

Conflict of Interest as a Significant Aspect in Tree Planting to Support Green Infrastructure in Cultural Landscape

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Abstract

The aim of this paper is to present landscape ecological research on green infrastructure in the cultural landscape of Slovakia. Part of the methodological procedure is a proposal for greening the landscape with non-forest woody vegetation. The function of non-forest woody vegetation is determined based on the value of ecological stability and specified conflicts of interest. We differentiated the territory of Slovakia according to variations in ecological stability of the cadastral territories of urban and rural settlements of the Slovak Republic (i) and the identified conflicts of interest between positive and negative socio-economic phenomena (ii). We proposed such functions of non-forest woody vegetation in the specified regions so that the heritage features are restored to the greatest extent possible and the traditional character of the territory with a high-quality living environment and a rich diversity of plant and animal species is preserved (iii). The proposed functions of non-forest woody vegetation in areas of real conflicts of interest will mitigate the negative impacts of stress factors on humans, soil, water, forest and biotic resources and contribute to increasing ecological stability and improving the overall ecological state of ecosystems in the given regions.

Keywords: *Cultural Landscape, Ecological Stability, Conflicts Of Interest, Non-Forest Woody Vegetation, Heritage Elements.*

Introduction

Theoretical aspects and definitions of cultural landscape have been dealt with by many Slovak and foreign authors since the last century. They understand the term cultural landscape as a natural landscape transformed by purposeful human activity, which needs to be examined from various aspects (Claasen, 1941; Wagner, 1956; Jäger, 1963; Drdoš, 1965; Neff, 1967; Buchwald & Engelhardt, 1968; Štěpán, 1967; Ružička, 1970; Žigrai, 1972; Drdoš et al., 1980; Ružička & Miklós, 1982 and others. According to Žigrai (1972), the aim of the study of cultural landscape is to clarify the mutual relationships between nature and human society in time and space on a certain section of the earth's surface. According to Buček (2013), from an ecological point of view, less stable to unstable ecosystems, such as built-up areas, agroecosystems, lignicultures, which are characterized by higher production but reduced ecological stability and limited biodiversity. According to Buček (2013), a cultural landscape cannot be harmonious without permanently ensuring biodiversity, geodiversity and ecological stability. It is therefore necessary to balance and divide the areas of these ecosystems deliberately destabilized by humans with appropriately distributed areas of more ecologically stable natural and close-to-nature ecosystems, the system of which forms an ecological network in the landscape (Buček, 2013).

The landscape ecological research that we carried out in the cultural landscape of Slovakia was aimed at assessing the impacts of human economic activities on the stability of the landscape and at proposing "green measures" to mitigate their negative impacts on individual ecosystems. The spatial demands of economic sectors lead to conflicts of interest in the cultural landscape and the emergence of landscape ecological problems. These problems are often associated with threats to ecological stability and biodiversity, threatening quantitative and qualitative indicators of natural resources and threatening the environment and human health. Since ecological stability is considered the basis for evaluating all conditions and assumptions for the use of cultural landscapes and its evaluation forms an important part of several spatial planning documents, it is important to know where it is threatened. The stability of the territory depends on the state of biotic components. Non-forest woody vegetation is also a landscape element with a high stabilizing effect (Špulerová, 2006; Múdry, 1989). According to Slovak conservationists, woody plants, as an important

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element in the cultural landscape, significantly participate in the formation of the character of the territory. They are an essential part of many processes that take place in the landscape. Woody plants (WP) are closely linked to several natural and anthropic elements in the territory. They create a multifunctional whole connected with them, formed primarily by cultural development, methods of use and natural conditions. WP represent a characteristic part of the landscape structure, which arose in connection with the method of long-term use of the territory. They co-create the image of a specific territory (SNC SR, 2024). WP influence the microclimatic regime, air quality parameters (De Ridder et al, 2004), also influence the hygienic conditions and biotic and recreational potential of the territory. Woody plants significantly influence the emergence and consequences of water and wind erosion. The functionality of woody plants and stands depends mainly on their location and spatial arrangement in the territory, species and age composition, height structure, quality and quantity (SNC SR, 2024). Woody plants as solitary trees, rows or area elements in the cultural landscape fulfill several functions, including increasing ecological stability. According to Špulerová (2006), the function of non-forest woody vegetation should be understood as the sum of real or potential possibilities for using its effects, while in principle they can be divided into natural functions – biotic and abiotic – and anthropic functions – economic and social character. According to Zachar (1986), these include recreational, medical, hygienic, aesthetic, educational, scientific, urbanization and communication functions. The aim of landscape ecological research was to evaluate conflicts of interest in the cadastral territories of urban and rural settlements in Slovakia (2. 927 municipalities) and to specify the functions of vegetation (non-forest woody vegetation - NFWV) to mitigate their negative consequences on humans, soil, water, forest and biotic resources. In designated regions with the same real conflicts, we aimed to prefer woody plants with such a function that would support ecological stability and biodiversity in given ecosystems and at the same time to support the pan-European and national initiative of building green infrastructure, the aim of which is to preserve the physical properties and identity of localities, protect and enhance natural capital and mitigate the risks of natural disasters and the negative impacts of stress factors (Ministry of Environment Slovak Republic, 2020).

