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GLOBAL PUBLIC SAFETY SYSTEMS. RESEARCH ON THE COHERENCE AND EFFECTIVENESS OF INTERNATIONAL AGREEMENTS PROTECTING ECOLOGICAL CONNECTIVITY

Dr. Marcin Pchałek

Regional Environmental Impact Assessment Committee, Poland
e-mail: mpchalek@kmplawyers.pl; https://orcid.org/0000-0003-4295-9060

Dr. habil. Diana Trzcińska

University of Gdansk, Poland
e-mail: diana.trzcinska@ug.edu.pl; https://orcid.org/0000-0003-1439-7240

Dr. habil. Piotr Sikorski

National Academy of Rural Science, Poland
e-mail: piotr_sikorski@sggw.pl; https://orcid.org/0000-0002-5611-4731

Abstract. Ecological connectivity is one of the primary prerequisites of effective prevention and adaptation to climate change. However the legal protection of this phenomenon has been scattered in different legal acts of international, European and national law. The main criterion adopted for the purposes of this research was to focus on the development of instruments for the protection of ecological corridors. The research included both framework agreements on the protection of biodiversity as well as agreements strictly related to the migration of fauna and flora. The main conclusions of the research show that the provisions of multilateral nature conservation agreements vary in terms of their legal force, and in most cases leave a wide margin of discretion to the parties with regard to the forms of implementation. Furthermore, the agreements are not integrated and coherent, and are still based on outdated management tools and terminology (dating back to the 1970-1980 period). Binding executive acts are not widely recognised as having the same legal force as framework conventions and are, in fact, lost in the microcosmos of national environmental legislation. It is recommended to conduct a harmonised, in-depth review of the implementation of the conventions analysed, in order to integrate and improve the coherence of the protection regime of ecological networks at national, continental and global levels. This should be done by adopting an integrative agreement under the auspices of all the conventions concerned. The detailed scope of the necessary amendments proposed in the final chapter of this article constitutes the main added value of this research.

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INTRODUCTION

Wild animals are migrating because of the different biological reasons where the most important are wintering, staging, feeding, breeding or moulting.[1] The civilizational development is inevitably linked with progressive expansion of the settlement network, increased density and surface of linear and nonlinear infrastructure [Byron and Arnold 2008, 20] as well as all other types of anthropogenic impacts especially connected with the exploitation of water engineering structures [Pchałek and Grzegrzółka 2017, 208]. In consequence, wild animals dwell in increasingly shrinking and isolated patches of habitats, their populations are decreasing, and the threat of their extinction rises [Good 1998, 15]. Furthermore, disappearance of habitats and species disrupts the functioning of ecosystems and results in decreased biotic diversity because of ecological feedback loops [Pichon, et al. 2024, 1]. "Conservation status of a migratory species" means the sum of the influences acting on the migratory species that may affect its long-term distribution and abundance. "Conservation status" will be taken as "favourable" i.a. when population dynamics data indicate that the migratory species is maintaining itself on a long-term basis as a viable component of its ecosystems and there is, and will be in the foreseeable future, sufficient habitat to maintain the population of the migratory species on a long-term basis.[2] However the whole definition of "favourable status" is not fully consistent with contemporary scientific knowledge. The definition should be complemented by the aspects of "barrier effect" concerning water migration [Belletti, et al. 2020, 436] as well as air migration which are today significantly affected by water steps cascades [Silva, et al. 2018, 340], and wind farms developments.[3]

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[1] The Bern Convention on the Conservation of European Wildlife and Natural Habitats, signed in Bern, 19 September 1979 (entered into force 1 June 1982), Secretariat provided by the Council of Europe, OJ L 38, 10.2.1982, p. 3-32 [hereinafter: the Bern Convention], http://data.europa.eu/eli/convention/1982/72/oj [accessed: 26.08.2024], Article 4.3.

[2] Convention on the Conservation of Migratory Species of Wild Animals, signed in Bonn, 23 June 1979, United Nations Treaty Series 1651, no. 28395 (entered into force 1 November 1983) [hereinafter: the Bonn Convention or CMS], https://www.cms.int/en/convention-text [accessed: 26.08.2024], Article I.1.c.(1),(3).

[3] Strasbourg, 26 August 2013. Wind Farms and Birds: An Updated Analysis of the Effects of Wind Farms on Birds, and Best Practice Guidance on Integrated Planning and Impact Assessment. T-PVS/Inf (2013) 15. Report prepared by BirdLife International on behalf of the Bern Convention Bureau Meeting, Strasbourg (17 September 2013).

