetuity, activities that may be carried out on the land, and long-term monitoring and reporting requirements to ensure that management objectives are achieved.[314]

Water Act by allowing mitigation. *See* Philip Womble & Martin Doyle, *The Geography of Trading Ecosystem Services: A Case Study of Wetland and Stream Compensatory Mitigation Markets*, 36 Harv. Envtl. L. Rev. 229, 246 (2012) (quoting 33 U.S.C. § 1251(a)). The subsequent development of wetland mitigation banking was largely due to highway and public works departments in various states establishing banks of sites which could then be used when development occurred. *See* J.B. Ruhl, James Salzman & Iris Goodman, *Implementing the New Ecosystem Services Mandate of the Section 404 Compensatory Mitigation Program – A Catalyst for Advancing Science and Policy*, 38 Stetson L. Rev. 251, 254 (2009). The "banks" must meet specified criteria in order to be approved to sell credits. *See, e.g.*, 33 C.F.R. § 332.1 (Part 332 establishes "standards and criteria for compensatory mitigation, including on-site and off-site permittee-responsible mitigation, mitigation banks, and in-lieu fee mitigation to offset unavoidable impacts to [US waters]"). Relatively recently, the concept of mitigation banking has been applied to habitat conservation plans under the ESA. *See* U.S. Fish & Wildlife Service, Habitat Conservation Plans Factsheet; link available from http://www.fws.gov/endangered/what-we-do/hcp-overview.html (accessed July 20, 2012). The plans are prepared as part of an application for an "incidental take permit", that is, a permit for a lawful activity that will damage the natural habitat of a species that is listed, proposed for listing, or is a candidate listed species under the ESA. The application must set out mitigation measures and show that the activity will not significantly reduce the likelihood that the species will survive or recover in the wild. Mitigation measures include, among other things, preservation of existing habitat by purchasing land or entering into a conservation easement. *Id.*

313. *See* Arild Vatn *et al. supra* note 312, at ix; *see also* Ian Dickie, Graham Tucker *et al.*, The Use of Market-Based Instruments for Biodiversity Protection – The Case of Habitat Banking 3-4 (Feb. 2010) (Eftec & Institute for European Environmental Policy, Project ENV. G.1/ETU/2008/0043) (hereinafter Ian Dickie *et al.*).

314. *See* J.B. Ruhl, Alan Glen & David Hartman, *A Practical Guide to Habitat Conservation Banking Law and Policy*, 20 Nat. Resources & Env't 26, 29-30 (2006).

Advantages of habitat banking schemes include compensating for relatively small incidents of damage that would otherwise not be regulated,[315] and the ability of a conservation bank to hold large areas of contiguous biologically diverse land.[316] Disadvantages include the potential for the scheme to result in actual damage to natural habitats in exchange for dysfunctional "fictional environmental gains".[317] Administration costs may be high. There is also a need for governmental authorities to monitor habitat banks adequately.[318]

The potential to use habitat banking for the Natura 2000 network has been considered. A recent study concluded, however, that its use was more likely for compensatory remediation under the ELD for damage to protected species and natural habitats than compensatory measures under the Habitats Directive.[319]

G. Payments for Ecosystem Services

PES is a relatively new approach that follows from the shift in traditional nature conservation legislation to the ecosystem services approach. The approach has two main components; valuing ecosystem services, and PES. PES is a market-based mechanism that involves paying owners, and in some cases users, of land to compensate them for actions carried out by them to increase ecosystem services provided by the land to other persons.

The concept behind PES is not new. It began in the US in 1997 and has increased rapidly since that time.[320] The term "ecosystem services" began to be widely used in 2004 following its use in the UN Millennium Ecosystem

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315. *See* Dave Owen, *Critical Habitat and the Challenge of Regulating Small Harms*, 64 Fla. L. Rev. 141, 193 (2012) (hereinafter Dave Owen).