Material & Methods

The aim of our research was to follow up on the European Union initiative to build green infrastructure and develop a methodology that defines the basic areas for planting vegetation with the aim of increasing ecological stability. The basis of the methodological procedure consisted of analyses, syntheses, evaluations and proposals. We verified and applied the methodological procedure at a supra-regional level for the territory of Slovakia. Through landscape ecological research, we assessed the ecological state of the regions of Slovakia according to the current state of green infrastructure and its barriers. We specified settlements of differing ecological quality and different needs for implementing measures to increase ecological stability. By proposing a specific function for non-forest woody vegetation, we supported and increased ecological stability in areas of specified conflicts of interest, especially in areas intensively used for agriculture, in areas with manifestations of natural risks and hazards and negative impacts of stress factors on the stability of the landscape. In the specified regions, according to the real conflicts of interest between positive and negative socio-economic phenomena and the calculated value of ecological stability, we proposed NFWV with a specific function: hygienic-biotic, hygienic-recreational, hygienic-remediation, hygienic-water protection, hygienic-water management, soil protection-ecostabilization, soil protection-biotic and landscape-refugia.

Socioeconomic phenomena represent material and non-material manifestations of human activities in the landscape, which express the demands of society and individual economic sectors for a certain space, ecological and natural conditions (Ružička, 1985; Miklós et al., 1985; Miklós, 1992; Forman & Godron, 1993; Jongman, 1995; Drdoš, 1992; Demek, 1999; Odum, 1975; Hrnčiarová et al., 1992; Izakovičová & Moyzeová, 2000; Izakovičová et al., 1997). Conflicts of interest represent current or future problems of landscape use, the solution of which is the essence of landscape protection and creation. Landscape-ecological measures prefer the protection of nature and landscape, the protection of natural and cultural-historical resources and the environment to other activities and also include measures to increase ecological stability (Ružička & Miklós, 1982; Miklós, 1992; Demek, 1974; Drdoš et al., 1980; Izakovičová & Moyzeová, 2000; Izakovičová et al., 1993; Moyzeová & Izakovičová, 2009). From this aspect, we based our research

on the methodology for assessing green infrastructure (Moyzeová et al., 2022). We assessed the synthetic impact of anthropic activities on the landscape structure through the degree of anthropization of the residential environment. To assess the degree of ecological stability, we used the coefficient of ecological stability (CES) (Miklós et al., 1985), which we calculated for two time periods for comparison - 2018 and 2023 and graphically processed into map 1 Ecological quality of districts according to the structure of use cadastral territories of urban and rural settlements. Based on the CES value, we included 2,927 Slovak settlements into five stability categories. Subsequently, we also included 79 districts of Slovakia into five quality categories. We also singled out settlements in which the CES value increased or decreased over the past five years. We further differentiated settlements based on specified conflicts of interest between positive socio-economic phenomena (PSEP) supporting green infrastructure, such as elements of nature and landscape protection, elements of protection of natural and cultural-historical resources and the environment (legend to map 2. Territorial system of positive elements and phenomena) and phenomena threatening green infrastructure, i.e. selected point, line and area stress factors (SF) that form barriers to green infrastructure (legend to map 3. Barriers threatening green infrastructure). By gradually superimposing individual socio-economic phenomena (SEP), we obtained a colorful mosaic of conflict areas in Slovakia. In each area, we precisely determined which socioeconomic phenomena meet there. Some of them were mutually exclusive, limited, others supported or were neutral. In total, we specified 50 types of SEP conflicts within the Slovak Republic, with each conflict having its own specifics and requiring a special measure (Table 1. Combinations of measures in specified areas of conflict of interests). Subsequently, we grouped settlements into regions with the same conflict of interest and developed a proposal for "green measures" to increase ecological stability. We precisely localized the problem of threatening ecological stability spatially and proposed such an amelioration function of non-forest woody vegetation in order to improve the ecological state of individual ecosystems and minimize the risks of their threat. To assign vegetation functions, we based our approach on valid legislation, expert assessment and the classification of NFWV functions according to the authors (Jurko, 1990; Špulerová, 2006; Zachar, 1986; Sláviková, 1987; Supuka et al., 1991; Rakovská, 1998; Rózová, 1994; Múdry, 1990; State Nature Conservancy of the Slovak Republic, 2025).