It should be noted that the ecological connectivity is the concept of abstractive nature,[4] however ecological networks of core areas and migratory corridors should be designated in a legally binding form based on geographically explicit data [Bennett and Mulongoy 2006, 4]. The primary example of continental ecological network is Natura 2000, where the core areas are special areas of habitats conservation (SACs) and important bird areas (SPAs). The migratory corridors covering terrestrial and water ecosystems [Hilty, et al. 2020, 30] are in fact of linear, nonlinear, continuous or non-continuous nature including s.c. "stepping stone" habitats [Saura, Bodin, and Fortin 2014, 180]. During birds' migration such habitats play a role similar to those like for the people highway rest areas.

As regards functionality of global public safety systems it must be stressed that the Resolution of the European Parliament of 17 December 2020 on the EU strategy on adaptation to climate change[5]: 1) emphasises that green infrastructure contributes to adaptation to climate change through the protection of natural capital, the conservation of natural habitats and species, good ecological status, water management and food security (point 8); 2) highlights the need to assess and make further use of the potential of forests, trees and green infrastructure in climate adaptation and in the provision of ecosystem services (point 25); 3) calls on the Commission and the Member States to classify green infrastructure as belonging to the category of critical infrastructure for the purposes of programming, funding and investments (point 29).

In the above context this article is a scientific response and invitation to further discussion because of two main reasons: 1) the first-ever report on the "State of the World's Migratory Species" finds that the overall conservation status of migratory species is still deteriorating[6]; 2) the conclusions of legal indicators-based report elaborated under auspices of International Union for Conservation of Nature which underlines that the Multilateral Environmental Agreements are neither efficient nor effective [Fromageau, Cherkaoui and Coll 2023, 33].

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[4] See *Global Assessment Report on Biodiversity and Ecosystem Services*, https://www.ipbes.net/global-assessment [accessed: 26.08.2024], p. 1037.

[5] European Parliament resolution of 17 December 2020 on the EU strategy on adaptation to climate change (2020/2532(RSP)), P9_TA(2020)0382 EU strategy on adaptation to climate change, OJ C 445, 29.10.2021, p. 156-67.

[6] *State of the World's Migratory Species*, UNEP-WCMC, Cambridge, United Kingdom 2024, p. 4.

1. MATERIAL AND METHODS

1.1. Legal sources

Protection of ecological connectivity is provided within the following categories of international legal norms: provisions in the scope of aerial (spatial forms) of nature protection including protection of landscape; provisions in the scope of protection of biodiversity including "species protection schemes".

For the purposes of analyses carried out in this paper, the following acts containing provisions from at least one of the categories listed above were identified: 1) The Ramsar Convention on Wetlands of International Importance Especially as Waterfowl Habitat, signed in Ramsar on 2 February 1971;[7] 2) Convention on the Conservation of Migratory Species of Wild Animals, signed in Bonn on 23 June 1979;[8] 3) The Bern Convention on the Conversation of European Wildlife and Natural Habitats, signed in Bern on 19 September 1979;[9] 4) The Convention on Biological Diversity, signed in Rio de Janeiro on 5 June 1992;[10] 5) The European Landscape Convention signed in Florence on 20 October 2000.[11]

These provisions are of various nature, on the one polar we can indicate substantive norms with direct effect and on the second one norms which are not enough precise, clear and unconditional as to grant them the value of direct effectiveness.

It must be noted that the substantive provisions regardless of their power must be supplemented by procedural schemes. Because the subject of environmental international law covers phenomena resulting in transboundary impacts such procedural basis has been introduced into international legal order in the form of Convention on Environmental Impact Assessment

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[7] The Ramsar Convention on Wetlands of International Importance Especially as Waterfowl Habitat, signed in Ramsar, 2 February 1971 (entered into force 21 December 1975) with amendments [hereinafter: the Ramsar Convention], https://www.ramsar.org/sites/default/files/documents/library/current_convention_text_e.pdf [accessed: 26.08.2024].

[8] The Bonn Convention, note no. 2.

[9] Ibid., no. 1.

[10] The Convention on Biological Diversity, signed in Rio de Janeiro, 5 June 1992 (entered into force 29 December 1993), Secretariat provided by the United Nations Environment Programme [hereinafter: the Biodiversity Convention or CBD], https://www.cbd.int/doc/legal/cbd-en.pdf [accessed: 26.08.2024].

