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UNIVERSAL HUMAN RIGHT TO NIGHT SKY: GROUNDS FOR PROTECTION AGAINST LIGHT POLLUTION

ABSTRACT: Excessive light emissions have become an increasingly significant environmental concern in modern living conditions, adversely affecting the metabolic, reproductive, and migratory processes of most living organisms. However, the legal regulation of this issue at the international, European, and national levels is still lacking. The paper focuses on the protection of the night sky as a universal value of humanity, which remains governed primarily by non-binding, unofficial, and para-legal *soft law* instruments. The author highlights many opportunities for preserving the night sky and emphasizes the need to incorporate its protection into formal legal sources at all levels. Such a shift would positively impact ecosystem development, reduce greenhouse gas emissions, safeguard the conditions necessary for scientific research, and foster new branches of sustainable tourism in specific regions.

KEYWORDS: light pollution, night sky protection, international soft law instruments on the protection of the night sky and starlight

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1. Introduction

Modern living and working conditions, shaped by suburbanization, technological advancement, extended working hours, and the development of marketing and the entertainment industry, are gradually altering the natural light regime. As an excessive and misdirected emission, artificial light creates environmental conditions that significantly affect the metabolic, reproductive, and migratory processes of most living organisms and has been linked to various human health issues. Additionally, the reflection of artificial light off the lower layers of the atmosphere impedes the observation of celestial bodies, thereby disrupting astronomical research. Inadequate lighting can also cause partial blinding of road users, resulting in numerous accidents. Recent studies indicate that up to 50 percent of lighting is wasted and that lighting is among the leading contributors to greenhouse gas emissions (Drndarski, 2015). It is now evident that light pollution must be recognized as a serious ecological issue within the broader context of global climate change studies and sustainable development policies. Like other forms of environmental degradation, it deserves a distinct legal framework at all levels—beyond the broader considerations of technological, energy, or economic resource optimization and nature conservation (Gajinov, Mijatović, Uzelac, 2022).

The protection of the night sky as a universal value of humanity is still grounded solely in non-binding soft law instruments at the international level, and only a negligible number of states have adopted specific legislation in this domain. Since the need for legal regulation of light pollution, the introduction of binding emission threshold limits, and the establishment of a domestic legal framework have already been addressed in the author's earlier works (Gajinov, Mijatović, Uzelac, 2022; Gajinov, 2024), this paper will explore the scope, significance, and implications of the newly established universal human right to an unpolluted night sky and starlight. This right now stands alongside many other ecological, social, and cultural rights, due to its relevance for biodiversity conservation, improved energy efficiency, scientific research, and the development of sustainable and novel forms of tourism.

2. Global Initiatives and Legal Grounds for the Right to Unpolluted Night Sky

Light pollution, or photopollution, was identified as a problem more than 50 years ago, when the first campaigns were launched in the United States to protect astronomical research and raise public awareness about the importance of preserving the night sky as a universal human value. The rapid population growth in certain areas of the American Southwest led to a sharp increase in light emissions, hindering the operation of the region's major observatories. In response, the International Dark-Sky Association (IDA) was established in the U.S. in 1988, bringing together civil society organizations from more than 60 countries worldwide, with the goal of combating photopollution, protecting astronomical research, and promoting more efficient energy use on a global scale (Fonović, 2008). Through the efforts of the International Astronomical Union (IAU), the Resolution on the Protection of the Night Sky was adopted at the 1997 General Assembly in Kyoto. Although not legally binding, the resolution represents a significant step toward recognizing the night sky as a universal heritage of humankind and strengthening awareness of the need for its protection. In 2001, the IDA launched a specialized program focused on preserving the night sky and the environment, as well as raising public awareness about the value of natural darkness. The aim was to provide adequate education and issue guidelines for the implementation of quality outdoor lighting.