To calculate the coefficient of ecological stability (CES), we used the formula (Miklós et al., 1985).

$$CES = \sum_{i=1}^n \frac{P_i \cdot c_p}{P}$$

where: CES = coefficient of ecological stability

P_i = area of individual landscape elements

c_p = coefficient of ecological significance of landscape elements

p = total area of the territory

n = total number of elements

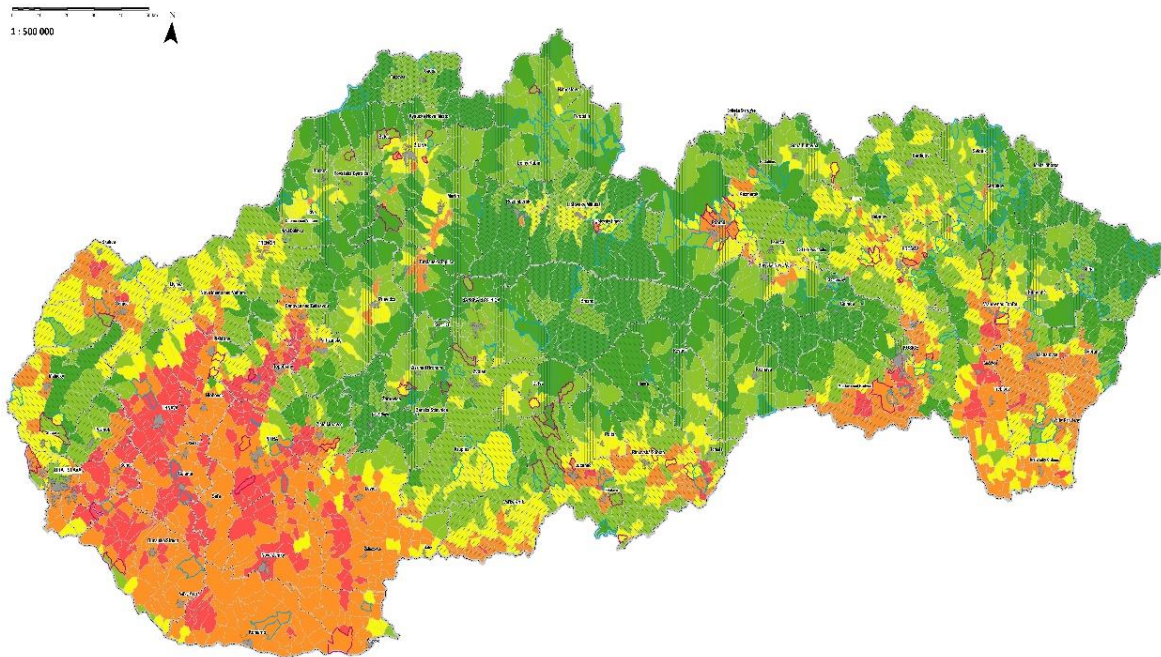
The values of the area of individual landscape elements were based on the types of land registered by the Research Institute of Geodesy and Cartography of the Slovak Republic. To determine the coefficients of ecological significance of the elements of the current landscape structure, we used the procedure of the authors Jurko (1990), Miklós (1992). CES expresses the degree of anthropogenic transformation of the landscape and reflects the area ratio of individual landscape-forming elements and their landscape-ecological significance. The resulting coefficient value determines the ecological quality of the spatial structure of the landscape, while according to Miklós (1992), the territory less anthropogenically altered has a better spatial structure from a landscape-ecological point of view and thus higher ecological stability.

In the research, we used a wide range of background materials and data, primarily of a statistical nature, which we analyzed, quantified, statistically evaluated and visualized in a GIS environment into a set of maps at a scale of 1:500,000.

Results

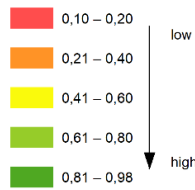
The final assessments are shown in maps 1 – 4 and in table 1.

Map 1. Ecological quality of districts according to the structure of use of cadastral territories of urban and rural settlements.

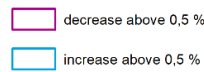


Map legend 1.

