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Protection of Plant Biodiversity in the Light of International Law

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Abstract: *Plants are an integral part of the living organism of nature. Protection of plant biodiversity is essential to ensure the health of ecosystems. The natural world is characterised by cyclical and mutually complementary processes. If the self-regenerative capacity of nature is disturbed, it results in a breach of the biological balance in the ecosystem and the human environment of life. The rapid degradation of natural habitats prompts one to analyse the existing plant protection mechanism. This paper will analyse environmental regulations and standards, which may be the basis for reforming protection programmes.*

Key Words: *International Law; Environmental Law; Plants; Biodiversity; Environmental Safety; Environmental Protection.*

Introduction

Current norms of international law focus on the protection of the environment within the meaning of individual elements of nature or ecosystems. Territorial location is a commonly used criterion in treaties, e.g. protection of a marine ecosystem or a mountain range. Comparatively, many more regulations and studies have been created in the area of animal protection law. This is due to the fact that animals accompany men from prehistoric times, they feel, show emotions and form attachments. Plants, on the other hand, although inscribed in our everyday life, so far occur on the outskirts of international law. Without diminishing the role and importance of animals for the functioning of nature and human life, this paper adopts a holistic approach to the natural environment.

The above-stated manner of deduction indicates that nature is a huge living organism, which consists of various species of flora and fauna and processes that enable and sustain life in nature. Holism perceives individual elements, which, despite their various functions in the ecosystem, altogether contribute to the harmonious functioning of nature as a whole. The term "harmony" indicates that plants play a key role in ensuring biological balance in nature and should not be overlooked. Plant health af-

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fects the functioning of the environment of human existence. Interdependent and complementary processes ensure biodiversity in nature.

Despite the rapid developments in science and technology, new anthropogenic processes are emerging or gaining momentum, which poses a serious threat to plant biodiversity. At the beginning of the 21st Century, the degree of environmental pollution exceeded permissible norms. More and more plant species succumb to extinction. The decline, in this respect, has reached "alarming rates".[1] The analysis below is aimed at formulating proposals for new solutions that could strengthen the protection of plant biodiversity.

1 Research problem and methodology

Increasing devastation of natural areas, excessive exploitation of natural resources and negative climate change mean that the fragile biological tissue of ecosystems is in a state of permanent danger. Illegal landfills, contamination of water, soil and air with toxic substances erode plant biodiversity. Urbanisation, the expansion of the economy and industry are rapidly absorbing further natural areas. It is, therefore, necessary to establish how the existing status of plants is articulated in international law. The adoption of the stated direction will allow to determine, at the same time, the essential elements of the currently functioning plant protection model.

For this purpose, the formal-dogmatic method was used when analysing legal documents and acts. The comparative method, on the other hand, will allow the verification of regulations against real life examples. In order to ensure that protection is comprehensive, one should consider the circumstances and the context. For this reason, reference is made to other fields of science. The arguments include the axiological aspect, which should permeate the formal and legal layer of regulations, as well as of social practice.

[1] See USMAN, A. B., S. ABUBAKAR, Ch. ALAKU and O. NNADI. Plant: A Necessity of Life. *International Letters of Natural Sciences* [online]. 2014, vol. 20, p. 151 [cit. 2022-11-11]. ISSN 2300-9675. Available at: https://doi.org/10.56431/p-f123mg; and ALMOND, R. E. A., M. GROOTEN, D. JUFFE-BIGNOLI and T. PETERSEN, eds. *Living Planet Report 2022: Building a Nature-positive Society* [online]. 1st ed. Gland, Switzerland: WWF, 2022. 115 p. [cit. 2022-11-11]. ISBN 978-2-88085-316-7. Available at: https://wwflpr.awsassets.panda.org/downloads/lpr_2022_full_report.pdf.