Despite the evident value that a dark sky holds for human civilization and its influence on the development of art, literature, philosophy, religion, and the natural sciences, it cannot be classified as cultural heritage under Article 1 of the Convention Concerning the Protection of the World Cultural and Natural Heritage, adopted in Paris in 1972. Nor does the night sky qualify as a natural site in accordance with Article 2 of the same document. Even under the 2021 Operational Guidelines for the implementation of the Convention (Guidelines No. WHC 21/01), which allow for the protection of mixed cultural and natural heritage provided that one or more criteria from Articles 1 and 2 are fulfilled, the dark sky cannot be considered a protected category. Since it cannot be territorially attributed exclusively to any one state, it cannot, from a

legal standpoint, be classified as “property” in the sense applied to other UNESCO-listed sites. Nevertheless, this does not preclude the dark sky from being protected as a distinctive attribute of a particular location or site—particularly in the case of observatories, which serve as “windows to the universe” and whose value lies in a range of intangible scientific, cultural, and religious dimensions (Szlachetko, 2022). For a site to be inscribed on the UNESCO World Heritage List in this context, it must meet three criteria: the dark sky itself as an object of observation; a specific location with a consistent geographical, architectural, atmospheric, landscape, or natural context; and finally, the fact that the site is used by society for the purpose of observation.

The 2000 European Landscape Convention provides a comprehensive yet straightforward definition of landscape as an area, as perceived or experienced by people, that results from the action and interaction of natural and/or human factors. This encompasses natural, rural, urban, and peri-urban environments, including terrestrial, aquatic, and marine areas. The Convention covers not only exceptional landscapes, but also ordinary and even degraded ones. However, a subsequent narrowing of the concept under Article 15(1), which addresses territorial scope, prevents the application of the Convention to the nocturnal landscape of the dark sky as a distinct and independent object of protection. In Recommendation CM/Rec(2008)3 of the Committee of Ministers to member states on the guidelines for the implementation of the European Landscape Convention, the focus is placed on the continuous management of landscape as a whole within the framework of spatial planning, with an emphasis on sustainability. The Convention also grants signatory states the freedom to implement its provisions in line with their national legislation, in accordance with the principle of subsidiarity. In practice, this means that the protection of the night sky as part of a broader landscape remains within the domain of domestic legal regulation by each signatory state.

At the regional IDA meeting held in Venice in 2002, the *Declaration for the Protection of the Night Environment* (“Light Pollution and the Protection of the Night Environment Venice: Let’s Save the Night”) was adopted, accompanied by a call for UNESCO to designate the night sky as part of the world’s cultural and natural heritage. This view is shared

by the emerging *Rights of Nature* movement, which—aware of the limited reach of public policy and legal regulation in preventing environmental degradation—advocates for establishing a new legal relationship between humanity and its natural surroundings. As a result, there is growing international support for the recognition of natural darkness as a public good (Barentine, 2020). Anyone who threatens its universal value and significance should bear corresponding consequences. According to proponents of this movement, all elements of nature, including the dark sky, constitute intrinsic goods, to be collectively managed and wholly shielded from any human activity incapable of providing them with real and lasting protection. All natural assets have the right to exist in their original form, to be preserved in such a state, and the right to be restored, if endangered or damaged in any way. These principles are linked to the universal concept of human rights and dignity, which belong to all people by virtue of their humanity, regardless of the weak enforcement or oversight mechanisms ensuring their protection (Budak, 2018). Accordingly, it is fully justified to argue that genuine human sustainability on Earth can only be achieved by recognizing and proactively embracing the fact that humanity's survival is intrinsically connected to nature. For this reason, we need a fundamental paradigm shift: one that sees nature as a resource that is wholly shared and collectively managed, with a legal status akin to that of a legal entity, on whose behalf legal action may be initiated. This concept can undoubtedly be extended to the dark sky, assuming its importance for the well-being of numerous species in both rural and urban ecosystems, for human health, and as a shared good to which all individuals hold the right of access, enjoyment, and the duty of preservation.

