

 <p>REVISTA MOLDOVENEASCĂ DE DREPT INTERNAȚIONAL ȘI RELAȚII INTERNAȚIONALE Chișinău, Republica Moldova</p>	<p>Revista Moldovenească de Drept Internațional și Relații Internaționale / Moldavian Journal of International Law and International Relations / Молдавский журнал международного права и международных отношений</p> <p>2024, Issue 1, Volume 19, Pages 9-22. ISSN 1857-1999 EISSN 2345-1963 Submitted: 06.05.2024 Reviewed 22.05.2024 Accepted: 01.06.2024 Published: 15.06.2024 https://doi.org/10.61753/1857-1999/2345-1963/2023.19-1.06</p>
---	--

**TRIBUNA DISCUȚIONALĂ
THE TRIBUNE OF DISCUSSION
ДИСКУССИОННАЯ ТРИБУНА**

**CONSIDERATIONS REGARDING THE INTRODUCTION OF A LAW OF
PROTECTIVE FOREST CURTAINS IN THE DOMESTIC REGULATORY
FRAMEWORK AS AN INTERNATIONAL COMMITMENT TO CONSERVE THE
ECOSYSTEM**

**CONSIDERAȚIUNI PRIVIND INTRODUCEREA UNEI LEGI A PERDELELOR
FORESTIERE DE PROTECȚIE ÎN CADRUL NORMATIV AUTOHTON CA
ANGAJAMENT INTERNAȚIONAL DE CONSERVARE A ECOSISTEMULUI**

**СООБРАЖЕНИЯ ОТНОСИТЕЛЬНО ВНЕДРЕНИЯ ЗАКОНА О ЗАЩИТНЫХ
ЛЕСНЫХ ЗАВИН ВО ВНУТРЕННЮЮ НОРМАТИВНУЮ БАЗУ КАК
МЕЖДУНАРОДНОГО ОБЯЗАТЕЛЬСТВА ПО СОХРАНЕНИЮ ЭКОСИСТЕМЫ**

MĂRGINEANU Elena* / MARGINEANU Elena / МЭРДЖИНЯНУ Елена

ABSTRACT:

**CONSIDERATIONS REGARDING THE INTRODUCTION OF A LAW OF PROTECTIVE
FOREST CURTAINS IN THE DOMESTIC REGULATORY FRAMEWORK AS AN
INTERNATIONAL COMMITMENT TO CONSERVE THE ECOSYSTEM**

The article analyzes the possibility of introducing a law on protective forest curtains into the national normative framework, following the existing provisions for this category of natural resource elements and the gaps between the responsibilities and rights of different categories of subjects regarding the management of forest protective curtains.

The need to harmonize the phrase „protective forest curtains” in the entire spectrum of normative acts is highlighted, as currently the legislator operates with several interchangeable terms that can create unnecessary confusion in solving the addressed problem. At the same time, a clear underlining of the attributions of the local public authorities is necessary in order to monitor the quality of the forest curtains in the managed perimeter, since the lack of clarity of the existing attributions does not allow the implementation of the environmental objectives established by the public policy documents of the Republic of Moldova in its international commitments in the field of environmental protection.

Keywords: protective forest curtains, forest, forest vegetation, anti-erosion, evapotranspiration, ecosystem, biodiversity conservation.

JEL Classification: Q54

Universal Decimal Classification: 349.6; 349:630

<https://doi.org/10.61753/1857-1999/2345-1963/2023.19-1.06>

* MĂRGINEANU Elena. - Doctor în drept, lector universitar, Universitatea Liberă Internațională din Moldova (ULIM), (Chișinău, Republica Moldova). / MARGINEANU Elena. - PhD in Law, University Lecturer, Free International University of Moldova (ULIM), (Chisinau, Republic of Moldova). / МЭРДЖИНЯНУ Елена. - Кандидат юридических наук, преподаватель, Молдавский независимый свободный университет (ULIM), (Кишинев, Республика Молдова). <https://orcid.org/0000-0002-6157-8506> E-mail: margineanu.elena@gmail.com

REZUMAT:

CONSIDERAȚIUNI PRIVIND INTRODUCEREA UNEI LEGI A PERDELELOR FORESTIERE DE PROTECȚIE ÎN CADRUL NORMATIV AUTOHTON CA ANGAJAMENT INTERNAȚIONAL DE CONSERVARE A ECOSISTEMULUI

Articolul analizează posibilitatea introducerii în cadrul normativ autohton a unei legi privind perdelele forestiere de protecție, urmărind prevederile existente pentru această categorie de elemente de resurse naturale și carențele dintre responsabilitățile și drepturile diferitor categorii de subiecți privind gestionarea perdelelor forestiere de protecție.

Se evidențiază necesitatea de armonizare a sintagmei „perdele forestiere de protecție” în întregul spectru de acte normative, întrucât actualmente legiuitorul operează cu mai mulți termeni interschimbabili care pot crea o confuzie inutilă în soluționarea problemei abordate. Totodată, este necesară o subliniere clară a atribuțiilor autorităților publice locale în vederea monitorizării calității perdelelor forestiere din perimetrul gestionat întrucât neclaritatea atribuțiilor existente nu permite implementarea obiectivelor de mediu stabilite prin documentele de politici publice ale Republicii Moldova în angajamentele sale internaționale pe domeniul protecției mediului.

Cuvinte-cheie: perdele forestiere de protecție, pădure, vegetație forestieră, antierozivă, evapotranspirație, ecosistem, conservarea biodiversității.