316. *See* Fred Bosselman, *Swamp Swaps: The "Second Nature" of Wetlands*, 39 Envtl. L. 577, 586 (2009).

317. *See* Dave Owen, *supra* note 315, at 193.

318. For example, a study of mitigation banks in Ohio in 2006 indicated that 25% of the area in the bank was not wetlands, 25% was poor quality wetlands, 58% was fair quality wetlands, and only 18% was high quality wetlands. *See* James Murphy, Jan Goldman-Carter & Julie Sibbing, *New Mitigation Rule Promises More of the Same: Why the New Corps and EPA Mitigation Rule will Fail to Protect our Aquatic Resources Adequately*, 38 Stetson L. Rev. 311, 327 (2009).

319. *See* Ian Dickie *et al., supra* note 313, at 245, § 11.2.

320. *See* J.B. Ruhl & James Salzman, *The Law and Policy Beginnings of Ecosystem Services*, 22 J. Land Use & Envtl. L. 157, 158-61 (2007) (describing beginnings of concept).

Assessment.[321]

There are four types of ecosystem services; provisioning services, regulating services, cultural services, and supporting services. Provisioning services provide goods from ecosystems including crops, livestock, fish and other food, wood and fibre, medicinal resources, and fresh water. Regulating services are services regulated by ecosystems including: floodplains and other ecosystems that regulate flooding; pollinators that regulate plants; peatlands, bogs and forests that regulate climate by acting as carbon sinks; vegetation, forests and wetlands that regulate air quality, water flows and soil erosion. Cultural services are non-material benefits derived from ecosystems including aesthetic and landscape values, spiritual values, tourism including ecotourism, and opportunities for outdoor learning and recreation. Supporting services support the other three services; they include soil formation and nutrient and water recycling.[322]

Many studies have been carried out on the valuation of ecosystem services and benefits provided by them. In 2001, the Organisation for Economic Co-operation and Development (OECD) began developing and promoting methods to value the services and to encourage their use in biodiversity policies, as well as to identify opportunities to create markets for biodiversity goods and services.[323]

The most influential reports have been prepared by TEEB (the Economics of Ecosystems & Biodiversity).[324] Their purpose is to analyse the global

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321. *See* COM(2011) 17 final, *supra* note 264, at 8, § 3.1. Market-based mechanisms are, of course, also not new. They have been used in various contexts, in particular emission trading systems for greenhouse gases. *See, e.g.,* Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a scheme for greenhouse gas emission allowance trading within the Community and amending Council Directive 96/61/EC (consolidated version).

322. *See* State and Outlook 2010, Biodiversity, *supra* note 5, at 25-30.

323. OECD, Environmental strategy for the first decade of the 21st century, Objective 1, Biodiversity 10 (adopted by OECD Environment Ministers, May 16, 2001).

324. TEEB was established following a meeting of the environment ministers of the G8 countries plus China, India, Brazil, Mexico and South Africa at Potsdam on 15-17 March 2007. Germany proposed the study as part of the so-called Potsdam Initiative. *See* Potsdam Initiative – Biological Diversity 2010; link available at http://www.bmu.de/english/service_downloads/doc/20197.php (accessed July 1, 2012). The proposal was endorsed by the G8 and the five other countries at the Heiligendamm Summit on June 6-8, 2007. *See generally Recognising nature's economic value,* 27 Natura 2000 10-12 (Dec. 2009); s*ee also* http://www.teebweb.org (accessed June 16, 2012). The series of reports are for ecologists

economic benefits of biodiversity, the costs of its loss, and the failure to take protective measures compared with the costs of effective conservation. TEEB recognises that valuing ecosystem services "is not ... a panacea, but rather [is] a tool to help recalibrate the faulty economic compass that has led us to decisions that are prejudicial to both current well-being and that of future generations. That is, "[t]he invisibility of biodiversity values has often encouraged inefficient use or even destruction of the natural capital that is the foundation of our economies".[325]