2 Terminology issues

In order to delimit the research area, key terminological issues should be clarified. Plants are an organised form of life in nature. By performing life-giving functions for the entire ecosystem, they create the conditions for the existence and development of all living creatures. They provide oxygen, regulate processes occurring in nature, cleanse and prevent the deposition of excessive amounts of carbon dioxide in the atmosphere. They are a source of food and shelter, they provide aesthetic experiences by filling human life with beauty and colours. Healthy plants determine the biodiversity of flora and fauna and the maintenance of biological balance in nature. They regulate processes that affect the elimination of negative climate change. For this reason, plants are referred to "constitute the foundation for all life on Earth".[2]

In biological sciences, the term 'plant' refers to a living organism. The influence of biological sciences is currently reflected, for example, in the Regulation (EU) 2016/2031 of the European Parliament and of the Council of 26 October 2016 on Protective Measures against Pests of Plants, amending Regulations (EU) No. 228/2013, (EU) No. 652/2014 and (EU) No. 1143/2014 of the European Parliament and of the Council and repealing Council Directives 69/464/EEC, 74/647/EEC, 93/85/EEC, 98/57/EC, 2000/29/EC, 2006/91/EC and 2007/33/EC, in which the definition of "plant" was applied to the animated part of nature.[3] This corresponds to the purport in the International Plant Protection Convention, in which the analysed concept was applied to live plants and their parts (Article II item 1).[4] Depending on the legal act, the regulated issues and the scope of application, the defined concept may have a different overtone. Furthermore, one should bear in mind that scientific terms are not legal definitions. However, scientific criteria may contribute to the sys-

[2] See *Resolution No. 73/252* [International Year of Plant Health, 2020] [2018-12-20]. United Nations General Assembly, 2018, UN Doc. A/RES/73/252. Similarly, see *Resolution No. 76/256* [International Day of Plant Health] [2022-03-29]. United Nations General Assembly, 2022, UN Doc. A/RES/76/256.

[3] See Article 2 point 1 of the *Regulation (EU) 2016/2031 of the European Parliament and of the Council of 26 October 2016 on Protective Measures against Pests of Plants, amending Regulations (EU) No. 228/2013, (EU) No. 652/2014 and (EU) No. 1143/2014 of the European Parliament and of the Council and repealing Council Directives 69/464/EEC, 74/647/EEC, 93/85/EEC, 98/57/EC, 2000/29/EC, 2006/91/EC and 2007/33/EC*. OJ EU L 317, 2016-11-23, pp. 4-104.

[4] See *International Plant Protection Convention* [Rome, 1951-12-06].

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tematisation of research matter and generation of *soft law* acts with a broader interdisciplinary view.

Basing on the current legal status, one may distinguish *sensu stricto* and *sensu largo* definitions. In the strict sense, the term "plant" refers to multiple and diverse forms of life in nature.[5] In order to reconstruct the definiens, one should consider the purpose for which the act in question was adopted. The Convention on International Trade in Endangered Species of Wild Fauna and Flora, signed at Washington on 3 March 1973, which governs international trade in endangered species of wild fauna and flora, is an illustration for the above-mentioned arguments. Conventional norms include the prevention of the illicit manufacture and distribution of products from protected plant species listed in the Appendices to the mentioned Convention. The practice of illicit trafficking in rare plant species is a lucrative form of crime. For example, according to the data from customs and tax services, approximately 200,000,000 kg of dried plants, including protected species, are exported from China every year.[6] Prevention requires a revision of the existing protection mechanism, cross-border exchange of information and international cooperation on a larger scale than before. Unlawful acts committed in this area constitute serious interference with the biological structure of plants and natural areas where flora habitats occur.