[11] The European Landscape Convention, signed in Florence, 20 October 2000, Council of Europe Treaty Series 176 (entered into force 1 March 2004) [hereinafter: the Florence Convention], https://rm.coe.int/16807b6bc7 [accessed: 26.08.2024].

in a Transboundary Context (EIA)[12] with subsequent UNECE Protocol on Strategic Environmental Assessment (SEA).[13]

In all developed or developing countries the SEA and EIA procedures cover all plans and public or private projects that may have significant impact on environment regardless of transboundary impact. In EU legal order these are Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 on the assessment of the effects of certain plans and programs on the environment[14] and Directive 2011/92/EU of the European Parliament and of the Council of 13 December 2011 on the assessment of the effects of certain public and private projects on the environment.[15]

1.2. Thesis

Generally low efficacy of international law results from the quality of legislative techniques and lack of will of Parties to the agreements as to amend their provisions in order to stop the loss of biodiversity. Despite of upcoming global climatic disaster still the economical and social interests are overweighing ecological balance. It must be treated as a shamefully short sighted of decision makers, lobbyists, entrepreneurs and unaware members of societies. The authors of this article would like to stressed in their own words that the environmental effects of climate change have o form of advanced and increasing negative changes as regards integrity and stability of the terrestrial ecosystems, hydrosphere, atmosphere and their interactions, leading to unpredictable, dynamic and extreme climatic phenomena as well as ongoing shift of climate zones, changes in pressure systems and wind directions. As a nexus social effects of climate change arise in the form of differentiated limitations in food production, barriers as regards access to work and food, partial or total obstacles in the field of economic activities and agricultural production. Taking into account the current trend in CO2 emissions and the level of effectiveness of climate policy it is undisputable that in a short

[12] Convention on Environmental Impact Assessment in a Transboundary Context, adopted in Espoo, 25 February 1991 (entered into force 10 September 1997) with amendments [hereinafter: EIA], https://unece.org/DAM/env/documents/2017/EIA/Publication/1733290_pdf_web.pdf [accessed: 26.08.2024].

[13] Protocol on Strategic Environmental Assessment to the Convention on Environmental Impact Assessment in a Transboundary Context, signed in Kiev, 21 May 2003 (entered into force on 11 July 2010) [hereinafter: SEA], https://unece.org/DAM/env/eia/documents/legaltexts/protocolenglish.pdf [accessed: 26.08.2024].

[14] Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment, with amendments, OJ L 197, 21.7.2001, p. 30-37.

[15] Directive 2011/92/EU of the European Parliament and of the Council of 13 December 2011 on the assessment of the effects of certain public and private projects on the environment (codification) Text with EEA relevance, with amendments, OJ L 26, 28.1.2012, p. 1-21.

perspective the human migration will escalate at continental and global level, and in the critical scenarios will result in social conflicts of unknown directions. Basing on the provisions imposing on the Parties discretional obligations in the form of "general clauses" the "international legislator" intentionally leaves himself "wide range" of freedom. At the same time the main goal of commented in this paper conventions are to ensure "wide and undisturbed range" but as regards migration of species. The mentioned "general clauses" have in majority of cases the following wording: "Parties shall endeavour to make wise and sustainable use of […]," "Parties shall endeavour to rehabilitate or restore, where feasible and appropriate." However, there are much more circumstances decreasing level of protection of ecological connectivity which are the consequences of the international treaties scheme. These includes: 1) basing the conservation rules on "species protection schemes" and considering the "aerial protection" as a marginal instrument whereas effectiveness of these schemes is in fact opposite; 2) multiplication "general clauses" by encouraging the Parties to include "the wise use of biodiversity" in spatial planning strategies, especially in case where under the national law of developing countries the spatial planning law is depreciated in a favour of infrastructural projects of overriding public interest; 3) on the one hand the conventions regimes overlap themselves but on the other hand it results only in legal mess because no one of them has provided for geographically explicit and strictly binding protection schemes.

Finally, we do not underestimate the role of catalogues of definitions included in the texts of the conventions which are still in force as regards law making and its application. However sometimes the effects of obsolete concepts and wording are not especially rational because "legal approach" to transboundary aspects makes them contrary to the real phenomena taking place in ecology of plants, animals and ecosystems.

In order to evaluate the effectiveness of international law in question the conventions have been analyzed in terms of: 1) the character of legal norms provided directly in a given convention or implementing agreement as well as adequate reporting and execution schemes; 2) the activity of conference of the parties of a given convention in the scope of issuing resolutions/recommendations/decisions, guidelines and reports on the implementation of the given convention; 3) external integrity at the normative level and initiatives of conventions secretariats and conference of the parties as regards cooperation between the Parties including harmonization of implementation measures.