JEL Classification: Q54

CZU: 349.6; 349:630

<https://doi.org/10.61753/1857-1999/2345-1963/2023.19-1.06>

РЕЗЮМЕ:

СООБРАЖЕНИЯ ОТНОСИТЕЛЬНО ВНЕДРЕНИЯ ЗАКОНА О ЗАЩИТНЫХ ЛЕСНЫХ ЗАВИН ВО ВНУТРЕННЮЮ НОРМАТИВНУЮ БАЗУ КАК МЕЖДУНАРОДНОГО ОБЯЗАТЕЛЬСТВА ПО СОХРАНЕНИЮ ЭКОСИСТЕМЫ

В статье анализируется возможность введения в национальную нормативную базу закона о лесозащитных пологах с учетом существующих положений по данной категории элементов природных ресурсов и различий между обязанностями и правами разных категорий субъектов по управлению лесозащитными пологами.

Подчеркнута необходимость гармонизации словосочетания «лесозащитные завесы» во всем спектре нормативных актов, поскольку в настоящее время законодатель оперирует несколькими взаимозаменяемыми терминами, которые могут создать излишнюю путаницу при решении рассматриваемой проблемы. В то же время необходимо четкое подчеркивание полномочий местных органов власти для контроля за качеством лесных завес в управляемом периметре, поскольку нечеткость существующих полномочий не позволяет реализовать экологические требования. цели, установленные документами государственной политики Республики Молдова в ее международных обязательствах в области охраны окружающей среды.

Ключевые слова: защитные лесные завесы, лес, лесная растительность, ротивоэрозивная борьба, эвапотранспирация, экосистема, сохранение биоразнообразия.

JEL Classification: Q54

УДК: 349.6; 349:630

<https://doi.org/10.61753/1857-1999/2345-1963/2023.19-1.06>

Introduction

The Republic of Moldova does not have a clear normative framework regarding the establishment and management of forest protection curtains. The legislation in force regulates these elements in an unstructured way both in terms of functionality and name. *The Law on Forest Protection Curtains* will allow the achievement of environmental conservation objectives even in conditions of significant climatic fluctuations.

Formally, the phrase „forest protection curtains” is not homogeneous in the existing normative acts, other phrases used interchangeably are „protection strips”, „river strips”, „street alignments”¹ or „road plantations”. For example, the new Forest Code has 8 entries for the word „curtains” and 0 for „strips”, and the amended Water Law has 35 entries for „strips” and 10 for „curtains”. The Water Law provides the definition for „strip water protection bank-land, with established dimensions, from the composition water protection zone for for protection water resources through the creation of foreign curtains or through greening”, at the same time, the legislator also uses the definition of „green spaces from the content traffic arteries” and in the list of management areas of the Municipal Enterprise „Association for the Management of Green Spaces” several „street alignments” in Chisinau are listed. These terms can be used interchangeably, but a unique wording is necessary to streamline the development of the regulatory framework of the Republic of Moldova.

Without a unique linguistic assignment to an element (forestry) that has the same function – protection, it is difficult to trace the subsequent normative connection. Thus, a law on the protection of forest curtains would establish the clear name of the category to be regulated and taken over in other normative acts.

At the same time, the category of „protective forest curtains” does not fall clearly into a sub-field of environmental law. In agroforestry practices, the following definition is offered: „formations forests with lengths differently and width relative narrow, located at a certain distance from they or towards an object in order to protect it against some factor pests”², again for current analysis is also proposed a description of „strips formed by elements of forest vegetation, established by planting, arranged linearly, laterally or on a sector of land, or adjacent to an objective, having the role of protection against natural and artificial influencing factors”. Thus, protective forest curtains are not part of the forest fund, but are classified as forest vegetation outside the forest fund, at the same time they can be planted on agricultural land and are not part of the category of green spaces in urban and rural localities with the exceptions established by the legislator. The protective forest curtains are part of the National Ecological Network and can be considered green corridors that unite the sectors of the forest fund and the natural areas protected by the state, but the system for establishing and managing them is inoperable, the management attributions being divided according to the location category, the profile the institution and the implementation capacities of the local public authorities – these are also not uniformly structured and presented clearly for any beneficiary interested in the issue of protective forest curtains.

A law of protective forest curtains will provide a unique classification, depending on the category, structure and nature of the species, the field of land on which they are located, here the category is contingent on the geographical location for the efficiency of the implementation of the necessary actions by the local public authorities and specialized centers with strict territorial subdivisions.

For the restoration of natural ecosystems, the preservation of the ecosystem and the improvement of the landscape aspect, the technical rules and regulations for forest management are applied to the management of these forest curtains. Therefore, although this category is separated from the forest fund, the ecological ensemble requires a simultaneous analysis and a harmonious integration of them in the National Ecological Network of the Republic of Moldova.

Fund forester of the Republic of Moldova

¹ Decision of the Chisinau Council no. 6/10 of 18.07.2017 regarding the approval of the „Regulation on the delimitation, management and protection of green spaces in the municipality of Chisinau”. [Online] <https://agsv.md/zonele-de-gestiune-2/> (Visited at 10.05.2024)

² Agroforestry practices recognized by the Ministry of Agriculture, Regional Development and the Environment. [Online] <https://www.madrm.gov.md/sites/default/files/PressReleas/Documente%20Atasate/PRACTICI%20AGROFORES TIERE%20PE%20EXEMPLUL%20F%C3%82%C5%9EILOR%20%C5%9EI%20PERDELELOR%20DE%20PROTEC%C5%A2IE.pdf> (Visited at 05.05.2024)

Forests of the Republic of Moldova represents the national strategic patrimony, the forest fund thus includes all forests, regardless of the type of ownership and form of management. Legally, it is considered forest a land covered with forest vegetation with an area of more than 0,25 ha.