PES links landowners and others who supply ecosystem services with beneficiaries of the services.[326] The concept of PES has various definitions of which the most commonly used is:

"1. a *voluntary* transaction where
2. a *well-defined* ES [environmental service] (or a land-use likely to secure that service)
3. is being 'bought' by a (minimum one) ES *buyer*
4. from a (minimum one) ES *provider*
5. if and only if the ES provider secures ES provision (*conditionality*)."[327]

PES are not payments for biodiversity itself but payments for land uses hospitable to biodiversity.[328] They can be used only for ecosystem services that go beyond legal requirements on land owners and users; they are not subsidies.[329] Examples in developed nations that are often cited in studies include payments by Vittel, a commercial provider of bottled spring water in France

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and economists, international and national policymakers, local and regional policymakers, business, and citizens. *Id.*

325. The Economics of Ecosystems and Biodiversity: Mainstreaming the Economics of Nature: A synthesis of the approach, conclusions and recommendations of TEEB 3 (2010) (hereinafter TEEB 2010); available from http://www.teebweb.org/ (accessed June 16, 2012).

326. UK Department for Environment, Food and Rural Affairs, Payments for Ecosystem Services 5 (Helen Dunn, Defra Evidence and Analysis Series Paper 4, Oct. 2011) (hereinafter Helen Dunn).

327. Sven Wunder, Center for International Forestry Research, Payments for Environmental Services; Some Nuts and Bolts 3 (CIFOR Occasional Paper 42, 2005); *see* Arild Vatn *et al.*, *supra* note 312, at 27.

328. *See* Stefano Pagiola, Paolo Agostini, José Gobbi, Cees de Haan, Muhammad Ibrahim, Enrique Murgueitio, Elías Ramírez, Mauricio Rosales & Juan Pablo Ruíz, Paying for Biodiversity: Conservation Services in Agricultural Landscapes 13 (World Bank Environment Department, Environment Department Paper No. 96, May 2004).

329. Helen Dunn, *supra* note 326, at 5, 16.

to farmers to adopt less intensive farming techniques to decrease nitrates entering the watershed.[330]

Another frequently cited example involves payments to landowners in the Catskill Mountains in New York State to protect the watershed in that region in order to supply drinking water to New York City.[331] The history of the scheme demonstrates advantages and disadvantages of current strategies to halt the loss of biodiversity and, thus, indicates measures that are likely to succeed and those that are unlikely to do so.

In 1989, the EPA, pursuant to the federal Safe Drinking Water Act, ordered New York City to improve the poor quality of its drinking water. The EPA gave New York City two alternatives. It could construct a water filtration plant, which had an estimated capital cost between $4 billion and $6 billion and annual operating and maintenance costs between $200 million and $400 million. Alternatively, it could take further measures to protect the 2,000 square mile watershed in the Catskill Mountains in which 230,000 people lived.[332] The EPA had concluded that current measures were inadequate. New York City chose the second alternative.

In 1991, the New York State Department of Health granted New York City a conditional waiver on the requirement to construct filtration facilities provided it purchase more buffer land in the watershed region, enact stricter regulations to protect the watershed and hire more people to police the region to ensure that it was being adequately protected under existing regulations and to prosecute offenders.[333]

The proposed regulations were much stricter than the existing ones. They included restrictions on agriculture, banning development near watercourses, and even banning the expansion of cemeteries. The proposal led to strong opposition from landowners in the Catskills who accused New York City of attempting to depopulate their region.[334] Opposition to the proposed regula-

330. *Id.* at 20-21.

331. *See, e.g., id.* at 23-24; TEEB 2010¸ *supra* note 325, at 20.

332. *See* Michael C. Finnegan, *New York City's Watershed Agreement: A Lesson in Sharing Responsibility,* 14 Pace Envtl. L. Rev. 577, 581, 618 (1997) (hereinafter Michael Finnegan). Under the Surface Water Treatment Rule, issued by the EPA in 1989 pursuant to the Safe Drinking Water Act, the only alternative to constructing water filtration works was developing a comprehensive watershed management plan. *See id.* at 617.