Coefficient of ecological stability



Change in the coefficient of ecological stability between 2018 and 2023



Degree of ecological quality of districts

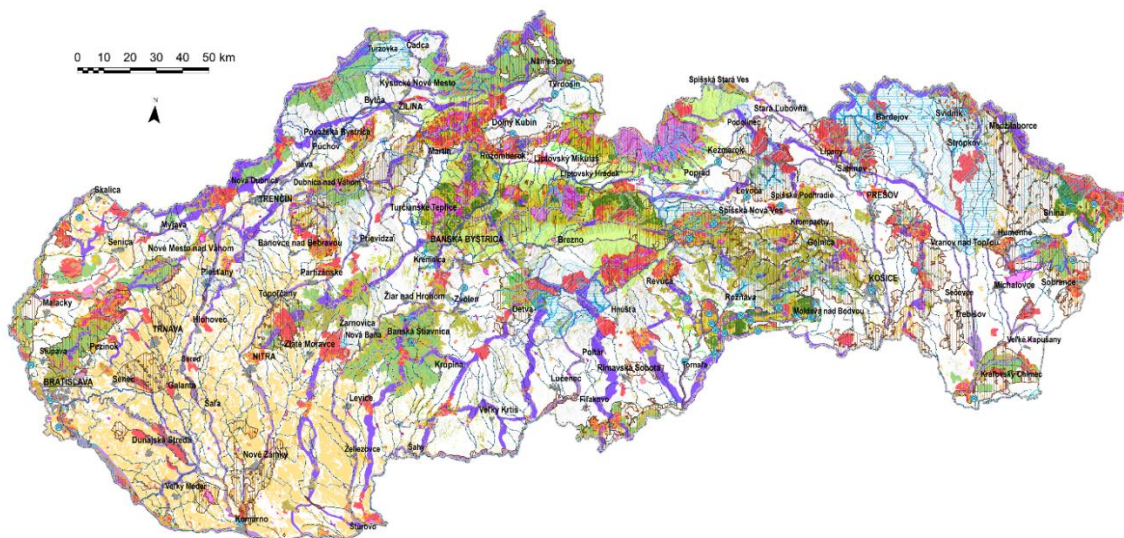


Territorial and administrative arrangement



The cartographic processing contains information on the CES values in 2018 and 2023. The second piece of information in the map is the level of ecological quality determined for 79 districts of Slovakia.

Map 2. Territorial system of positive elements and phenomena.



Map legend 2.

Elements of nature and landscape protection

- national park
- protection zone of national park
- protected landscape area
- protected areas with 4th and 5th nature protection levels
- territory of European importance
- protected bird area
- biosphere reserve
- Ramsar Convention site
- biocentre
- hydric ecological corridor of supraregional importance
- terrestrial ecological corridor of supraregional importance

Protection of forest resources

- special purpose forests
- protective forests

Protection of soil resources

- best soil

Protection of water resources

- natural healing water source
- natural mineral water source
- stream important for water management
- protected water management area
- catchment area of drinking water source
- protection zone of water source

Protection elements of cultural historical and health sources

- spa area

Monument fund

- city monument reserve
- national cultural monument
- UNESCO World natural and cultural heritage

Territorial and administrative arrangement

- state frontier
- regional border
- district border
- built-up areas of settlements

BRATISLAVA capital of the Slovak Republic

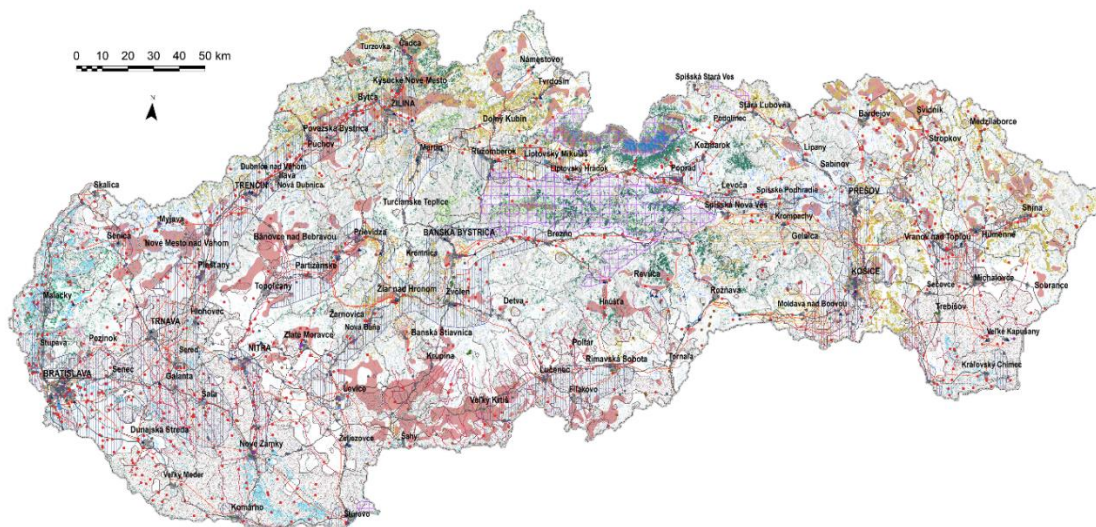
PREŠOV seat of region

Zvolen seat of district

Tomala town

The cartographic processing contains information on the occurrence and area representation of positive socio-economic phenomena related to the protection of nature and landscape, the protection of natural and cultural-historical resources and the environment. Positive socio-economic phenomena support green infrastructure and, within the framework of conflicts of interest, we interpret them as phenomena at risk.