Because of the fact that the most coherent and developed continental ecological network is the European concept – Nature 2000, the above-mentioned criteria have been also evaluated in the light of the implementation measures and other forms of response of EU institutions.

As for the official documents implementing or supporting implementation and transposition of international agreements, all the sources have been derived from conventions secretariats and the European Commission websites. The thesis of the article has been also compared with the statements presented in scientific literature and methodological guidelines.

2. THEORY

2.1. The objective of the Ramsar Convention is to protect wetlands and waterfowl at a global scale

The definitions of those are intertwined, since in the meaning of the Convention waterfowl are birds ecologically dependent on wetlands – which in practice limits the protection to birds from certain systematic groups. The first obligation imposed on the Parties to the Convention is to designate relevant wetlands on their territories in order to put them on the List of Wetlands of International Importance.[16] As of August 2024, there were 2.520 Ramsar Sites, which extend over 257 million hectares all around the world.[17] This is the strict form of "aerial (spatial) protection". In theory the Ramsar Convention introduces general obligation on promotion of wise use of wetlands. In the light of the above, the main instrument for the conservation of wetlands as a non continues elements of waterfowl ecological corridors has an indirect form because concerns proper spatial planning and management. In effect the Parties to Convention should adopt commonly binding provisions requiring inclusion of the "national programmes on the protection of migratory species" in spatial management plans [Wieser, et. al. 2011, 8]. Protection of ecological corridors in the course of spatial planning procedures is also impossible without implementing suitable instruments of assessment of impacts of plans and programmes establishing framework for development of projects significantly affecting wetlands ecosystems. With this view, the Secretariat of the Ramsar Convention developed "Guidelines on biodiversity-inclusive environmental impact assessment and strategic environmental assessment" [Pritchard 2010].

2.2. The objective of the Florence Convention is the protection of landscape at a European scale

In the meaning of the Florence Convention, landscape is "an area, as perceived by people, whose character is the result of the action and interaction

[16] The Ramsar Convention, note no. 5, Article 2(1).

[17] Ramsar the Convention on Wetlands, Official website: https://www.ramsar.org/ [accessed: 26.08.2024].

of natural and/or human factors." Therefore, the Convention applies also to elements other than natural, historical or man-made ones, and covers all the components of a given area, be it urban, rural, natural or industrial landscape. In fact the landscape protection under the Florence Convention appears to be an underused resource since "creating more resilient landscapes by increasing connectivity is a widespread aspiration in national and international planning and conservation guidance" [Kettunen, Genovesi, Gollasch, et al. 2007]. Linking landscape protection with conservation of ecological network becomes more pronounced in the context of implementation of the Birds and the Habitats Directives [ibid., 20]. Especially as regards Article 10 of the Habitats Directive[18] concerning directly landscape migration unfortunately in the soft law form ("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").

2.3. The objective of the Bonn Convention is the protection of migratory species at a global scale

The Parties consented to engage in activities aimed at protection of migratory species "wherever possible and appropriate". The convention establishes wide scope of definitions, generally of high importance including definition of "migratory species". However, the term of "migratory corridor" or "migratory route" has not been explained. The Parties should endeavour to ensure strict protection of migratory species ("species protection tools") specified in Appendix I to the Bonn Convention (endangered species) and also to enter into agreements concerning protection and control of migratory species specified in Appendix II to the Convention (unfavourable conservation status of species). The convention does not provide for a strict obligation concerning protection of migratory species within the form of "aerial (spatial) protection". Moving on to outward impact of the CMS on the protection of ecological corridors, it must be mentioned that the Convention became the foundation for adopting three major independent agreements intentionally related to this topic. These are: 1) the Agreement on the Conservation of Populations of European Bats (London 1991);[19] 2) the Agreement on the Conservation

[18] Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora, with amendments, OJ L 206, 22.7.1992, p. 7-50, Article 10.

[19] The Agreement on the Conservation of Populations of European Bats (EUROBATS), signed in London, 4 December 1991 (entered into force on 16 January 1994) [hereinafter: the EUROBAT Agreement], https://www.eurobats.org/official_documents/agreement_text [accessed: 26.08.2024].

of Small Cetaceans of the Baltic and North Seas (New York 1992);[20] 3) Agreement on the Conservation of African-Eurasian Migratory Waterbirds (AEWA, Haque 1995);[21] 4) Remaining regional agreements concerning Appendix II generally concern particular species.