However, in *sensu largo*, the term "plant" refers to a component part of a given ecosystem. The Framework Convention on the Protection and Sustainable Development of the Carpathians points to the plants that make up the largest area of primeval forests on the European continent.[7] There are many endemic plant species in the Carpathians. The states parties expressed their will to reform the model of protecting the mountain ecosystem as a "unique natural treasure of great beauty and ecological value", a refuge of biodiversity of flora and fauna.[8] The stated Convention highlights the role of preserving the ecological functions of forests, protecting traditional crops, integrating environmental concerns into re-

[5] See *Convention on International Trade in Endangered Species of Wild Fauna and Flora* [Washington, 1973-03-03].
[6] See POKORA, A. Egzotyczne medykamenty. *Wiadomości Celne*. 2009, nr 10-11, p. 64. ISSN 1230-9087.
[7] See *Framework Convention on the Protection and Sustainable Development of the Carpathians* [Kiev, 2003-05-22].
[8] See Preamble of the *Framework Convention on the Protection and Sustainable Development of the Carpathians* [Kiev, 2003-05-22].

gional agricultural policy and sustainable land management.[9] The creators of the Convention standards were aware that semi-natural and natural grasslands are an element of the landscape, as well as an integral part of ecological networks (Article 7 item 2). Nature is a living organism, hence the disturbance of biological processes in a given area is not indifferent to the functioning of the ecosystem as a whole. Therefore, in order to give plant protection a comprehensive character, the definitions should take into account the interactions between humans and the environment. In this respect, it is advisable to use definitions that combine biological (scientific) aspects with functional ones.

3 Protection of plant biodiversity

Biodiversity is essential for the development of plurality in plant species. Biodiversity is defined as "the variety and richness of life on Earth",[10] in all forms of existence. This phenomenon occurs within species, as well as between different species and ecosystems.[11] The Convention on Biological Diversity, opened for signature at Rio de Janeiro on 5 June 1992, underlines that biodiversity is essential for "maintaining life sustaining systems of the biosphere" (Preamble).[12] Biodiversity indicates the inherent and intrinsic value of plants as living beings. It should be emphasised that the protection of plant biodiversity is not limited to biological aspects only, but concerns deeper issues arising from the rights on the basis of which nature functions in an organised manner. The main cause of the disappearance of plant species is anthropogenic activity. For the complementarity of protective measures, it is necessary to take into account biotic factors (interactions between living organisms and their environment of life) and abiotic factors (physicochemical factors, ecological factors of a physical nature) that affect the course of processes in ecosystems.

3.1 Conservation in-situ

Pursuant to the Article 2 of the Convention on Biological Diversity, opened for signature at Rio de Janeiro on 5 June 1992, the *in-situ* protec-

[9] See Article 7 item 2, Article 7 item 4, Article 11 of the *Framework Convention on the Protection and Sustainable Development of the Carpathians* [Kiev, 2003-05-22].
[10] See JEFFRIES, M. J. *Biodiversity and Conservation*. 2nd ed. London: Routledge, 2006, p. 5. ISBN 0-415-34299-6.
[11] See Article 2 of the *Convention on Biological Diversity* [Rio de Janeiro, 1992-06-05].
[12] See *Convention on Biological Diversity* [Rio de Janeiro, 1992-06-05].

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tion involves the conservation of plants and their habitats in the natural environment, restoring the population of plant species in ecosystems, and in the case of cultivated species, introducing protection in the surroundings in which the plants have developed their characteristic properties (e.g. arable crops). Conservation *in-situ* involves accounting for plant habitats in spatial planning, restoring degraded natural areas, creating protected areas. It also includes the development of coherent environmental protection programmes, controlling the risks associated with the introduction of genetically modified organisms into the environment, which could adversely affect the growth process resulting from the natural development cycle of plants.