Excessive artificial lighting disrupts and in some cases entirely prevents astronomical observations of stars and other celestial bodies, thereby limiting the right to education and scientific research vital to the progress of society as a whole. In addition, light pollution has a markedly negative impact on the touristic value of certain landscapes, where starlit nights and their aesthetic and cultural richness contribute to the development of a distinct and sustainable form of tourism known as astrotourism (Krajnović, 2020). Beyond the imperative of protecting the night sky as a universal value, it is also important to recognize that more

rational and context-appropriate use of lighting would carry significant economic benefits, particularly in an era marked by a profound economic and energy crisis that has shaken Europe and the wider world in recent years. Consequently, public authorities increasingly recommend switching off decorative lighting on government buildings, parking lots, and other facilities when it is not functionally necessary.

Thanks to the efforts of UNESCO, the International Astronomical Union, and numerous other international organizations, the *La Palma Declaration on the Defence of the Night Sky and the Right to Starlight* (hereinafter: La Palma Declaration) was adopted at the First International Conference on the Protection of the Night Sky in 2007. The Declaration proclaims the right to an unpolluted night sky as an inalienable right of humanity, on equal footing with other ecological, social, and cultural rights, given its importance for the advancement of human civilization and the preservation of biodiversity. According to the Declaration's second principle, the progressive degradation of the night sky's value constitutes an immediate risk that humanity must confront, warranting treatment equal to that of other pressing environmental issues. The conservation, protection, and revalorization of natural and cultural heritage related to nocturnal environments and celestial observation represents a key opportunity for international cooperation and the safeguarding of quality of life. Although not legally binding, the goals set forth in this document pose a genuine challenge and ongoing responsibility for policymakers and the lighting industry alike, ensuring that the night sky, as part of humankind's shared heritage, remains accessible to all. The La Palma Declaration also highlights the importance of leveraging the night sky's value for the development of new tourism products based on the observation of celestial phenomena and nocturnal environments. This opens numerous opportunities for collaboration among tourism stakeholders, local communities, and scientific institutions, while also serving as a prerequisite for conducting astronomical research and promoting scientific and technological advancement. Furthermore, the Declaration emphasizes that an unpolluted night sky constitutes a vital component of sustainable development—one that is inseparable from nature and shared by all of humanity. It is regarded as a resource that significantly contributes to the preservation of cultural

diversity, the biological richness of landscapes, the conservation of cultural heritage, and plays an important role in the fight against climate change. Consequently, the control of artificial light emissions must be recognized as a fundamental element of public environmental policy and incorporated into the management plans of various types of protected areas.

In response to the initiatives and goals set forth in the La Palma Declaration, the International Astronomical Union adopted a further resolution—*Resolution B5 in Defense of the Night Skies and the Right to Starlight*—at its XXVII General Assembly held in Rio de Janeiro in 2009. This document frames the night sky as a source of inspiration, emphasizing its cultural and scientific significance. According to the resolution, the enjoyment and contemplation of the starry sky should be regarded as a fundamental socio-cultural and ecological right, and its progressive degradation as a profound loss for all humankind. The resolution calls for the control of excessive lighting—which amplifies skyglow—to become a central element of nature conservation policy, given its harmful effects on humans, flora and fauna, ecosystems, and landscapes. It also encourages the development of diverse forms of tourism that utilize the night sky as a resource, in order to safeguard its value across all destinations. Finally, the IAU resolution urges members to take necessary measures to involve all stakeholders—at national, regional, and international levels—in the collective effort to protect the night sky and the right to observe the stars.

All the aforementioned documents are of an internally binding nature only, grounded in the voluntary commitment of their drafters to the objectives of protecting nature and the heritage of the dark sky. Nevertheless, despite their non-binding character, these soft law instruments play an important role in structuring and articulating goals of significance for all of humanity, as well as for plant and animal life. Therefore, they should be observed, at least until they are replaced by traditional hard law sources (Mijatović, 2024).