Taking into account the coherence of law and legal certainty principles it should be noted that AEWAs' scope of regulation overlaps Ramsar Convention. In the light of Article 1(2)(c) of AEWA "Waterbirds" means those species of birds that are ecologically dependent on wetlands for at least part of their annual cycle, have a range which lies entirely or partly within the Agreement. There is only one requirement in the text of AEWA concerning external coordination namely "The Agreement secretariat shall consult: (a) on a regular basis, […], where appropriate, the bodies responsible for the secretariat functions under i.e. Ramsar Convention."

2.4. The objective of the Bern Convention is to protect European species as well as their natural habitats

Protection of ecological processes requires as a general rule the cooperation of several states, with special focus on threatened and endangered species, including migratory ones. The Parties to the Convention should take proper and indispensable legislative and administrative measures in order to ensure protection in particular species listed in Appendices I and II to the Convention, as well as protection of endangered natural habitats. In their policies regarding planning and development, the Parties must acknowledge the need to conserve protected areas and to avoid or limit to the greatest possible extent any deterioration of their conservation status. condition. The Parties are obliged to ensure that the protection periods and/or procedures regulating exploitation of hunting migratory species specified in Appendix III to the Convention are sufficient to meet relevant requirements and properly applied. The greatest achievement of the Bern Convention was the creation of Emerald Network.[22] Potential Emerald sites were included in a Geographical Information System. Natura 2000 ecological network mentioned in the introductory section has been based on the same ecological criteria as applied to the Emerald Network., [Ćurčić and Đurđić

[20] Agreement on the Conservation of Small Cetaceans of the Baltic, North East Atlantic, Irish and North Seas, New York 17 March 1992 (entered into force on 29 March 1994) [hereinafter: the ASCOBANS Agreement], https://treaties.un.org/pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XXVII-9&chapter=27&clang=_en [accessed: 26.08.2024].

[21] Agreement on the Conservation of African-Eurasian Migratory Waterbirds, 16 June 1995 Hague (entered into force on 1 November 1999) [hereinafter: the AEWA Agreement].

[22] The Council of Europe. 2005. Development of the Emerald Network: General Principles of the Procedure for Examining and Approving Emerald Sites Put Forward by States. Secretariat's Proposals. Strasbourg.

2013, 21-34]. Last but not least, although not strictly a flyway-based instrument, the Bern Convention provides for specific provisions for the conservation of migratory birds species and until the entry into force of AEWA was the only one European conservation instrument that enabled the participation of African countries.

2.5. The global nature protection treaty of "umbrella" character is the Convention on Biological Diversity (also referred to as the CBD)

The Convention imposes an obligation to properly manage natural resources of significant importance for the conservation of biological diversity, both inside and outside special protection areas. The Parties to the Convention should support protection of ecosystems and natural habitats as well as sustainability of viable populations of species in their natural environment. It should be noted that the definition of biological diversity, included in Article 2 of the CBD explains this term 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 [...]." It should be interpretated that the CBD has initiated the philosophy of ecological feedback principle. However the review of decisions of the Conference of Parties shows that initially, i.e. until 2000, CBD biodiversity protection guidelines were issued separately for the following categories: a) biological diversity of forests; b) biological diversity of dryland, mountain and inland water ecosystems; c) marine and coastal biological diversity; d) agricultural biological diversity.

An explicit breakthrough promoting ecosystem and feedback loops approach was made at the Fifth Meeting of the Conference of the Parties in Nairobi, Kenya on 15-26 May 2000. In accordance with the conclusions of the Meeting the priority goal of ecosystem approach should be to protect the structure and functioning of ecosystem in order to preserve its services. The principle emphasizes the significance of dependencies within and across species as well as in their abiotic environment which means the ecological feedbacks. Moreover it stresses both the role of protection of existing ecosystems and the need for their restoration [Michel, Russier-Decoster and Clap 2015, 5]. Finally, during the Seventh Ordinary Meeting of the Conference of Parties (2004) the ecological networks topic were incorporated in the work program on protected areas as a key issue of conservation strategy [Van der Sluis, Bloemmen and Bouwma, 2004, 7]. The latest contribution of the Conventions Secretariat as regards protection of ecological connectivity was the initiative which has resulted in elaboration of *The Global Assessment*

Report on Biodiversity and Ecosystem Services.[23] The authors of the Report have compiled the most advanced concepts and definitions in the field of applied ecology which are gathered in a separate Annex (I)(Glossary).