Conservation *in-situ* also involves the reintroduction of species into the environment in which they originally existed. Coastal wetlands play a significant role in this respect. Wetlands perform functions important for human life, as well as for the proper functioning of the ecosystem, e.g. they reduce the effects of drought, hurricanes, floods, tsunamis; mangrove forests offer a natural buffer against storms by reducing the speed and height of waves; root systems of plants bind the shoreline while preventing erosion and negative wind impacts; wetlands also purify water ("natural filters" in nature), absorb carbon dioxide ("carbon sinks"), neutralise negative climate change.[13] The loss of wetlands would be an irreversible loss for mankind and nature. We should not delay in this respect, because humanity has lost 64 % of wetlands since year 1900.[14] Wetlands are a natural habitat for many species of plants and animals, including reservoir of endemic species. Wetlands create a palette of colours and landscapes, also performing aesthetic functions.

The multifunctional nature of wetlands requires coordinated and future-oriented protection. The List of Wetlands of International Importan-

[13] See BRIGGS, Ch. Wetlands: At the Heart of Disaster Risk Reduction. In: *United Nations University* [online]. 2015, p. 4 [cit. 2022-11-11]. Available at: https://i.unu.edu/media/ias.unu.edu-en/news/7676/Christopher-Briggs.pdf; KAUL, S. and R. KUMAR. *Wetland Conservation: Ethos* [online]. 1st ed. New Delhi: Wetlands International South Asia, 2019, pp. 19-22 [cit. 2022-11-11]. Available at: https://south-asia.wetlands.org/publications/wetland-conservation-ethos/; and RICHARDSON, C. J. Ecological Functions and Human Values in Wetlands: A Framework for Assessing Forestry Impacts. *Wetlands* [online]. 1994, vol. 14, no. 1, pp. 2-4 [cit. 2022-11-11]. ISSN 1943-6246. Available at: https://doi.org/10.1007/bf03160616.

[14] See BRIGGS, Ch. Wetlands: At the Heart of Disaster Risk Reduction. In: *United Nations University* [online]. 2015, p. 5 [cit. 2022-11-11]. Available at: https://i.unu.edu/media/ias.unu.edu-en/news/7676/Christopher-Briggs.pdf.

ce ("The Ramsar List") in terms of botany, zoology, ecology, limnology, hydrology is being reviewed on the basis of the Convention on Wetlands of International Importance Especially as Waterfowl Habitat, signed at Ramsar on 2 February 1971.[15] Wetlands regulate hydrological relations, chemical and biogeochemical processes in the ecosystem. They are, therefore, referred to as the "kidneys of the landscape".[16] Restoring natural habitats of plants in wetlands can help preserve ecosystem functions. The ecological cycle and plant biodiversity are currently threatened by global warming, expansion of urbanisation and industry, dehydration and the use of more and more land for crops. Wetland restoration should include practical solutions (e.g. creation of peat reserves, revitalisation of floodplains and old river beds), combined with ecologically conscious legislation.

3.2 Conservation ex-situ

In the light of the Convention on Biological Diversity, opened for signature at Rio de Janeiro on 5 June 1992, the *ex-situ* protection of flora will include the protection of biodiversity components outside their habitats.[17] Actions in this field are resorted to when conservation activities in the natural environment are impossible or significantly limited, e.g. due to soil erosion, cessation of biological and biochemical processes. The creation of seed banks ('frozen' botanical gardens) in which seed (genetic) material of plants threatened with extinction is stored is another form of plant conservation *ex-situ*. The term "genetic material" refers to reproductive and vegetative propagating material with functional units of heredity.[18] Studies of lettuce seeds carried out at the Seed Bank of the Polish Academy of Sciences have shown that the cryogenic method (–160 degrees Celsius) allows for the storage of seeds for up to 3 400 years.[19]

[15] See Article 2 items 1 – 2 of the *Convention on Wetlands of International Importance Especially as Waterfowl Habitat* [Ramsar, 1971-02-02].

[16] See SHINE, C. and C. de KLEMM. *Wetlands, Water and the Law: Using Law to Advance Wetland Conservation and Wise Use*. 1st ed. Gland, Switzerland: IUCN, 1999, p. 7. IUCN Environmental Policy and Law Paper, no. 38. ISBN 2-8317-0478-2.