Map 3. Barriers to the threat of green infrastructure.

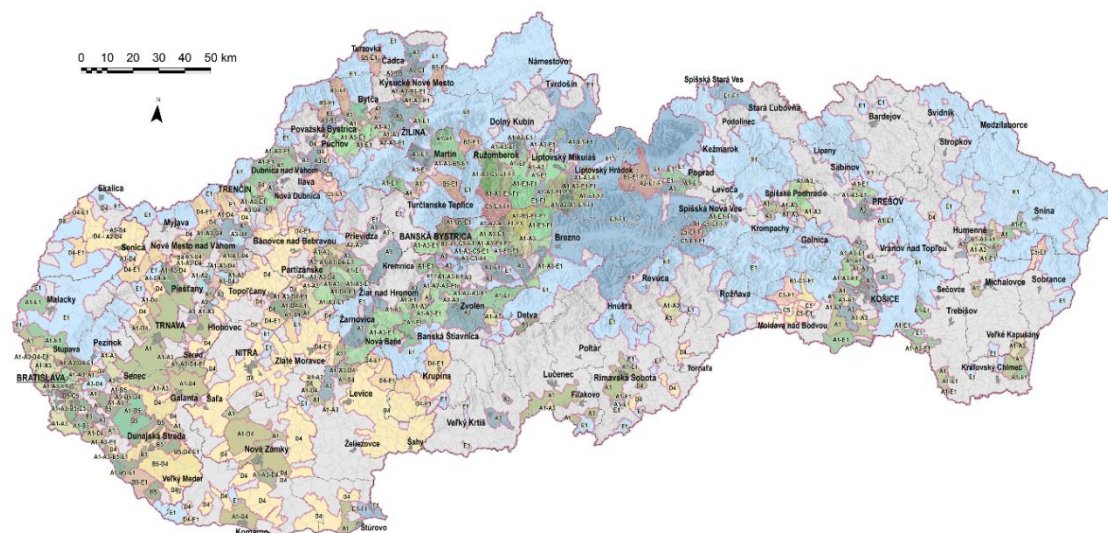


Map legend 3.

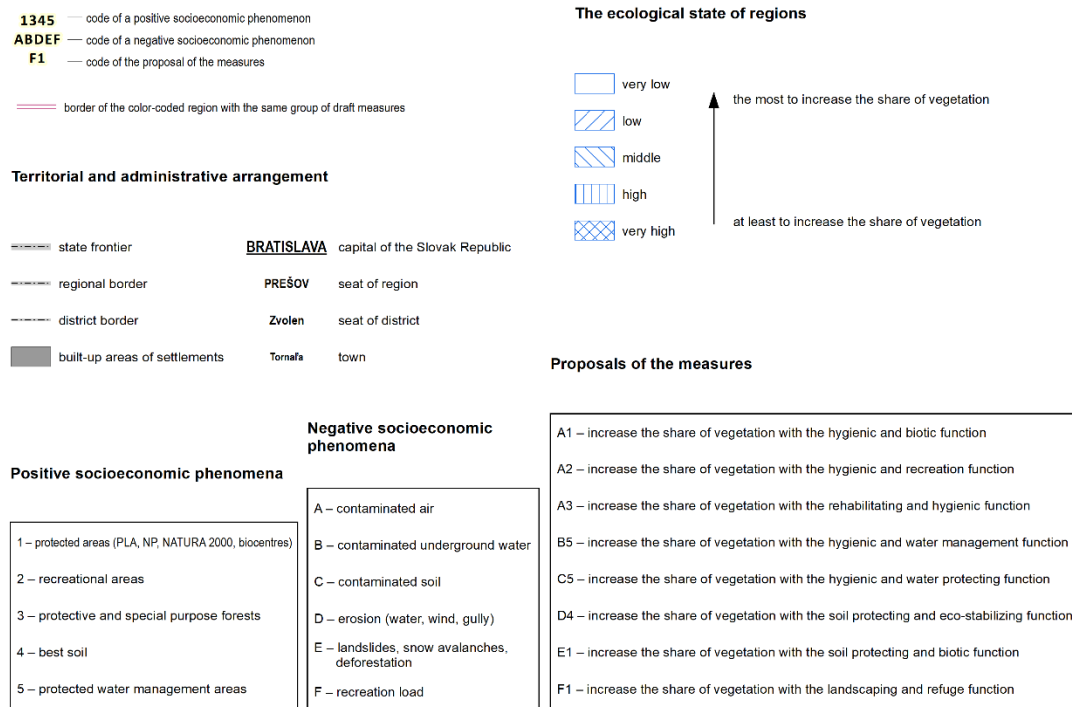


Cartographic processing contains information on the occurrence and area representation of selected point, line and area negative socio-economic phenomena. Negative socio-economic phenomena, so-called stress factors, threaten green infrastructure and, within the framework of identifying conflicts of interest, we interpret them as threatening phenomena.