The degree of forest coverage in the European Union is 39%¹. **The degree of forest coverage** of the Republic of Moldova is 11,4 %, the lands of the forest fund with forest vegetation included being 13,3% (449.8 thousand ha). The objective established in the „*Environmental Strategy 2013-2024*” is to increase this indicator up to 15% (507.2 thousand ha)², and the objective established in the „*Moldova European National Strategy 2030*” is to increase the forested area by 100 thousand hectares³. However, to ensure the ecological stability of the landscapes, the recommended share of forests would be 24%⁴.

The geographical distribution of forests in Moldova is as follows: north - about 19.7%, center - about 52.9%, south - 21.2% and to the left of the Dniester - 6.2%. They are **managed** 80.7% by the Moldsilva Agency (the central administrative authority in the field of forestry), 18.7% by local public authorities (LPA) and 0.6% are private forests.

The age of the forests in the Republic of Moldova is predominantly young. About 47% of Moldova's forests are up to 40 years old and only 22% are over 80 years old. As functional zoning, about 55% of the forests have land and soil protection functions (functional subgroup II), over 22% - recreation function (subgroup IV), and over 19% - forests of scientific interest (subgroup V). Only 2.5% of the stands of the forest fund have the function of water protection.

Moldova is affected by strong winds and the surface of eroded land is about 880 thousand hectares, with an increase in the surface affected by **erosion** by over 7000 hectares annually. The **drought** phenomenon is intensifying (up to 5-6 events in 10 years in the southern part of the country), and combined with the reduction of the biological resistance of the trees, it has affected by drying about 32% of the available forests.

The Republic of Moldova owns 57 **greenhouses** within the Moldsilva Agency (with an area of approximately 962 ha). Although their potential is 80 million seedlings, in 2021 the production capacity was only 12.1 million seedlings (45.3 ha).

The indicative share of **saplings by species** is as follows: pedunculate oak – 30%, acacia – 15%, elm – 7%, poplar – 6.5%, ash, red oak, platinum and sophora – 5% each, black walnut and black pine – 1.5% and 12% other species.

The indicative share of **tree species of the forest fund** is as follows: acacia - 34%, gorun - 11.8%, pedunculate oak - 15%, ash - 7.9%, hornbeam - 4.9%, linden - 3.4% , field elm – 1.6%, white poplar – 1.3%.

The average volume harvested per foot decreased to 115 m³/ha, and the average volume of mass harvested annually is about 600 thousand m³/year , from which 85-90% is firewood. In rural areas, 82% of homes use the stove for heating, and 17% have an autonomous system (gas, electricity, wood, coal)⁵. The lowest average volume per hectare is recorded for acacia (27 m³/ha), and the highest for linden (237 m³/ha) and gorun (235 m³/ha). **The annual growth** of woody mass also decreased to 3.5 m³/year/ha.

The role protective forest curtains in the balance of natural ecosystems

¹ Eurostat 2021: [Online] <https://ec.europa.eu/eurostat/web/products-eurostat-news/-/edn-20210321-1> (Visited at 19.04.2024)

² Environmental Strategy of the Republic of Moldova 2014-2023. (Visited at 18.02.2024)

³ National Development Strategy „European Moldova 2030”. (Visited at 11.01.2024)

⁴ Boboc N. Bejan I. Șîtu P. Considerations regarding the evolution of forest landscapes on the territory of the Republic of Moldova. In: Bulletin of the Academy of Sciences of the Republic of Moldova, no. 303.3. Chisinau, 2007. [Online] https://ibn.idsi.md/sites/default/files/imag_file/Consideratii%20cu%20privire%20la%20evolutia%20peisajelor_0.pdf (Visited at 12.05.2024)

⁵ National Bureau of Statistics - Household energy consumption. Chisinau, 2022. [Online] https://statistica.gov.md/files/files/publicatii_electronice/Consum_energie_gospoda/Consumul_energie_gospod_ariile_casnice_editia_2022.pdf (Visited at 21.11.2023)

Along with the reduction of protective forest curtains, the process of soil erosion intensifies, and millions of tons of fertile soil are lost from agricultural lands annually. The wind decreases its speed by up to 35% in the sheltered part of the agricultural land, and due to the reduction in wind speed, the evaporation of water from the soil decreases considerably and the evapotranspiration of trees protected by forest curtains with a height of over 15m, decreases by up to 40%. Water runoff is reduced by up to 15% if the agricultural land is well forested¹. At the same time, the agricultural harvest can register an increase of up to 40% for cereal crops through:

- Anti-erosion protection,
- Protection against the wind,
- Protection of the banks of surface water bodies,
- Sound insulation, protection of various objectives of public and/or industrial interest.

The main ecological, social and economic effects of the establishment and proper management of protective forest curtains are:

- Improvement of microclimatic conditions (reduction of wind, reduction of air temperature amplitude by up to 4 ° C, reduction of unproductive evapotranspiration by up to 30%, increase of air humidity at the soil surface by up to 5%);
- Improving soil fertility conditions;
- Improving the growing conditions of agricultural crops;
- Increasing the production of wood pulp and ancillary products;
- Protection of aquatic resources;
- Protection of socio-economic objectives and transport routes;
- Improving the conditions for the conservation of zonal biodiversity;
- Improving the carbon stock uniformly;
- Reconstruction and landscaping.