3. DISCUSSION

The "ecological connectivity" represents the philosophy which establishes fundaments as to maintaine and restore biological diversity [Torres, Patterson and Jaeger 2022, 451-59]. In fact, this is the wording of strategic nature concerning achievement of favourable status of ecological networks at different spatial planning levels starting from local (landscape level) and ending at intercontinental migrations (wintering birds migration) [Chapman et al. 2014, 11-25]. Taking into account the mentioned definition on "biodiversity" the conclusion should be that the favourable status of ecological connectivity depends on the functionality and integrity of ecosystems and habitats creating migratory corridor (including stepping stone habitats) as well as the core areas together with adjacent buffer zones [Bond, Bradley, Kiffner, et al. 2017, 1705-721]. That is because, even if the migratory corridor will be considered as an area of good conservation status at the analysed spatial level the general status of ecological connectivity will be not sufficient if the core areas (ecosystems and its habitats) are affected by significant and regular negative impact [Catchpole 2016, 35-54]. In one of the previous research projects, we have proposed to define "Migratory corridor" as a "trail enabling migration and dispersion of plants, animals, fungi and diaspores between patches of their habitats, including structural elements of natural environment necessary for its proper functioning of linear, non-linear, bandwidth and spatial, continuous and non-continuous, natural, semi-natural and anthropogenic, biotic and abiotic nature, including air space" [Pchałek, Kupczyk, Matyjasiak, et al. 2011, 111].

Taking into account the above illustration of the specificity concerning migratory corridors it must be noted that no one of commented conventions has created clear, precise and unconditional framework for legally binding protection scheme concerning complexity of ecological networks.

As regards "aerial forms of protection" only one of the commented conventions provides for the obligations in the strict and binding meaning namely Ramsar Convention. However, because of the extremely small number of Wetlands of International Importance indicated at the national level they may be compared with e.g. national parks or "nature reservoirs". In effect considering Wetlands of International Importance as an important part of global ecological network cannot be justified (in Poland there

[23] See *Global Assessment Report on Biodiversity and Ecosystem Services*.

has been 19th Ramsar Sites designated covering in sume 152.964 ha). It is strongly controversial legal status because wetlands generally play crucial role as regards migration of birds. Leaving their protection within the scope of procedural autonomy of Parties to Convention must be treated as most representative example of ineffectiveness of international law. It must be remembered that the wetlands not covered by strong protection regime will be significantly affected by flood protection and inland water ways infrastructure [Pchałek 2019, 18].

As for the "aerial protection" also the provisions of Florence Convention' have no significance for the purposes of protection of ecological connectivity. Recommendation CM/Rec(2008)3 of the Committee of Ministers to Member States on the guidelines for the implementation of the European Landscape Convention[24] entirely omits the question on protection of ecological corridors. Basing on the implementation reports published by the Secretariat of the Convention, one of the most spectacular project has been developed in the Czech Republic ("The Čehovice landscape, Prostějov district in Moravia, Regional Land Office Prostějov.)" In order to achieve ecological sustainability, the core area with bio corridors has been restored, along with the creation of a wetland, the planting of various groups of trees and the reintroduction of species which have left their previous habitats because of the ecological needs.[25]

Theoretically polish law includes much more stringent obligations as regards protection of landscape. On the one hand there are two aerial forms of protection established on basis of Nature Protection Act namely landscape parks and landscape protection areas.[26] Nevertheless, landscape parks and landscape protection areas have been not designated on the basis of criterions concerning restoration and maintenance of ecological connectivity. On the second hand the Spatial Planning and Management Law requires elaboration of "landscape audit" for the purposes of procedure concerning adoption of regional spatial management plans.[27] Unfortunately, the form of Landscape Audit do not allow to use this tool as regards ecological connectivity nor at the regional neither local scale. As it was mentioned

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[24] Recommendation CM/Rec(2008)3 of the Committee of Ministers to member states on the guidelines for the implementation of the European Landscape Convention (Adopted by the Committee of Ministers on 6 February 2008), https://search.coe.int/cm?i=09000016805d3e6c [accessed: 26.08.2024].

[25] European Landscape Convention, The Landscape Award Alliance of the Council of Europe. European Spatial Planning and Landscape Series No. 103. The Council of Europe, Strasbourg 2016, p. 52.

[26] Article 16 and Article 23 of the Act of 16 April 2004 on nature protection, Journal of Laws No. 92, item 880.