333. *See id.* at 619-20.

334. *See id.*

tions led to litigation, which included 33 towns and five county governments forming a coalition to oppose their promulgation.[335] This was because, in effect, the regulations severely restricted the use of land owned and used by people living in the watershed region not for their benefit but for the benefit of people living in New York City.[336]

As a result of the negotiations that followed, the parties eventually entered into a Memorandum of Agreement in 1997.[337] Under the Memorandum, New York City voluntarily purchased land in the watershed (as opposed to the compulsory purchases that had preceded it and helped fuel opposition), entered into conservation easements and upgraded infrastructure in the watershed.

In order to fund the scheme, New York City and New York State committed $260 million and $7.5 million, respectively, to purchase land essential to protecting the watershed.[338] In addition, New York City provided an additional $400 million for other measures, including conservation easements with landowners, to minimise water pollution.[339] This alternative was still less expensive than constructing water filtration and treatment facilities.[340] A factor that also benefitted New York City was the existence of state law that provided it with substantial authority to regulate the watershed, thus resulting

335. *See id.* at 621. The coalition even received $100,000 in funding from the New York State budget, an appropriation secured by a State Senator who represented part of the watershed region. *Id.*

336. *See id.* at 627.

337. New York City Watershed Memorandum of Agreement, dated January 21, 1997, between New York City, New York State, the US Environmental Protection Agency, the Coalition of Watershed Towns, the Catskill Watershed Corporation, the County of Putnam, and the County of Westchester; link available at http://www.nysefc.org/Default.aspx?TabID=76&fid=389#dltop (accessed July 29, 2012); *see also* Mark Pires, *Watershed Protection for a World City: the Case of New York*, 21 Land Use Policy 161, 161-75 (2004) (describing history and implementation of plan); Matthew Gandy, *The Making of a Regulatory Crisis: Restructuring New York City's Water Supply*, 22(3) Transactions of the Institute of British Geographers 338, 338-58 (1997) (describing history of crisis in New York City's water supply system in 1990s).

338. *See* Michael Finnegan, *supra* note 332, at 626.

339. SEC(2006) 607, *supra* note 9, at 28, § 2.4.2.

340. *See* Barton H. Thompson, Jr., *Ecosystem Services and Natural Capital: Reconceiving Environmental Management,* 17 N.Y.U. Envtl. L.J. 460, 480 (2008) (hereinafter Barton Thompson).

in lower payments than would otherwise have been required.[341]

The New York City scheme, in effect, substituted less expensive ecosystem services for the use of technology in the form of water filtration facilities.[342] It shows that technology is a substitute for ecosystem services in some cases but only at a much greater cost than conserving biodiversity; it does not show that technology is a substitute for all ecosystem services.

PES are not a solution to the overall loss of biodiversity in the EU; the New York City scheme also shows that they generally require government funding. In this respect, the New York City scheme was somewhat unusual in that the users of the water would have had to pay whether or not an ecosystem or a technological option was selected.

The effectiveness of PES also depends on criteria specific to individual locations. For example, the purchase of land and the adoption of management plans can only provide ecosystem services if a sufficient number of landowners are involved. The size of individual landholdings is also critical because the administrative costs of entering into agreements rises with the number of landowners.

One area in which a network of ecosystem services has been piloted is Southern Finland. The Forest Biodiversity Programme involves regional forestry authorities, landowners, NGOs and others, to show the benefits of ecological corridors. The results from the pilots have shown that they tend to promote co-operation between organisations, not landowners. Whilst they promoted conservation, they did not result in uniformity of connectivity of the protected sites.[343] They also showed that a sufficiently large number of landowners must be involved to keep administrative costs relatively low.[344] The schemes may work more effectively in regions with larger landholdings[345] but there will inevitably be other issues to consider.

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341. *Id.* at 482.