Without intervention, soil erosion and the negative effects of drought (which can be relatively mitigated by forest cover) will catalyze the reduction of soil quality in the Republic of Moldova (due to alluvial and wind erosion, the Republic of Moldova loses more than 20 million m³ of the fertile soil layer annually)². For agricultural lands, the lack of forest curtains will cause huge harvest losses. For the protection of the water bed, the lack of forest curtains will cause losses of aquatic potential:

- Losses of more than 20 km³ of moisture,
- Reduction of aquatic insect populations necessary to improve water quality,
- Providing leaf and fruit scraps to maintain the aquatic food chain,
- Reducing water speed after storms,
- Stabilization of banks and minimization of erosion, etc.

At the same time, one of the negative effects of the non-implementation of the measures to establish protective forest curtains is the damage to the genetic spectrum and biodiversity of the native natural ecosystems. The isolation of the representatives of the forest fauna to a limited perimeter unbalances the ecosystem and does not allow the harmonious development of the fauna of the Republic of Moldova, which would otherwise have been facilitated by the establishment and maintenance of the quality of green connecting corridors between the sectors of the forest fund.

¹ Dănescu F. Costăchescu C. The creation of the national network of protective forest curtains, an important premise for improving environmental conditions, between necessity and possibility. In: Journal of Forestry and Hunting, No. 35, 2014. ISSN 2284-7936. [Online] <http://progresulsilvic.ro/wp-content/uploads/2015.35.pdf#page=60> (Visited at 12.05.2024)

² Gumovschi A. Vîinari P. The role of forest curtains in protecting biodiversity and agricultural crops. BIOTICA Ecological Society. Chisinau, 2023. ISBN 978-9975-84-201-3. [Online] https://bioticamoldova.org/storage/files/Rolul_Perdelelor_Forestiere.pdf (Visited at 10.05.2024)

Development the concept of curtains protection forests

In the Eastern European region, the need for protective forest curtains gained a publicly voiced concept in the mid-1960s, when Romania realized the first plantations of forest crops. Despite all this, Romania experienced turbulence regarding the maintenance of the system of green corridors giving priority to the exploitation of wood mass and the processing of agricultural land until the early 1990s when the discussion about the purpose of a national system of forest curtains was reintroduced to the attention of the state, the legal framework for their establishment being established in 2002 with the adoption of Law no. 289 on forest curtains¹.

Most of the forest curtains in the Republic of Moldova were arranged during the Soviet period, but more than 50% of them have lost their functionality, either through deforestation or natural causes. At the beginning of 1912 in Russia, parties were formed for afforestation of ravines and fixing sands. Then the drought of 1946 dictated the need to adopt a plan to combat desertification, by planting forest curtains, known as the „plantation creation plan forest protection of fields, implementation employments sidereal, the construction of ponds and water pools for ensuring fruits constants and in other in the steppe conditions and forest steppe of the part European Union of the USSR”². The cumulative length of the forest curtains (over the entire Soviet area) comprised over 5320 km. In the 1950-1960 period, the emphasis on the productivity of collective farms and state farms required the addition of almost 113 thousand ha of field protection curtains to the network and the construction of 44 thousand ponds with strict sanitary zones³. In the Ukraine of the 1980s, the agricultural lands occupied by forest curtains were about 400 thousand hectares and in the dry years, the natural increase of the harvest exceeded 50%⁴.

The United States also developed a plan to massively create forest plantations to improve growing conditions for agricultural crops and protect them from drought, wind and dust storms. This plan was known as the „Roosevelt Plan” and its implementation was also prompted by the massive erosions in the USA in the year 1934, which were classified as one of the greatest natural disasters that can be avoided by human action. The value of the crops saved as a result of the positive impact of protective forest curtains exceeds by more than 10 times the amounts reimbursed in case of loss insurance in case of catastrophic droughts⁵.

In the Republic of Moldova, oak forests were mainly planted in the 1950s, receiving a major sanitary treatment in the 1980s. In the mid-1970s, the area of forest forests was 29 thousand ha, in the 1980s about 23 thousand ha, and today this indicator returned to almost 30 thousand ha. However, according to scientific regulations, it is recommended that their share in the total area of agricultural fields be at least 4%⁶, and in the Republic of Moldova this indicator currently does not exceed 2%.

According to the National Program for the Development of Nut Crops until 2020⁷, one of the state's objectives was to increase the productivity of the existing walnut plantations,

¹ Law no. 289 of 15.05.2002 regarding forest protection curtains. In: Official Gazette of Romania no. 338 of 21.05.2002. [Online] https://www.cdep.ro/pls/legis/legis_pck.htm_act_text?idt=35288 (Visited at 17.04.2024)

² Gosyurizdat M. History of collective farm law : Sat. Legislative materials of the USSR and RSFSR 1917-1958 T.II. Published in 1958. [Online] <https://docs.historyrussia.org/ru/indexes/values/882143> (Visited at 10.05.2024)

³ Galupa D. Establishing protective forest curtains as an adaptation measure to climate change: A practical guide for agricultural producers. UCIP IFAD. Chisinau, 2021. ISBN 978-9975-87-683-4.

⁴ Musat I. Evaluation of the economic and ecological efficiency of forest field protection curtains. In: Journal of Forestry and Hunting, no. 28 of 2011. [Online] <https://www.cabidigitallibrary.org/doi/pdf/10.5555/20123144972> (Visited at 10.05.2024)

⁵ Ibid.