Map 4. Ecological status of Slovak regions according to the current state of green infrastructure and its barriers.



Legend to map 4.



Cartographic processing contains information on real conflicts of interest between positive socio-economic phenomena and negative socio-economic phenomena at the regional and local levels (Table 1). When proposing the functions of the NFWV, as measures to increase ecological stability in specified regions of Slovakia, we proceeded from the set goals and needs for building green infrastructure.

Based on the low value of the coefficient of ecological stability (year 2023) of less than 0.2, 9.74 % of settlements were classified as significantly unstable territories. In these territories, it is necessary to implement eco-stabilization measures in the form of planting area and line elements of green infrastructure. The proposed planting of vegetation also needs to be supplemented with measures of an engineering, technical and technological nature. 22.31 % of settlements with an ecological stability coefficient value in the interval from 0.2 to 0.4 were classified as unstable areas, 19.13 % of settlements with an ecological stability coefficient value in the interval from 0.4 to 0.6 were classified as partially stabilized areas, 32.01 % of settlements with an ecological stability coefficient value from 0.6 to 0.8 were classified as stabilized areas. The last fifth category with an ecological stability coefficient value higher than 0.8 was reached by a total of 492 settlements, which is 16.81 % of the total number of 2,927 settlements in Slovakia. The cadastral territory of these settlements was characterized as significantly stabilized without the need to implement ecostabilization measures. From a landscape-ecological point of view, in all settlements in which the ecological stability coefficient was lower than 0.6, it is necessary to implement measures to increase ecological stability. In terms of assessing the level of ecological quality of districts in Slovakia, out of a total of 79 districts, the highest percentage of districts was 33 % with a high level of quality, 22 % with a very low level of ecological quality, 20 % with a low level of ecological quality, 15 % with a medium level and 10 % with a very high level of ecological quality. In 57 municipalities, which is 1.95 % of the total number of municipalities of 2,927, the CES decreased by more than 0.5 % during the five years evaluated (2018 - 2023). In 144 municipalities, which is 4.92 % of the total number of municipalities, the CES increased by more than 0.5 % during the evaluated period. Table 1 shows the conflicts of interest and combinations of measures, the number of sites and the number of municipalities in the sites of the Slovak Republic.

Table 1 Combinations of Measures in Specified Areas of Conflict of Interest.

S N	Combination measures	of	Number of areas in SR	Number of municipalities in the areas
1	no combination		107	1324
2	A1		36	106
3	A1-A2		1	1
4	A1-A2-A3-E1		3	2
5	A1-A2-A3-E1-F1		2	2
6	A1-A2-E1		1	1
7	A1-A3		38	58
8	A1-A3-B5-C5		1	1
9	A1-A3-B5-C5-E1		1	1
10	A1-A3-B5-E1		4	4
S N	Combination measures	of	Number of areas in SR	Number of municipalities in the areas
11	A1-A3-C5-E1		1	1
12	A1-A3-C5-E1-F1		1	1
13	A1-A3-D4		10	17
14	A1-A3-D4-E1		5	6
15	A1-A3-E1		27	75
16	A1-A3-E1-F1		6	10
17	A1-B5		6	13
18	A1-B5-E1		2	2
19	A1-B5-E1-F1		1	1
20	A1-C5-E1-F1		1	1
21	A1-D4		13	28
22	A1-D4-E1		6	9
23	A1-E1		40	71
24	A1-E1-F1		7	13
25	A2		2	2
26	A2-A3		3	4
27	A2-A3-D4		1	2
28	A2-A3-E1		1	1
29	A2-D4		1	1
30	A2-E1-F1		1	1
31	A3		43	102
32	A3-B5		2	2
33	A3-B5-D4		1	1
34	A3-C5-E1		1	1
35	A3-D4		9	11
36	A3-E1		4	4
37	B5		13	27
38	B5-C5		1	1
39	B5-C5-E1		1	2
40	B5-D4		1	20
41	B5-D4-E1		1	1

42	B5-E1	10	17
43	B5-E1-F1	1	3
44	C5	3	6
45	C5-E1	5	8
46	C5-E1-F1	3	3
47	D4	50	236
48	D4-E1	12	33
49	E1	63	624
50	E1-F1	5	65
51	F1	1	1

SN- serial number

Conflict of interest marked A1 - threat to protected areas by polluted air occurred in 23 combinations in 213 areas and 424 settlements within the Slovak Republic.