[17] See Article 2 in connection with the Article 9 of the *Convention on Biological Diversity* [Rio de Janeiro, 1992-06-05].

[18] See Article 2 of the *International Treaty on Plant Genetic Resources for Food and Agriculture* [Rome, 2001-11-03].

[19] See Ochrona ex situ dziko rosnących, zagrożonych i chronionych roślin w Polsce wschodniej. In: *Polska Akademia Nauk Ogród Botaniczny – Centrum Zachowania Różnorodności Biologicznej w Powsinie* [online]. 2014, p. 7 [cit. 2022-11-11]. Available at: https://www.ogrod-powsin.pl/pliki/files/bank-nasion/projekty/flornatur.pdf.

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Cryopreservation stops the ageing process, which allows the seeds to remain viable for a long time. Seeds stored in liquid nitrogen do not lose their germination capacity. In the light of the above-mentioned, seed banks can be considered as a subsidiary form of protection in relation to *in-situ* methods.

The Millennium Seed Bank is considered "the Noah's Ark" for plants. It is the largest and most biodiverse plant seed bank in the world. Botanic gardens Wakehurst with the Millennium Seed Bank are located in West Sussex. The institution operates under care of the Royal Botanical Gardens (the north-west of London).[20] It currently stores over 2.4 billion plant seeds from 97 countries around the world.[21] The accumulated genetic material is systematically broadened.

The Global Seed Bank (Svalbard globale frøhvelv) on Spitsbergen was established on 26 February 2008 with a view to protecting crop species. In order to ensure the safe and long-term storage of the plant genetic material, the premises were located in a rock tunnel hollowed out in permafrost.[22] The Arctic frost facilitates the seed storage process. Svalbard globale frøhvelv plays an important role in protecting the integrity and viability of seeds with a view to sustaining agriculture and providing humanity with healthy food.

It should be pointed out that, in practice, *ex-situ* protection may intertwine with *in-situ* protection methods, e.g. by using seeds from a "frozen" botanical garden to establish new forest nurseries in the rehabilitated areas (restoration of plant and tree populations). Collected seeds can be used to adapt plants to current changes in the climate. Stored genetic resources are a form of protection also in the event of armed conflicts, natural disasters or catastrophes that could lead to the destruction of plant species diversity in a given area or ecosystem.

The discussed activities are part of the implementation of the Global Strategy for Plant Conservation, which assumes the deposit of at least 75 % of endangered plant species *ex-situ* in their country of origin, and at

[20] The Royal Botanic Gardens in Kew were inscribed on the World Heritage List by the UNESCO World Heritage Centre in year 2003.

[21] Information provided by the Royal Botanical Gardens (status as of 11 November 2022).

[22] See FOWLER, C. *The Svalbard Global Seed Vault: Securing the Future of Agriculture* [online]. 1st ed. Bonn: Global Crop Diversity Trust, 2008, pp. 4, 16, 17 [cit. 2022-11-11]. Available at: https://blogs.worldbank.org/sites/default/files/climatechange/The%20Svalbard%20Seed%20Vault_Global%20Crop%20Diversity%20Trust%202008.pdf.

least 20 % available for restoration programmes and recovery.[23] Conservation *ex-situ* implemented by seed banks aims to maintain the genetic integrity and viability of genetic resources. Plant genetic diversity forms "the web of biodiversity".[24] In order to give a comprehensive character to activities in question, protective mechanisms should be correlated with pro-ecological education.