⁶ The Project of the National Forest Extension and Rehabilitation Program for the period 2023-2032. [Online] https://gov.md/sites/default/files/document/attachments/subiect-02-nu-1012-mm-2022_1.pdf (Visited at 15.04.2024)

⁷ Government Decision no. 8 of 03.01.2006 regarding some measures to increase the production of nut crops. In: Official Monitor of the Republic of Moldova, no. 5-8. From 13.01.2006. [Online] https://www.legis.md/cautare/getResults?doc_id=11073&lang=ro# (Visited at 12.05.2024)

including those in the alleys along the roads (these having an expected production volume of 4.1 thousand tons in 2006 to 9.2 thousand tons in 2020¹). Although previously the economic preference was given to the agricultural processing of fertile lands, the need for a healthy system of forest curtains is still emphasized both by the state through environmental policies and by international entities.

The normative framework applicable to reports on the establishment and management of protective forest curtains

In regards to international application

Protective forest curtains are one of the pillars that ensure the preservation of natural habitats.

Internationally, the conservation of the ecosystem is an initiative that is subject to the provisions of national legislation and international agreements. Terrestrial and aquatic surfaces are subject to a conservation regime to ensure the ecological restoration of natural ecosystems.

Although the concept of ecological networks is not new and they have developed over decades in different regions with tangential natural resources, the over-use of the soil and the processes of environmental pollution have emphasized the imperative to recognize nature as an inviolable value with own identity. One of the main factors for the development of ecological networks is the continuous decrease of biodiversity in Europe, of the quality of natural habitats in the spectrum compared to a century ago, as well as the increase of management fragmentation of available resources. Awareness of the fragmentation of natural parks and the uncoordinated distribution of ecological zones has boosted the consolidation of their protection interests by ensuring socio-legal institutionalization. Ecological connectivity is found in international instruments such as:

- Ramsar Convention (wetlands, rational use)²,
- Bern Convention (wild species)³,
- Barcelona Convention on Endangered Species of Wild Fauna and Flora⁴,
- European directives on habitats and species of fauna and flora⁵,
- Bonn Convention (migratory species at risk of extinction and those with an unfavorable conservation status)⁶,
- Cooperation Convention for the Protection and Sustainable Use of the Danube River (sustainable use)⁷;
- European Union Regulation on Organic Agriculture (agricultural practices compatible with the protection of the environment and natural resources)⁸;
- Man and Biosphere Program (sustainable resource management practices)⁹;

¹ Walnut Revival: The National Program for the Development of Walnut Crops until 2020. [Online] http://renastereanucului.com/?new_language=1&go=resource&n=2 (Visited at 12.05.2024)

² Ramsar Convention Manual - a guide to the convention wetlands: 6th edition (Ramsar, Iran, 1971). Ramsar Convention Secretariat, Gland, Switzerland. 2013.

³ Convention on the Conservation of European Wildfire and Natural Habitats, signed at Bern on 29th September 1979.

⁴ Barcelona Convention Protocol concerning Specially Protected Areas and Biological Diversity in the Mediterranean (SPA/BD Protocol) as part of Convention for the Protection of the Mediterranean Sea against Pollution, signed at 1st January 1995.

⁵ Council Directive on protection measures against the introduction into the Community of organisms harmful to plants or plant products and against their spread in the Community: 2000/29 / EC of 08 May 2000. In: Official Journal of the European Union, 2001.

⁶ Convention on the Conservation of Migratory Species of Wild Animals CMS, signed at Bonn, Germany on 6th November, 1979.

⁷ Convention on Cooperation for the Protection and Sustainable Use of the River Danube (Danube River Protection Convention), signed at Sofia, on 29th June 1994.

⁸ Council Regulation on organic production and labeling of organic products (EC) no. 834/2007, signed on 28th June 2007. In: *Official Journal of the European Union*, 2007.

⁹ BATISSE, M. *Man and the biosphere: an international research programme*. Biological Conservation, 1971.

- European Ecological Network EECONET (land use in alignment with nature conservation objectives);

- as well as the implementation of EU policy.

Protective forest curtains are touched indirectly in most international normative acts aimed at the protection of soil, biodiversity and the ecosystem as a whole.

In the Republic of Moldova

The Land Code no. 22/2024¹ recognizes the establishment of *forest strips for the protection of fields* as a way of using land for agricultural purposes (art. 23, para. 2, pe), assigning to the lands for *forest strips for the protection of fields* a separate article (art. . 28). These are also expressly recognized as silvoameliorative measures to prevent soil erosion (art. 68, para. 2). Also, the Land Code obliges the buyer of a land in the private domain of the administrative-territorial unit to plant *anti-erosion forest strips* (art. 17, para. 9). The Land Code also recognizes the lands allocated for *diversion strips (from the banks) of rivers, water basins, main canals and collectors* as lands intended for the water bed (art. 42), *riparian strips and protection zones* having an article separately (art. 44). In general, the Land Code expressly mentions the „need to create forest strips” when „forming a land” (art. 68, para. 2) in the chapter on soil improvement and land development. The aspect of combating erosion by creating forest strips (grassed) is developed in art. 70 and art. 70, paragraph 1, letter f .

The Forestry Code no. 887/1996² does not contain the phrase „forest strip”, but operates with the phrase "forest curtain", expressly establishing that forest curtains (both those located on agricultural land and located along communication routes and on the lands of the aquatic fund), are not included in the forest fund. However, it includes protective forest curtains in the status of forests with a special protection regime for situations in which illegal cutting and their damage were found (Silvic Code, Annex 1, Annex 2). In Chapter X Afforestation of degraded lands and planting protective forest curtains on lands outside the forest fund, the legislator mentions that the financing of these works is carried out from the state budget and from the budgets of administrative-territorial units (art. 55).

Law no. 440/1995³ regarding the areas and strips of water protection of rivers and water basins , regulates the way of creating water protection areas and riparian strips of water protection of rivers, water basins, the regime of their use and the activity of their protection. This was repealed by Law no. 352/2023⁴ for the amendment of Water Law no. 272/2011⁵, the relevant provisions being thus transposed in Law 272/2011, Chapter VIII „River areas and water protection strips”.