To date, only several countries have adopted specific legal instruments regulating the issue of light pollution at the national level. Notable exceptions include Croatia, Slovenia, the Czech Republic, France,

and, outside Europe, Chile, South Korea, and Mexico. In some states, this issue is addressed as part of broader legislation on energy efficiency, environmental protection, or nature conservation, as seen in Finland and Germany. In many others, light pollution is regulated at the federal level (e.g. the United States), at the regional level, (e.g., Italy and Spain), or at the local level. Still, in many countries, including Serbia, Estonia, Romania, Norway, Liechtenstein, Iceland, Cyprus, and others, there is still no legislation concerning excessive artificial lighting (Szlachetko, 2022; Vidmar et al., 2022).

3. Right to Night Sky Protection and Perspectives

The intrusion of light onto a person's property during evening hours disrupts privacy and undermines a peaceful and comfortable life within one's own home. It negatively affects sleep quality, leading to chronic fatigue and, over time, deterioration of individual health, proven to be linked to the occurrence of cancer and various other illnesses. Such light may originate from exterior lighting installed too close to residential properties, from overly tall streetlamps, decorative building illumination, nearby sports facilities—most commonly stadiums—advertising billboards, or poorly designed security lighting. When the lighting in question is particularly vibrant, flashing, or dynamic in character, its adverse effects not only compromise individual health and quality of life, but can also entirely distort the appearance, ambiance, and atmosphere of one's living environment (Zielinska-Dabkowska et al., 2020). In the continental legal system, such harmful effects are traditionally defined as “immissions” in the context of neighboring property relations—i.e., emissions involving the release of harmful substances or effects into the environment across the boundaries of adjacent properties. In common law jurisdictions, they are typically classified as *public nuisance*, *private nuisance*, and less frequently, as *trespass*—direct and unlawful interference (Gajinov, 2016).

Case law concerning light pollution remains limited worldwide. The highest concentration of such disputes is found in the United States, where, since the 1990s, there has been a noticeable increase in litiga-

tion, reflecting growing public awareness of the need for environmental protection. Nevertheless, a comprehensive 2018 study examining 180 different legal cases across all 50 U.S. states involving either excessive illumination or insufficient and inadequate lighting revealed that citizens rarely prevailed in disputes against local authorities (Zhou, 2018). Of all recorded cases, only three specifically concerned the protection of the night sky as a universal value of humankind. In the first—*Laubenstein v. Bode Tower*—the plaintiff, an amateur astronomer, sought to minimize light levels around his property by deactivating security lighting and encouraging his neighbors to do the same, in order to preserve the natural environment. The Bode company in Oklahoma, however, successfully obtained all necessary permits and proceeded to construct a telecommunications tower to improve mobile network coverage. In his nuisance claim, Laubenstein emphasized the impact of the tower's flashing lights, which reflected off a nearby water surface and disrupted both the visual character of his home and his right to peaceful enjoyment of his property—particularly in light of his efforts to maintain conditions conducive to scientific observation. While the lower court initially ordered the tower's removal, the decision was overturned on appeal, with the court finding that the public interest in improved network coverage outweighed the plaintiff's aesthetic preferences. The ruling was further justified by the absence of additional evidence indicating that the presence of the tower posed a health risk or otherwise infringed upon the right to a quiet and comfortable living environment by obstructing the view of the night sky. The second case had a different outcome: a company specializing in renewable energy sources (EDF) filed an appeal against the decision of the Foster Township Zoning Hearing Board in Luzerne County, Pennsylvania, which had denied their request for a special exception to construct wind turbines in the area (*EDF Renewable Energy v. Foster Township Zoning Hearing Board*). Local residents, including the president of the local astronomical society, argued that the wind turbines would obstruct views of the sky and contribute to increased light pollution. Without delving into the full details of the dispute, it is significant that the appeal was dismissed by the Luzerne County Court on the grounds that the company had failed to provide sufficient information and evidence that the planned wind turbines would not jeop-

ardize the interests and property of the local community, in accordance with local zoning regulations. In the most recent case (*In re Stokes Communications Corp.*), an appeal filed by a telecommunications company was also rejected. The Environmental Board had requested the company to install light shields on a radio transmission tower. The rationale put forward was concern over the quality of the night sky, which could be compromised—an encouraging signal in terms of growing recognition for this universal natural value.