4 Current perspective of environmental norms

Many environmental regulations have been developed under national laws. The content of the provisions of internal law is influenced by the national legal tradition, systemic principles of the state, commonly accepted values, as well as cultural and natural heritage. Geopolitical considerations, economic situation, current directions of internal and foreign policy, transformations and institutionalisation of the international community come to the fore. It should be pointed out that the treatment of the natural environment as an object of protection is one of the characteristic features of the current regulations.[25] In this context, Robert Zawłocki noted: "The protection of the environment against particularly harmful behaviour by means of criminal law instruments is undoubtedly justified […]. At the level of the individual object of protection, the provisions of the discussed chapter [XXII of the Polish Criminal Code] protect various goods, which, in fact, constitutes an objectification of the natural environment. These include parts of the environment, e.g. in the form of things, objects, areas, as well as human beings themselves and, in particular, their life and health."[26] Objectification of the environment affects the

[23] See Objective II, Target 8 in *The Global Strategy for Plant Conservation: 2011 – 2020*. 1st ed. Richmond, UK: Botanic Gardens Conservation International, 2012, p. 14. ISBN 978-1-905164-41-7; and EBERT, A. W. and J. M. M. ENGELS, eds. *Plant Biodiversity and Genetic Resources* [online]. 1st ed. Basel: MDPI, 2021. 657 p. [cit. 2022-11-11]. ISBN 978-3-0365-0895-5. Available at: https://doi.org/10.3390/books978-3-0365-0895-5.

[24] See *Strategic Plan for the Commission on Genetic Resources for Food and Agriculture (2019 – 2027)* [online]. 1st ed. Rome: Food and Agriculture Organization of the United Nations, Commission on Genetic Resources for Food and Agriculture, 2021, p. 3 [cit. 2022-11-11]. Available at: https://www.fao.org/3/ca8345en/ca8345en.pdf.

[25] See JAKUBOWSKA, A. Ochrona środowiska – aspekty prawne zagadnienia. *Mazowsze: Studia Regionalne* [online]. 2008, nr 1, p. 109 [cit. 2022-11-11]. ISSN 2543-4373. Available at: https://mazowszestudiaregionalne.pl/ochrona-srodowiska-aspekty-prawne-zagadnienia/; and WIERZBOWSKI, B. and B. RAKOCZY. *Prawo ochrony środowiska: Zagadnienia podstawowe*. 7. wyd. Warszawa: Wolters Kluwer, 2018, p. 19. ISBN 978-83-8124-947-8.

[26] In the Polish "Ochrona środowiska naturalnego przed szczególnie szkodliwymi dla niego zachowaniami za pomocą instrumentów prawa karnego jest niewątpliwie uzasadniona […]. Na płaszczyźnie indywidualnego przedmiotu ochrony przepisy omawianego rozdzia-

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development of regulations, determines the current perception on plants in the law.

The Stillheart Declaration on Rights of Nature and the Economics of the Biosphere indicates that most of the present legal provisions treat nature in categories of commodification – "current law 'sees' nature as human owned property".[27] Actually, protection mechanism is embedded in anthropocentric criteria. The paradigm of protection shaped according to the above-stated criteria highlights industrial and economic aspects, which results in excessive interference with the environment, consumption of natural resources beyond needs and separation of man from nature.

5 Rights of nature in ensuring ecological safety

Rights of nature are a relatively new legal concept that has emerged in the Latin American countries. The creation of nature rights was impacted by many factors, which often occurred in a cumulative manner. The main anthropogenic reasons include policy directions pursued by decision-makers, economic conditions, crises and social diversification, displacement of the indigenous people from traditionally occupied territories, as well as the expansion of foreign fuel and energy companies.

The first country in which rights of nature were recognised as constitutional rights was Ecuador.[28] The Amazon forests of Ecuador are an epicentre of plant biodiversity.[29] Oil extraction performed by an American

łu [XXII Kodeksu karnego] chronią różne dobra, które w istocie stanowią uprzedmiotowienie środowiska naturalnego. Zatem są to jego części, np. w postaci rzeczy, obiektów, terenów, jak i samego człowieka, a w szczególności jego życia i zdrowia". See ZAWŁOCKI, R. Karnoprawna ochrona środowiska naturalnego. *Przegląd Prawa Rolnego* [online]. 2014, nr 1, p. 129 [cit. 2022-11-11]. ISSN 2719-7026. Available at: https://doi.org/10.14746/ppr.2014.14.1.6.