By Law no. 239/2007⁶ of the vegetable kingdom , the legislator establishes the need to obtain the Authorization for cutting forest vegetation for the application of forestry cuttings on the lands with protective forest curtains located along the communication routes, on the lands in the bottom of the waters and on the lands with agricultural purpose (art. 26, para. 4).

¹ Land Code no. 22 of 15.02.2024. In: Official Gazette of the Republic of Moldova, no. 93-95 of 07.03.2024. [Online]

https://www.legis.md/cautare/getResults?doc_id=142192&lang=ro (Visited at 17.04.2024)

² Forestry Code no. 887 of 21.06.1996. In: Official Gazette of the Republic of Moldova, no. 4-5 of 16.01.1997. [Online] https://www.legis.md/cautare/getResults?doc_id=141062&lang=ro (Visited at 17.04.2024)

³ Law no. 440 of 27.04.1995 regarding the protection zones and strips of the waters of rivers and water basins. In: Official Gazette of the Republic of Moldova, no. 43 of 03.08.1995. [Online] https://www.legis.md/cautare/getResults?doc_id=141213&lang=ro (Visited at 17.04.2024)

⁴ Law no. 352 of 15.12.2023 to amend the Water Law no. 272/2011. In: Official Gazette of the Republic of Moldova, no. 514 of 29.12.2023. [Online] https://www.legis.md/cautare/getResults?doc_id=140989&lang=ro (Visited at 17.04.2024)

⁵ Water Law no. 272 of 23.12.2011. In: Official Gazette of the Republic of Moldova, no. 46-49 of 01.02.2024. [Online]

https://www.legis.md/cautare/getResults?doc_id=141581&lang=ro (Visited at 17.04.2024)

⁶ Law of the animal kingdom no. 239 of 08.11.2007. In: Official Gazette of the Republic of Moldova, no. 40-41 of 26.02.2008. [Online] https://www.legis.md/cautare/getResults?doc_id=141558&lang=ro (Visited at 17.04.2024)

Law 591/1999¹ regarding the green spaces of urban and rural localities, it stipulates that protective curtains (of water, those located on agricultural lands, along communication routes, as well as those in the protection areas of water intakes) do not part of green spaces, but is classified as vegetation outside green spaces (art. 5).

Law no. 94/2007² regarding the ecological network, it is stipulated that the competent authority to extend the forest curtains along the communication routes, as part of the process of establishing the national ecological network (art.7, para.1).

Law 1538/1998³ regarding the background of state-protected natural areas does not expressly mention the management of protective forest „strips” or „curtains”, but reserves a separate title for the protection areas of objects and complexes in the background of protected areas (Title IV).

Government Decision no. 548/2018⁴ regarding the organization and operation of the Environmental Protection Inspectorate, it expressly provides that the inspector exercises state control over the implementation of programs for the expansion of the forest fund as well as the creation of zone protection strips and water protection strips (Section II, p.4, letter b).

The technical regulations regarding the planting of forest curtains for the protection of transport routes, known as „road plantations” or „strips of anti-noise green spaces” are established by the Practical Construction Code (Regulations on environmental protection in the activity of design, construction, modernization, rehabilitation and road maintenance CP D.02.30:2023)⁵.

The National Forest Extension and Rehabilitation Program for the period 2023-2032⁶ expressly provides as an objective, the planting of 10 thousand ha of forest cover (Objective 15; Section 2, Expected results, p.10; Chapter IV Specific Objective 1, Measure 1.3). It is mentioned that forest curtains must occupy 4-5% of the surface of agricultural land (Section 4, p.35). In Section 7 Establishing forest plantations, 3 principles are presented for the establishment of forest plantations on degraded or unproductive land.

Conclusions

The lack of clarity of the attributions of state institutions and private natural and legal persons do not allow a qualitative management of the protective forest curtains. Looking at the forest canopy of agricultural land, the main stakeholders are local public authorities and land owners. If local public authorities are responsible for monitoring and ensuring the quality of the forest curtain system in its perimeter, then harmful practices such as excessive plowing at the expense of forest curtains or damage to the forest vegetation in the protective strips can be reduced. At the same time, it is necessary to be aware of the positive impact of protective forest curtains on the ecosystem in general and on the increase in agricultural harvest in particular.

¹ Law no. 591 of 23.09.1999 regarding the green spaces of urban and rural localities. In: Official Gazette of the Republic of Moldova, no. 133-134 of 02.12.1999. [Online] https://www.legis.md/cautare/getResults?doc_id=141075&lang=ro (Visited at 17.04.2024)

² Law no. 94 of 04/05/2007 regarding the ecological network. In: Official Gazette of the Republic of Moldova, no. 90-93 of 29.06.2007. [Online] https://www.legis.md/cautare/getResults?doc_id=133945&lang=ro (Visited at 17.04.2024)

³ Law no. 1538 of 25.02.1998 regarding the fund of natural areas protected by the state. In: Official Gazette of the Republic of Moldova, no. 66-68 of 16.07.1998. [Online] https://www.legis.md/cautare/getResults?doc_id=141074&lang=ro (Visited at 17.04.2024)

⁴ Government Decision no. 548 of 13.06.2018. In: Official Gazette of the Republic of Moldova, no. 210-223 of 22.06.2018. [Online] https://www.legis.md/cautare/getResults?doc_id=138709&lang=ro (Visited at 17.04.2024)

⁵ Code of practice in construction D.02.30:2023 – Roads and bridges, approved and implemented by Order of the Ministry of Infrastructure and Regional Development no. 194 of 18.12.2023. In: Official Gazette of the Republic of Moldova no. 488-491 with application from 21.12.2023. [Online] <https://www.asd.md/wp-content/uploads/2024/02/CP-D-02-30-2023.pdf> (Visited at 17.04.2024)

⁶ The Project of the National Forest Extension and Rehabilitation Program for the period 2023-2032. [Online] https://gov.md/sites/default/files/document/attachments/subiect-02-nu-1012-mm-2022_1.pdf (Visited at 14.04.2024)

Thus, the soil fertility in an agricultural field can be improved considerably, at a faster than natural rate, which corresponds to the interests of the beneficiaries of agricultural land.