342. *See* J.B. Ruhl, *Agriculture and Ecosystem Services: Strategies for State and Local Governments,* 17 N.Y.U. Envtl. L.J. 424, 440 (2008) (PES can result in local jurisdictions avoiding costs by substituting regulation of ecosystem services for technological service infrastructure).

343. *See* Louise Fromond *et al., supra* note 287, at 14.

344. *Id.* at 15. This was a crucial issue in Southern Finland, in which 73% of the forests are owned by private landowners, with over half of the sites being less than 20 hectares with many small landholdings. *Id.* at 5.

345. *Id.* In Sweden, for example, a quarter of forest land is owned by large corporations. In

Another drawback of PES is the potential to favour one type of habitat or species over another. For example, a recent consultation on sustainable development indicators in the UK stated that the "longer-term intention is to focus on species and habitats that are important for ecosystem services".[346] This focus, whilst understandable especially in the current depressed economy, does not take into account the intrinsic value of species and natural habitats. Another drawback of PES is the free-rider effect in which persons or organisations that also benefit from the services wait for another person or organisation to pay for them.[347]

Other issues that must be considered include the perception that biodiversity is no longer part of the common heritage but is, instead, a commercial commodity.[348] This perception will be aggravated if transactions involving PES are carried out privately with no public participation or even knowledge. Another crucial issue is persuading people to begin paying for ecosystem services when they have received them at no cost in the past.[349]

PES, thus, appear to be part of the solution but not the entire solution to the problem of halting the loss of biodiversity. That is, they are part of the new governance that is needed.

1. Payments for Ecosystem Services in the Natura 2000 Network

Studies are being carried out to identify the relationship between the level of funding for the Natura 2000 network and ecosystem services and related socio-economic benefits provided by it.[350] The studies include an assessment by the Commission of the overall value of the services based on the method-

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France, most forest land is privately owned, with over two-thirds of the private holdings less than one hectare. Further, in France, about two-thirds of forests in metropolitan areas are privately owned; 10% are owned by the State with the remainder owned by municipalities and other governmental bodies. *Id.*

346. Department for Environment, Food and Rural Affairs, Sustainable Development Indicators Consultation, Annex 1 Proposed Sustainable Development Indicators (SDIs) 2012 40, § 8.9 (July 2012); link available from http://www.defra.gov.uk/consult/2012/07/24/sus-dev-indicators/ (accessed Aug. 1, 2012).

347. *See* Barton Thompson, *supra* note 340, at 478.

348. *See* Colin Reid, *supra* note 123, at 228-29.

349. *See id.* at 222-23.

350. *See* M. Kettunen *et al.*, *supra* note 81, at 61, § 5.2.

ology developed for TEEB.[351]

A report published in December 2011 estimated the annual monetary value of benefits from the network at between €223 billion and €314 billion.[352] The report considered that PES could include a contribution by users of water who benefit from the water retention and water quality services provided by a Natura 2000 site to its maintenance, management and restoration.[353] It suggested public/private partnerships to include: companies that depend on a steady stream of clean water; carbon offsetting schemes; businesses that benefit from a site's natural beauty or other characteristics for recreation and tourism; and businesses that could benefit from biodiversity-friendly products such as honey, meat or beer certified as being associated with Natura 2000 sites.[354] Purely private partnerships to halt the loss of biodiversity are still relatively rare. In most cases, governmental authorities are involved in some capacity.

2. Relationship Between Payments for Ecosystem Services and Property Law

A further crucial issue is the relationship between PES and property law. Property law is based on the ownership of distinct pieces of land. It is, thus, the mechanism that has enabled – even driven – fragmentation of the EU and other areas. Ecosystems, in contrast, do not respect the boundaries of individual landholdings and cannot continue to exist if they are confined within them when conditions in those landholdings change or are affected by outside influences. The current concept of property, in fact, seems almost designed to ensure the continued loss of biodiversity.