[27] See *Stillheart Declaration on Rights of Nature and the Economics of the Biosphere* [Woodside, 2014-03-03].

[28] See ECHEVERRÍA, H. Rights of Nature: The Ecuadorian Case. *Revista Esmat* [online]. 2017, vol. 9, n. 13, p. 78 [cit. 2022-11-11]. ISSN 2447-9896. Available at: https://doi.org/10.34060/reesmat.v9i13.192.

[29] See MYERS, N. Threatened Biotas: "Hot Spots" in Tropical Forests. *Environment Systems & Decisions* [online]. 1988, vol. 8, no. 3, p. 194 [cit. 2022-11-11]. ISSN 2194-5411. Available at: https://doi.org/10.1007/bf02240252; GÓMEZ-BETANCUR, L., S. P. VILARDY Q. and D. TORRES R. Ecosystem Services as a Promising Paradigm to Protect Environmental Rights of Indigenous Peoples in Latin America: The Constitutional Court Landmark Decision to Protect Arroyo Bruno in Colombia. *Environmental Management* [online]. 2022, vol. 69, no. 4, p. 770 [cit. 2022-11-11]. ISSN 1432-1009. Available at: https://doi.org/10.

company caused soil devastation, as well as penetration of toxic substances into the soil, water and atmosphere. The degradation of natural areas amounted to an ecological disaster known as the "Amazon Chernobyl" or "Rainforest Chernobyl".[30] The deepening devastation of nature prompted a search for a new paradigm of environmental protection.

Rights of nature originate from traditional views, beliefs and customs of the indigenous peoples. In the Article 71, the Ecuadorian Constitution uses the phrase "Pacha Mama", which means "Mother Earth".[31] For the indigenous people, "Pacha Mama" is the personification of a being considered to be the source of all life. According to the traditional views, there is a genealogical relationship between nature and people. The above-stated approach can also be observed in other countries where rights of nature have been introduced as *ius cogens*. For example, the Māoris say of the Whanganui River: "Ko au te awa, ko te awa ko au" ("I am the river, the river is me").[32] According to the beliefs of the indigenous people, the Whanganui River was passed on to their ancestors by Papatūānuku, which in the Māori language means "Mother Earth". Unlike in the English law, in the Māori culture and tradition, the river, along with other natural elements, was not an object and was not subject to trade.[33] Hence, the conclusion that rights of nature cast a broader light on the dependence of human beings on the forces of nature. This approach treats plants as not only a source of food or shelter, but as a tissue into which human life is embedded, which is illustrated also by the ruling of the Constitutional Court of Colombia of 10 November 2016, which sets out

1007/s00267-021-01483-w; and KIMERLING, J. Disregarding Environmental Law: Petroleum Development in Protected Natural Areas and Indigenous Homelands in the Ecuadorian Amazon. *Hastings International and Comparative Law Review* [online]. 1991, vol. 14, no. 4, p. 851 [cit. 2022-11-11]. ISSN 2577-0284. Available at: https://repository.uchastings.edu/hastings_international_comparative_law_review/vol14/iss4/6/.

[30] See DONZIGER, S. R. Rainforest Chernobyl: Litigating Indigenous Rights and the Environment in Latin America. *Human Rights Brief*. 2004, vol. 11, no. 2, pp. 1-4. ISSN 1533-6808.

[31] See *Constitution of the Republic of Ecuador* [2008].