The effects of the introduction of some provisions in the field will be felt to a different extent by several socio-economic groups, their interests being largely unaffected. The first group is thus the local and central public authorities, directly targeted in monitoring the application of the legislation in order to ensure the establishment, improvement and quality assurance of forest protection curtains on the territory of the Republic of Moldova. The second group are land owners and subjects who have the right of possession and use of land that requires protection by forest curtains. At the same time, economic agents carrying out activities that require additional attention from the perspective of preserving the ecosystem and respecting forest alignments can be included here (such as the processing of the land immediately next to or even over the strip reserved for protective forest curtains). The third group is the native citizens who can benefit from a greener and healthier environment. Citizens of all ages can study the diversity of forest plants, medicinal, decorative, etc., the diversity of fauna in the forest curtains that serve as corridors between forests, they can organize and carry out recreational activities (tourism, sports, cultural activities, etc.), they can enjoy a cleaner air in the region protected from wind, dust and erosion. The fourth group of interests is formed by the national scientific institutions that are going to study the flora and fauna of the Republic of Moldova from the established or managed green corridors, in order to carry out scientific research.

The protective forest curtains are regulated asymmetrically by site category, it being unclear which subject, how and when is responsible for its management. This lack of clarity allows interpretations and difficulties not only in the management of forest curtains, but especially in their establishment and the reduction of actions that lead to the damage of forest curtains. Thus, a separate law on protective forest curtains provides a guideline on identifying the management responsibilities of protective forest curtains.

Bibliography:

1. Agroforestry practices recognized by the Ministry of Agriculture, Regional Development and the Environment. [Online] <https://www.madrm.gov.md/sites/default/files/PressReleas/Documente%20Atasate/PRACTICI%20AGROFORESTIERE%20PE%20EXEMPLUL%20F%C3%82%C5%9EILOR%20C5%9E%20PERDELOR%20DE%20PROTEC%C5%A2IE.pdf> (Visited at 05.05.2024).
2. Barcelona Convention Protocol concerning Specially Protected Areas and Biological Diversity in the Mediterranean (SPA/BD Protocol) as part of Convention for the Protection of the Mediterranean Sea against Pollution, signed at 1st January 1995.
3. BATISSE, M. *Man and the biosphere: an international research programme*. Biological Conservation, 1971.
4. Boboc N. Bejan I. Șițu P. Considerations regarding the evolution of forest landscapes on the territory of the Republic of Moldova. In: Bulletin of the Academy of Sciences of the Republic of Moldova, no. 303.3. Chisinau, 2007. [Online] https://ibn.idsi.md/sites/default/files/imag_file/Consideratii%20cu%20privire%20la%20evolutia%20peisajelor_0.pdf (Visited at 05.05.2024).
5. Code of Practice in Construction D.02.30:2023 – Roads and bridges, approved and implemented by Order of the Ministry of Infrastructure and Regional Development no. 194 of 18.12.2023. In: Official Gazette of the Republic of Moldova no. 488-491 with application from 21.12.2023. [Online] <https://www.asd.md/wp-content/uploads/2024/02/CP-D-02-30-2023.pdf> (Visited at 05.05.2024).
6. Convention on the Conservation of European Wildfire and Natural Habitats, signed at Bern on 29th September 1979.
7. Convention on the Conservation of Migratory Species of Wild Animals CMS, signed at Bonn, Germany on 6th November, 1979.
8. Convention on Cooperation for the Protection and Sustainable Use of the River Danube (Danube River Protection Convention), signed at Sofia, on 29th June 1994.