[27] Article 38a of the Act of 27 March 2003 on spatial planning and management, Journal of Laws No. 80, item 717.

in the scientific literature "To date, there is no unified division of the entire country into microregions, which in Poland are commonly perceived as the most appropriate natural spatial units for local-scale landscape analysis and management" [Piniarski 2023, 1]. It must be also remembered that despite of ambitious polish legislation relating to Landscape Audits in case of developing countries such as Poland the large number of specific acts has been adopted for the purposes of efficient absorption of EU funds in the context of rapid infrastructural growth. There should be mentioned i.e. such regulations as acts on specific rules on development of road projects, flood protection infrastructure, public airports infrastructure or wind farms developments. Polish Constitutional Tribunal has stated that in case of such categories of public interest application of spatial planning and management law may be excluded.[28] In effect "In Poland, where no legal instruments to protect ecological networks exist, the development of ecological corridors at local scale requires not only conducting an analysis of the present land use and landscape permeability, but also a detailed analysis of spatial planning documents" [Jakiel and Bernatek 2015, 245].

The main conclusion of the above argumentation is that taking into account the legal order where the effectiveness of international agreement is determined by national rules concerning spatial planning and management law, we cannot counter for harmonized approach even at the level of European Union.

Turning to directly binding prohibitions as regards strict protection of species it should be underline that this is the only one preventive institution adopted under Bonn and Bern Conventions. We will not be able to find provisions in those agreements which establishe direct obligations concerning protection of habitats and ecosystems necessary for maintain favourable conservation status of geographically explicit migratory routes [Shen et al. 2020, 158].

"Strict protection schemes" do not allow for effective prevention as regards impact of large infrastructural projects because migratory species are in the movement and their existence is as a rule organized at the population level.

In this place however the added value of European law should be appreciated. If we have already mentioned the Bern Convention indirectly gave rise to designation of Natura 2000 network, which supports as far as possible also the sites which should be protected under previously discussed global conventions – the Ramsar Convention and the Bonne Convention.

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[28] Judgment of the Polish Constitutional Tribunal of 6 June 2006, ref. no. K 23/05, Journal of Laws No. 106, item 720.

Taking into account the aspect of ecological functionality of Natura 2000 network it must be noted that this structure is managed at two different spatial levels The lower level concerns protection of integrity of core areas dedicated seperatelly to protection of bird species and to conservation of habitats alone or with inhabiting species. Both categories of sites are covered by the provisions of Article 6 of Habitats Directive (92/43/EEC)[29] which constitutes "aerial (spatial)" regime of protection. On the second hand the Article 6 section 4 establishes the higher level of protection regime concerning overall coherency of ecological network.

Undoubtfully so called "habitats assessment" based on Article 6(3)-(4) of Habitats Directive is the most advanced legal tool as regards contemporary environmental protection law [Krämer 2009, 59]. However, as usual the devil is in detail. In the above context it should be noted that actually, there is only one professional legal report elaborated under the auspices of organization of the highest international rank that clearly indicate an obligation on designation and protection of ecological corridors under the provisions of Habitats Directive. The authors of the report consider the Nature 2000 scheme as implying "the designation of protected areas, the adoption of ecological corridors, the adoption of conservation and protection measures, including of management and strict species protection measures" [Fromageau, Cherkaoui and Coll 2023, 28]. In practice the effectiveness of Habitats Directive at the application phase depends on the legislative techniques especially in the field of implementation of so called "blurred terms" which in the light of the theory of law gives the administrative authorities certain margin of interpretation discretion. Conclusions concerning Nature 2000 conceptual scheme are the following: neither the notion of 'site integrity' of the core areas nor the notion of 'overall coherency of the network' has its legal definition. This legal state takes place regardless of the fact that both of the terms establishes substantive environmental quality standards. In effect implementation of a preventive protection regime under Articles 6(3) and 6(4) of Habitats Directive is therefore determined by neverending legal, ecological and biological disputes [Rees et al. 2013, 14; Kleining 2024 passim]. The Court of Justice of EU does not feel competent as regards mentioned aspects and consequently underlines that in accordance with the principle on the shared competencies such considerations must be undertaken by the authority or court of the member state.[30]

As regards terminology concerning strict protection of species, we can only say that fifty years after adoption of CMS the problem with definition

[29] Council Directive, note no. 20, Article 6.