4. Conclusion

U odnosu na druge izvore štetnih uticaja koje je daleko zahtevnije otkloniti ili ograničiti, uz često velika infrastrukturna ulaganja, svetlost kao zagađivač iziskuje isključivo pametno upravljanje i racionalnu potrošnju, što momentalno daje rezultate. To podrazumeva kombinaciju različitih metoda, od minimiziranja količine plave svetlosti, korišćenja adekvatnog nivoa osvetljenosti sa ograničenim brojem izvora, upotrebe zaštićenog osvetljenja, gašenje svetla, koje trenutno nema funkciju, do ugradnje pametnih senzora. Primena ovih mera zahteva edukaciju lokalnih organa i zajednice o pravilnom načinu korišćenja veštačkog osvetljenja i racionalnijoj potrošnji, kroz primere dobre prakse, obuke i vodiče, kao deo lokalnih planova delovanja u ovoj oblasti. Sa pravne tačke gledišta neophodno je što pre tradicionalnom, obavezujućom *hard law* regulativom uspostaviti sistem zaštite noćnog neba kao univerzalnog dobra čovečanstva na međunarodnom nivou. To bi predstavljalo osnov i za usvajanje nacionalnih pravnih mehanizama namenjenih zaštititi od svetlosnog zagađenja u što većem broja država kojom bi bila regulisana pitanja koja se odnose na period upotrebe, maksimalni nivo osvetljenja, neophodnu zaštitu izvora, temperaturu boje svetlosti, pitanje direktnih smetanja izazvanih svetlosnim snopovima, karakteristike svetlosnih signala, kao i raspored zona sa određenim nivoom osvetljenosti prema njihovim različitim funkcijama (Feathers, 2022). Na ovaj način bi se uspostavila pravno obavezujuća pravila o ograničenju upotrebe veštačke svetlosti koje ugrožava zdravlje ljudi i čitave ekosisteme, uticalo na smanjenje emisije gasova sa efektom staklene bašte kao

doprinos ublažavanju klimatskih promena, ali i omogućilo posmatranje noćnog neba koje je kao deo životne sredine trenutno nepravedno zapostavljeno.

Compared to other sources of harmful environmental impact, which are often far more difficult to eliminate or mitigate and frequently require extensive infrastructural investments, light, as a pollutant, demands only smart management and rational consumption to yield immediate results. This involves a combination of measures such as reducing the amount of blue light, using appropriate levels of illumination with a limited number of sources, employing shielded lighting fixtures, turning off lights when they are not functionally necessary, and installing intelligent sensor systems. The implementation of these measures requires the education of local authorities and communities on the proper use of artificial lighting and more efficient consumption practices, through examples of good practice, training programs, and instructional guides, all embedded within local action plans. From a legal standpoint, it is essential to promptly establish a system for the protection of the night sky as a universal common good of humanity through traditional, binding hard law instruments at the international level. This would serve as the foundation for the adoption of national legal mechanisms aimed at combating light pollution, regulating issues such as permitted usage periods, maximum brightness levels, the protection of light sources, light color temperature, direct interference from light beams, signal characteristics, and designated zones with differentiated levels of illumination based on functional use (Feathers, 2022). In this way, legally binding rules would be introduced to limit artificial lighting that threatens human health and entire ecosystems, contribute to reducing greenhouse gas emissions as part of climate change mitigation efforts, and enable the observation of the night sky, a vital but unjustly neglected component of the environment.

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