9. Council Directive on protection measures against the introduction into the Community of organisms harmful to plants or plant products and against their spread in the Community: 2000/29 / EC of 08 May 2000. In: Official Journal of the European Union, 2001.
10. Council Regulation on organic production and labeling of organic products (EC) no. 834/2007, signed on 28th June 2007. In: *Official Journal of the European Union*, 2007.
11. Dănescu F. Costăchescu C. The creation of the national network of protective forest curtains, an important premise for improving environmental conditions, between necessity and possibility. In: *Journal of Forestry and Hunting*, No. 35, 2014. ISSN 2284-7936 [Online] <http://progresulsilvic.ro/wp-content/uploads/2015.35.pdf#page=60> (Visited at 05.05.2024).
12. Decision of the Chisinau Council no. 6/10 of 18.07.2017 regarding the approval of the „Regulation on the delimitation, management and protection of green spaces in the municipality of Chisinau”. [Online] <https://agsv.md/zonele-de-gestiune-2/> (Visited at 05.05.2024).
13. Environmental Strategy of the Republic of Moldova 2014-2023.
14. Eurostat 2021. [Online]: <https://ec.europa.eu/eurostat/web/products-eurostat-news/-/edn-20210321-1> (Visited at 05.05.2024).
15. Forestry Code no. 887 of 21.06.1996. In: Official Gazette of the Republic of Moldova, no. 4-5 of 16.01.1997. [Online] https://www.legis.md/cautare/getResults?doc_id=141062&lang=ro (Visited at 05.05.2024).
16. Galupa D. Establishing protective forest curtains as an adaptation measure to climate change: A practical guide for agricultural producers. UCIP IFAD. Chisinau, 2021. ISBN 978-9975-87-683-4.
17. Gosyurizdat M. History of collective farm law : Sat. Legislative materials of the USSR and RSFSR 1917-1958 T.II. Published in 1958. [Online] <https://docs.historyrussia.org/ru/indexes/values/882143> (Visited at 05.05.2024).
18. Gumovschi A. Vînari P. The role of forest curtains in protecting biodiversity and agricultural crops. BIOTICA Ecological Society. Chisinau, 2023. ISBN 978-9975-84-201-3. [Online] https://bioticamoldova.org/storage/files/Rolul_Perdelelor_Forestiere.pdf (Visited at 05.05.2024).
19. Government Decision no. 548 of 13.06.2018. In: Official Gazette of the Republic of Moldova, no. 210-223 of 22.06.2018. [Online] https://www.legis.md/cautare/getResults?doc_id=138709&lang=ro (Visited at 05.05.2024).
20. Government Decision no. 8 of 03.01.2006 regarding some measures to increase the production of nut crops. In: Official Monitor of the Republic of Moldova, no. 5-8. From 13.01.2006. [Online] https://www.legis.md/cautare/getResults?doc_id=11073&lang=ro# (Visited at 05.05.2024).
21. Land Code no. 22 of 15.02.2024. In: Official Gazette of the Republic of Moldova, no. 93-95 of 07.03.2024. [Online] https://www.legis.md/cautare/getResults?doc_id=142192&lang=ro (Visited at 05.05.2024).
22. Law no. 1538 of 25.02.1998 regarding the fund of natural areas protected by the state. In: Official Gazette of the Republic of Moldova, no. 66-68 of 16.07.1998. [Online] https://www.legis.md/cautare/getResults?doc_id=141074&lang=ro (Visited at 05.05.2024).
23. Law no. 440 of 27.04.1995 regarding the protection zones and strips of the waters of rivers and water basins. In: Official Gazette of the Republic of Moldova, no. 43 of 03.08.1995. [Online] https://www.legis.md/cautare/getResults?doc_id=141213&lang=ro (Visited at 05.05.2024).
24. Law no. 352 of 15.12.2023 to amend the Water Law no. 272/2011. In: Official Gazette of the Republic of Moldova, no. 514 of 29.12.2023. [Online] https://www.legis.md/cautare/getResults?doc_id=140989&lang=ro (Visited at 05.05.2024).
25. Law of the animal kingdom no. 239 of 08.11.2007. In: Official Gazette of the Republic of Moldova, no. 40-41 of 26.02.2008. [Online] https://www.legis.md/cautare/getResults?doc_id=141558&lang=ro (Visited at 05.05.2024).
26. Law no. 591 of 23.09.1999 regarding the green spaces of urban and rural localities. In: Official Gazette of the Republic of Moldova, no. 133-134 of 02.12.1999. [Online] https://www.legis.md/cautare/getResults?doc_id=141075&lang=ro (Visited at 05.05.2024).
27. Law no. 94 of 04/05/2007 regarding the ecological network. In: Official Gazette of the Republic of Moldova, no. 90-93 of 29.06.2007. [Online] https://www.legis.md/cautare/getResults?doc_id=133945&lang=ro (Visited at 05.05.2024).
28. Law no. 289 of 15.05.2002 regarding forest protection curtains. In: Official Gazette of Romania no. 338 of 21.05.2002. [Online] https://www.cdep.ro/pls/legis/legis_pck.htm_act_text?id=35288 (Visited at 05.05.2024).

29. Musat I. Evaluation of the economic and ecological efficiency of forest field protection curtains. In: Journal of Forestry and Hunting, no. 28 of 2011. [Online] <https://www.cabidigitallibrary.org/doi/pdf/10.5555/20123144972> (Visited at 05.05.2024).
30. National Bureau of Statistics - Household energy consumption. Chisinau, 2022: [Online] https://statistica.gov.md/files/files/publicatii_electronice/Consum_energie_gospoda/Consumul_energie_gospodariile_casnice_editia_2022.pdf (Visited at 05.05.2024).
31. National Development Strategy „European Moldova 2030”.
32. The Project of the National Forest Extension and Rehabilitation Program for the period 2023-2032. [Online] https://gov.md/sites/default/files/document/attachments/subiect-02-nu-1012-mm-2022_1.pdf (Visited at 05.05.2024).
33. Walnut Revival: The National Program for the Development of Walnut Crops until 2020. [Online] http://renastereanucului.com/?new_language=1&go=resource&n=2 (Visited at 05.05.2024).
34. Water Law no. 272 of 23.12.2011. In: Official Gazette of the Republic of Moldova, no. 46-49 of 01.02.2024. [Online] https://www.legis.md/cautare/getResults?doc_id=141581&lang=ro (Visited at 05.05.2024).

Copyright©MARGINEANU Elena, 2024.

Contacts/Contacte/ Контакты:

MARGINEANU Elena.

PhD in Law, University Lecturer,
Free International University of Moldova (ULIM).
MD-2012, Vlaicu Pârcălab str.
Chisinau, Republic of Moldova.

E-mail: margineanu.elena@gmail.com

<https://orcid.org/0000-0002-6157-8506>

<https://doi.org/10.61753/1857-1999/2345-1963/2023.19-1.06>