Issues that must be resolved include the distinction between the concepts

351. SEC(2011) 1573 final, *supra* note 72, at 13, § 6.3. The knowledge will allow investments in Natura 2000 to be factored into funding for decisions for regional development and other sectors that are primarily based on socio-economic factors. *Id.*

352. P. ten Brink, S. Bassi, T. Badura, M. Kettunen, L. Mazza & K. Hart (Institute for European Environmental Policy) with M. Rayment, M. Pieterse & E. Daly (GHK), H. Gerdes, M. Lago & S. Lang (Ecologic Institute), A. Markandya, P. Dunes & H. Ding (Metroeconomica) & R. Tinch & I. Dickie (Eftec), Estimating the Overall Economic Value of the Benefits Provided by the Natura 2000 Network, Synthesis Report 15 (Dec. 2011) (Commission Contract 07.0307/2010/581178/SER/B3) (hereinafter P. ten Brink *et al*.).

353. *See* P. ten Brink *et al.*, *supra* note 352, at 43.

354. *Id.*at 44.

of "property" and "environment". The value of natural resources under the "property concept" lies in their use and transformation; the value of natural resources in the "environment concept" lies in their non-use and non-transformation.[355] Ecosystem services are directly opposite to the property concept that considers that nature is valuable only if it is transformed.[356] Further, the provision of ecosystem services generally requires the participation of many landowners and, thus, persuading them to manage ecosystems as a whole, in effect by recombining the fragments.[357] As described above, this has invariably proven difficult to accomplish in practice. As Professor Sax has stated, "while virtually every other interest that we consider vital has been made the subject of enforceable legal rights, our heritage of biodiversity stands largely outside the framework of established jurisprudential theory, and thus – except to the extent governments find it in their interest to act protectively – exposed to the ravages of human activity."[358]

Yet another issue is that services derived from ecosystems generally benefit property away from the site that provides them. The question thus arises as to whether a natural process is a property right.[359] Interests in natural processes circumvent boundaries; a process that differs from traditional property concepts.[360]

Ⅶ. Conclusion

Halting the loss of biodiversity in the EU is at a crossroads. The EU biodiversity strategy was bound to fail as was its target of halting the loss of biodiversity in the EU by 2010. A major reason for the failure is basic. The Commission cannot implement or enforce the EU biodiversity strategy and biodiversity action plans in the national territories of Member States; it can

355. Keith H. Hirokawa, *Three Stories About Nature: Property, the Environment, and Ecosystem Services*, 62 Mercer L. Rev. 541, 569-70 (2011) (hereinafter Keith H. Hirokawa).

356. *Id.* at 576.

357. *See* Dale D. Goble, *The Property Clause: As if Biodiversity Mattered*, 75 U. Colo. L. Rev. 1195, 1197-98, 1200 (2004).

358. Joseph L. Sax, *The Unfinished Agenda of Environmental Law*, 14 Hastings W.-Nw. J. Envtl. L. & Pol'y 1, 5 (2008).

359. *See* Keith H. Hirokawa, *supra* note 355, at 594.

360. *See id.* at 604.

only enforce the provisions of the Birds and Habitats Directives that direct Member States to take specified actions. If, or rather when, a Member State has its own biodiversity strategy, the Member State inevitably implements and enforces that strategy in its national territory instead of the EU strategy. Regardless of the number of strategies and action plans the Commission issues, and regardless of those that are adopted by the Council, this fundamental flaw will remain. The most that the Commission can do is to attempt to persuade Member States to adopt the concepts and measures in the EU strategy and action plans in their own strategies and action plans and to support their implementation of them.