Objective: To preserve the diversity of plant and animal species, the object of protection and the traditional character of the area in protected areas.

Measure: To revitalize nature conservation areas threatened by the negative effects of polluted air by planting NFWV with a hygienic-biotic function, with the ability to remove polluting and dust particles in the air.

Conflict of interest A2 - threat to recreational areas of spa towns by polluted air occurred in 10 combinations in 16 areas and 17 settlements within the Slovak Republic.

Objective: To preserve a quality environment for the physical and psychological well-being of people in recreational areas of spa towns.

Measure: Revitalize spa town areas threatened by polluted air by planting NFWV with a hygienic-recreational function. Prefer planting biologically rich and aesthetically impressive vegetation with the ability to remove pollutants and dust particles in the air.

Conflict of interest A3 - threat to forest ecosystems by polluted air occurred in 21 combinations in 164 areas and in 306 settlements within the Slovak Republic.

Objective: In purpose-built forests, preserve their anti-erosion, water management and anti-avalanche functions.

Measure: Improve the current state of forest ecosystems threatened by the negative impact of polluted air by planting NFWV with a hygienic-remedial function, with the ability to remove pollutants and dust particles in the air.

Conflict of interest marked B5 - threat to significant water resources by polluted groundwater occurred in 15 combinations in 46 areas and 96 settlements within the Slovak Republic.

Objective: In protected water management areas (PWMA), to preserve a high-quality environment and ensure the protection of qualitative and quantitative indicators of the water source intended for supplying the population with drinking water.

Measure: In PWMA threatened by polluted groundwater, to improve the current situation, to define areas for planting vegetation with a hygienic and water management function. To improve water quality indicators, to plant vegetation with the ability to filter and capture pollutants from groundwater. To improve quantitative indicators, to improve vegetation that has a positive impact on water management, water

regime, to regulate the infiltration of atmospheric precipitation and to balance the overall water balance in nature.

Conflict of interest marked C5 - threat to important water resources by polluted soils occurred in 11 combinations in 19 areas and in 26 settlements within the Slovak Republic.

Objective: To preserve a high-quality environment in protected water management areas and to ensure the protection of qualitative indicators of the water source intended for supplying the population with drinking water.

Measure: In protected water management areas threatened by polluted soils, to improve the current situation, to define areas for planting vegetation with a hygienic and water protection function, with the ability to filter and capture pollutants from the soil and thus improve the quality of water primarily intended for drinking purposes.

Conflict of interest marked D4 - threat to the highest quality soils by erosion occurred in 12 combinations in 110 areas and in 365 settlements within the Slovak Republic.

Objective: In areas with the highest quality soils, stabilize the territory and maintain the quantity, quality and soil fertility.

Measure: On large-scale agriculturally cultivated soils threatened by external destructive processes caused by water and wind erosion, define areas for planting vegetation with a soil protection and eco-stabilization function. The stability of the agricultural landscape with a low representation of territorial system of ecological stability (TSES) elements needs to be increased by planting area and linear tree vegetation, whose root system has a positive effect on soil drainage and reclamation. At the same time, preserve soil quality and fertility by using crops with an anti-erosion effect.

Conflict of interest marked E1 - threat to protected areas by clear-cutting, landslides, and avalanches occurred in 29 combinations in 216 areas and in 963 settlements within the Slovak Republic.

Objective: In protected areas, preserve the diversity of plant and animal species, the subject of protection and the overall character of the territory.

Measure: Revitalize nature conservation areas threatened by clear-cutting, landslides, and avalanches by planting NFWV with a soil-protective-biotic function. By planting vegetation whose root system stabilizes the territory and protects the soil from external destructive processes, create conditions for the existence of biota and its food chain.

The conflict of interest marked F1 - threat to protected areas by excessive recreation occurred in 11 combinations in 29 areas and in 101 settlements within the Slovak Republic.

Objective: In protected areas, prioritize preserving the subject of protection and the character of the territory and an attractive environment for recreational purposes.

Measure: Revitalize protected areas threatened by excessive recreation by planting NFWV with a landscape-forming-refugial function. Vegetation with the ability to quickly regenerate will create conditions for the preservation of the gene pool, species diversity of animals, plants and microorganisms and at the same time preserve the recreational character of the area. Vegetation modifications should be supplemented by regulating the number of visitors in the visiting rules of protected areas.