[30] Case C-727/17: judgment of the Court (Fourth Chamber) of 28 May 2020 (request for a preliminary ruling from the Voivodeship Administrative Court in Kielce – Poland), OJ C 255, 3.8.2020, p. 2-3.

of migratory species remains actual. The Convension defines "Migratory species" as "the entire population or any geographically separate part of the population of any species or lower taxon of wild animals, a significant proportion of whose members cyclically and predictably cross one or more national jurisdictional boundaries."[31] In the context of protection of ecological corridors it should be emphasized that in the light of that definition such species as wolf (*Canis lupus*) will still not be considered as migratory species because nor the wolf populations neither the significant proportion of their members does not cyclically and predictably cross one or more national jurisdictional boundaries" [Pchałek 2010, 126]. At the same time *Canis lupus* remains one of the fundamental indicators as regards mapping of regional and continental ecological networks moreover becomes to have a status of flaq species [Mekonnen, Fashing, Chapman, et al. 2024, 45]. Such legal status should be compared with the viewpoint presented in recent literature which assumes that multilateral environmental agreement should be intended to be a dynamic agreement that evolves in response to new information and circumstances [Bodansky 2024, 300].

Summarizing the authors completely agree with the statement presented in the latest scientific articles indicating that "The effectiveness of those treaties, which together comprise international wildlife law (IWL), depends on their national implementation by individual states rather than on their number" [Goyes 2024, 143].

4. RESULTS AND CONCLUSIONS

As for the general needs concerning international law making in the field of protection of ecological connectivity it is recommended to undertake activities as an initiative of Conventions Secretariats in order to adopt integratory agreement including: 1) Replacement of ecological connectivity in the hierarchy of public interest especially in the context of prevention and adaptation to climate changes, food security, role of the "umbrella species" as regards agricultural production and sustainable forestry management; 2) Amendments adequate to contemporary scientific knowledge concerning ecological networks in the scope of terminology, legal form of protection, geographically explicit data, integration with spatial planning and environmental impact assessment procedures whereas: a) catalogue of definitions should be established in the form of unified conceptual scheme,

[31] CMS, note no.2, Article 1(1)(a): "Migratory species denotes the entire population or any geographically separate part of the population of any species or lower taxon of wild animals, a significant proportion of whose members cyclically and predictably cross one or more national jurisdictional boundaries."

especially as regards the following terms: "ecological network", "connectivity of ecosystems and habitats", "migratory corridors", "significant impact factor", "critical ratio of significant impact"; b) harmonized legal protection forms shall be introduced as regards aerial conservation schemes with clear distinction between the provisions of substantive and procedural nature; c) the role of strategic environmental impact assessment procedure must be exposed as regards mitigation and compensation of largescale and cumulative impacts at national and transboudary dimensions e) the transboundary impact assessment of plans and projects should play more transparent role as regards protection of migratory species, with the particular attention given to renewable energy developments such as wind farms and water steps cascades.

As for the spatial planning, aerial protection and environmental impact schemes, it should be ensured that all of those branches of regulation interact with GIS Data Basis on Ecological Connectivity. The Basis shall enable access to interactive, regularly updated and supervised data concerning each spatial level of migration and including: 1) general data on ecological needs of individual species or groups of species 2) specific (real) data concerning localization, parameters, land use category (natural, semi-natural, anthropogenic), conservation status of strategic routs and habitats (including stepping stones habitats) confronted using GIS shape files with existing, aprooved and planned infrastructural barriers affecting ecological connectivity 3) necessary preventive requirements and active protection measures including data on responsible authorities 4) division into ecological spatial units interacting with significant impact factors resulting from barriers indicated under point 2); The main added value of the Data Basis on Ecological Connectivity should be identified with elaboration and updating process of GIS shapes concerning migratory corridors linked with the conditions necessary to maintain ecological continuity for particular groups of species and categories of corridors.

Finally the integratory agreement should require the Parties as regards establishing clear institutional scheme covering public authorities and private entities under obligation to include ecological connectivity requirements in the scope of their respective competencies such as:

1) National, regional and local spatial management and strategic development planning authorities: (1) authorities involved in SEA and EIA procedures it is: a) authorities conducting the procedure on adaptation strategic plan (programme) or issuing project development consent; b) environmental protection bodies acting in the form of co-agreement or co-opinion (binding or not binding form); (2) environmental Protection Authorities responsible for managing aerial nature protection, including Nature 2000 sites and implementing species protection.

2) Environmental Inspection Authorities responsible for monitoring the state of all or some of the elements of natural environment covered by the State Environmental Monitoring.
3) Veterinary Inspection Authorities, Zoological Gardens, non-governmental organizations responsible for providing veterinary assistance to wild animal species which are hurt as a result of anthropogenic impacts.
4) Water Management Authorities responsible for managing land ecosystems depending on waters which belong to the network of ecological corridors.
5) Implementing the land use and land use change regulations within the scope of climate protection policies.
6) Forest Management Authorities responsible for managing forest ecosystems belonging to the network of ecological corridors.
7) Road, Train and Inland waterways Planning Authorities.

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