The 2020 target for halting the loss of biodiversity, therefore, will also fail unless there is a single biodiversity strategy and related action plans that consider entire ecosystems and the loss of biodiversity across the EU and which does not stop at Member State borders. Progress towards this approach is being made. In December 2011, the Council invited the Commission "to develop and agree with Member States a common implementation framework to underpin the effectiveness of the Strategy."[361] In June 2012, the Council urged the Commission to address, in the Seventh Environment Action Programme, the further development and implementation of the common implementation framework to achieve the target of halting the loss of biodiversity in the EU by 2020.[362]

The Commission has responded by, among other things, proposing actions such as investments in green infrastructure, and funding for the restoration,

361. Council of the European Union, EU biodiversity strategy to 2020; towards implementation, Council conclusions 4, para. 10 (18862/11, Dec. 19, 2011). The Council also stated that the Commission and Member States should "continue promoting a common approach to nature conservation in the whole EU territory" including its outermost regions and report to the Council in early 2012. *Id.* at 11, para. 37. The Commission reported to the Council in February 2012. *See* Commission Decision of 21.2.2012 concerning the adoption of the 2012 work programme in the framework of the Preparatory Action BEST (Voluntary scheme for Biodiversity and Ecosystem Services in Territories of the EU Outermost Regions and Overseas Countries and Territories) (C(2012) 1037 final, Feb. 21, 2012).

362. Council of the European Union, Conclusion on setting the framework for a Seventh EU Environment Action Programme, 3173rd Environment Council meeting, Luxembourg, 11 June 2012, 5, para. 8. The common framework is to include achievement of the Aichi targets for biodiversity. *Id.* The Sixth Environment Action Programme was the first programme to be adopted by the European Parliament as well as the Council. Whilst this heightens its legal status, the programme is still soft law. Member States are not obliged to comply with its provisions. *See* Sirini Withana *et al.*, *supra* note 93, at 8.

preservation and enhancement of biodiversity under EU funds,[363] as well as publishing the targets for the EU biodiversity strategy to gain public support for it.[364] In addition, the Commission has called for a new governance that includes raising public awareness to halt the loss of biodiversity.[365]

In order to be acceptable, the new governance must be fair and be seen to be fair. Many difficulties, of course, arise, because stakeholders have different views of what is fair. The owner of protected land, such as a Natura 2000 site, is likely to consider that fairness entails compensation for loss of income and restrictions on the use of the land. The opinion of different landowners on the fair level of compensation will also vary. In contrast, the public – and future generations – may consider that persons who benefit from a natural resource should internalise the cost of maintaining biodiversity.[366]

It is also crucial to raise public awareness that the loss of biodiversity is an issue for which there is no overall technological solution.[367] Although technology may provide, at a large cost, part of the solution, it cannot provide the entire solution. History has shown that this is the case. For example, although fish hatcheries and fish farms are vital to the production of food to serve an ever growing human population, they cannot replace salmon streams or the loss of fish in the oceans. The construction of dams and reservoirs can, and does, help control flooding but it is not an alternative to building over floodplains. Simply setting aside biodiversity in protected areas in order to allow economic development to proceed unhindered outside them has, as this article has shown, failed.[368]

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363. *See* Commission Staff Working Document, Elements for a Common Strategic Framework 2014 to 2020 the European Regional Development Fund, the European Social Fund, the Cohesion Fund, the European Agricultural Fund for Rural Development and the European Maritime and Fisheries Fund, Annexes 20/32 (SWD(2012) 61 final, Mar. 14, 2012).

364. *See* The EU Biodiversity Strategy to 2020 (brochure, 2011); available at http://ec.europa.eu/environment/nature/info/pubs/docs/brochures/2020%20Biod%20brochure%20final%20lowres.pdf (accessed Aug. 17, 2012).

365. *See* COM(2011) 874 final, *supra* note 290, recitals 11, 13, arts. 11-12.

366. *See* Louise Fromond *et al.*, *supra* note 287, at 7.

367. *See generally* Garrett Hardin, *The Tragedy of the Commons*, 162 Science 1243, 1243-48 (Dec. 13, 1968).

368. *See* Joseph Sax, *Ownership, Property, and Sustainability,* 31 Utah Envtl. L. Rev. 1, 7 (2011).

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