Discussion

The most common function of vegetation in the cultural landscape is its hygienic function. It improves the hygienic conditions of the air, mainly by producing oxygen, absorbing and subsequently detoxifying

pollutants. It affects the microclimate of the environment by reducing soil evaporation and transpiration, increasing relative air humidity, increasing condensation of water vapor and mitigating temperature extremes. It improves air quality by having a favorable effect on air flow, producing oxygen and filtering dust particles and various other particles and toxic substances. In addition to the hygienic function, many woody plants also fulfill a number of other functions, the use of which we have indicated in our research.

According to Špulerová (2006), the functions of vegetation, areas of action and forms of implementation naturally merge, combine and exclude each other. From this aspect, taking into account the functions of vegetation is very important when designing plantings or interventions in existing stands. Without their knowledge and use, landscape design would not be complex (Špulerová, 2006). Although the functions of vegetation are classified differently by different authors Zachar (1986), Sláviková (1987), Jurko (1990), Rakovská (1998), Pagan (1996), Machovec et al. (2000), they agree that when evaluating the functions of NFWV, it is necessary to take into account the dendrological composition of stands and the structural and biochemical properties of individual tree species. From the point of view of the functions of NFWV in the urbanized environment of settlements, the climatic and biotic functions should be preferred from the categories of natural functions, and the group of social functions from the categories of anthropic functions. According to (Benčat' et al., 2015) green areas in settlements should be linked to historical and symbolic urban structures such as city parks, monuments, etc., which form the framework of so-called intact green areas. On the contrary, in an open, natural landscape, replacement planting should primarily complement the framework of territorial systems of ecological stability, protected areas, NATURA2000 elements and elements of the already existing green infrastructure. Following the results of landscape ecological research, it is important that when planting NDV, the degree of anthropization of the area and conflicts of interest between positive socio-economic phenomena and stress factors are also taken into account. Since these research results can supplement the missing information on the localization of NFWV planting with a specific function so that not only ecological stability is supported and increased, but also the negative impacts of stress factors on humans and their environment is mitigated.

Conclusion

In 1,324 settlements, no conflicts of interest between positive and negative socio-economic phenomena were identified. In these settlements, there was no direct threat to ecological stability, which is one of the important aspects of the use of cultural landscapes, and its assessment in practice forms an important part of several spatial planning documents. In other urban and rural settlements, based on the CES value and the specified conflicts of interest, we proposed to implement "green measures" in the form of planting NFWV. When planting trees to increase ecological stability and mitigate the negative effects of stress factors, in addition to the design of specific functions, it is important to prefer autochthonous tree and shrub species. For example, oak, beech, hornbeam, poplar, alder, maple, ash, willow, fir, hazel, elder etc. Plant species resistant to local conditions such as altitude, exposure and slope, as well as geological and pedological conditions. Focus on taxa that have valuable properties such as high biotic resistance to biotic and abiotic factors (Benčat', 2009). Plant tree species resistant to climate fluctuations such as drought and high temperatures. In frosty locations, plant trees resistant to frost, snow and wind; in polluted areas, trees resistant to emissions and salinization. On slopes, plant trees with anti-avalanche, anti-erosion, strengthening and reclamation effects, as well as protective and decorative effects. Many trees serve as a food base for forest animals, birds and other wildlife. Some tree species are suitable for urban environments (solitaires, parks, gardens, hedges, alleys, tree rows and industrial centers). Others are suitable for open landscapes such as windbreaks, game reserves, tree rows along roads, protective forest belts, etc. Some tree species are suitable for afforestation of mine dumps, devastated lands after mining and quarrying, for reclamation of extreme high-altitude sites, rocky areas, and terrain threatened by erosion, for strengthening the banks of foothill and high-altitude watercourses, in muddy soils, etc. To specify specific tree species, it is necessary to rely on available literary sources focused on dendrology and tree ecology (Benčat', 2009; Benčat' et al., 2015; Čaboun, 1996). When establishing and maintaining greenery and landscape planning, it is important to accept the growing and ecological requirements, appearance and aesthetic properties of trees (Machovec et al., 2000; Supuka et al., 1999 and prefer planting native tree species resistant not only to local climatic and pedological conditions but also to the negative effects of stress factors. Our proposals will

contribute to the dissemination of information where it is important and necessary to consider planting NFWV in order to improve the ecological state of ecosystems and at the same time support ecological stability and biodiversity. Tree species that fulfill one or more functions in the area will contribute to the protection of biodiversity, improvement of the quality of life and will also contribute to the mitigation of negative consequences related to climate change. The application of the methodology in real practice will contribute to the preservation and addition of stabilizing elements in the cultural landscape. We have made the results of the presented landscape ecological research on green infrastructure at the supraregional level available to the general professional and lay public on the website of the Institute of Landscape Ecology of the Slovak Academy of Sciences.

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