[32] See IORNS MAGALLANES, C. J. Nature as an Ancestor: Two Examples of Legal Personality for Nature in New Zealand. *VertigO* [online]. 2015, vol. 22, p. 6 [cit. 2022-11-11]. ISSN 1492-8442. Available at: https://doi.org/10.4000/vertigo.16199; and RADZIUNAS, C. Missing the Mark: A Critical Analysis of the Rights of Nature as a Legal Framework for Protecting Indigenous Interests. *Tulane Environmental Law Journal* [online]. 2022, vol. 35, no. 1-2, p. 117 [cit. 2022-11-11]. ISSN 1942-9908. Available at: https://journals.tulane.edu/elj/article/view/3770.

[33] See *The Whanganui River Report: Waitangi Tribunal Report*. 1st ed. Wellington: GP Publications, 1999, pp. 48-51. ISBN 1-86956-250-X.

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the main assumptions of bioculturalism – unity and interdependence between man and nature (§ 9.28).[34]

Rights of nature play an important role in building a socio-ecological space. Following this line of reasoning, plant protection will also include the transfer of knowledge and skills on natural methods of soil cultivation, plant care, production of medicines of plant origin with the use of traditional methods (ethnomedicine, folk medicine). Therefore, in order to increase the effectiveness of protection mechanisms, the biocultural element related to folk knowledge and traditional skills passed down from generation to generation should be taken into account. Nurturing traditional knowledge aims to show more clearly that natural resources should not be treated merely as raw materials, but, above all, as obligations and responsibilities for the state of the natural environment.

Environmental protection revolves around fundamental issues of human existence. Sustainable use of plants and other natural resources determines the direction of profiling activities in the economy, industry and agriculture. Becky Mansfield and Ariel J. Rawson identified rights of nature as the most significant alternative to the mainstream environmental management resulting in commodification (objectification) and anthropocentrism.[35] Rights of nature can help neutralise the economic and material criteria (property rights) that currently prevail in environmental legislation.

Conclusions

So far, the focusing of environmental standards on socio-economic criteria results in the weakening of ecological indications and the objectification of the environment in the provisions of the law. Plants "blur" in the thicket of regulations mainly concerning the prevention of pests, ensuring agricultural food safety or counteracting negative climate change. The principle of sustainable development, which should support the maintenance of balance in political, economic and environmental activities, is exposed to massive impacts at the core of the regulation. Instead of eco-

[34] See *Case of Center for Social Justice Studies et al. v. Presidency of the Republic et al.* [The Atrato River Case] [2016-11-10]. Judgement of the Constitutional Court of Colombia, 2016, T-622/16.

[35] See RAWSON, A. J. and B. MANSFIELD. Producing Juridical Knowledge: "Rights of Nature" or the Naturalization of Rights?. *Environment and Planning E: Nature and Space* [online]. 2018, vol. 1, no. 1-2, p. 99 [cit. 2022-11-11]. ISSN 2514-8494. Available at: https://doi.org/10.1177/2514848618763807.

logical aspects, more and more often utilitarianism, market mechanisms and factors affecting trade come to the fore.

Industrialisation, overexploitation and the global ecological crisis pose a serious threat to the pillars of ecological safety, plant biodiversity and biological processes taking place in nature. In view of complementarity, this paper analysed both *in-situ* and *ex-situ* protection methods. The variety of plant species is an expression of the diversity of life forms in nature. On the other hand, it shows the challenges in ensuring effective and efficient protection, so that the actions taken do not constitute too far-reaching interference in the genetic profile of plants. Our paper refers to the rights of nature, which can help prevent the reductionist vision of the environment. This concept aims at shaping harmonious relations between the human beings and the natural world based on respect for and rational use of natural resources. The presented considerations do not exhaust the discussed issues, but may lead to a deeper legislative reflection.

The state-centric nature of international relations means that the implementation of environmental norms still depends primarily on the will of individual countries. The threats to the plant biodiversity and the environment on a global scale indicate that there is an urgent need to develop a ground of dialogue and understanding. The analysed norms and regulations, through referring to timeless axioms, can contribute to the formation of new environmental ethics in order to engage and to prospectively care for our common "home", planet Earth.

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