

The Impact of Nature Tourism on the Environment: Challenges and Solutions

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Abstract—Tourism is an important industry that can provide economic benefits, but at the same time also create negative impacts on the environment and local communities. The aim of this study is to assess the impact of tourists on the environment by analyzing various aspects related to the creation of nature trails, active tourism, pollution, and economic factors. During the study, various sources of information about nature trails and environmental quality were explored, as well as research and practical examples were used. The study found that the creation of nature trails is a promising opportunity for the development of nature tourism, but requires professional planning and a sustainable approach. It was also concluded that active tourism can have both positive and negative effects on the environment, so it is important to exercise caution and adhere to the principles of sustainable tourism. The study identified a pollution problem that can negatively impact the natural environment and tourism sustainability, and concluded that effective control and monitoring is necessary. It was also concluded that the economic potential of tourism must be balanced with the requirements of environmental protection and sustainable development. The results of the study show that sustainable tourism is possible if measures are implemented that promote environmental awareness, regulate tourist flow, develop environmentally friendly infrastructure, and promote cooperation between all interested parties. The results of the study are essential for understanding the impact of tourism on the environment and working out sustainable tourism development strategies that take into account environmental protection requirements and ensure a balance between economic, social and environmental interests.

Keywords—Creative industries, Environmental Impact, Latvia, Nature Tourism, Tourists, Virtual reality (VR).

I. INTRODUCTION

To attract tourists, nature is used as a tourism resource, it is “a set of natural and man-made factors and events that attract the emotional, spiritual, physical and healing interests of tourists” [1]. Therefore, in many countries, nature is positioned as a valuable, unique tourist attraction. For example, Azerbaijan is known for its untouched nature: flora and fauna, mineral springs, geological monuments such as mud volcanoes, deep gorges, waterfalls, etc., because the country has 11 climatic zones where you can relax in all seasons [2]. The Latgale region (Latvia) could also gain competitive advantages as an international tourism destination, taking into account its geographical location, rich natural and cultural resources, and opportunities for international support in the development of tourism products [3]. The natural resources of Latvia are [4]-[5]:

- waters (rivers, lakes, springs, wells, etc.),
- forests,
- caves,
- meadows,
- swamps,
- rural landscape,
- flora,
- fauna.

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Latvia's geographical location is suitable for biologically diverse development, and it is positive that bees, through pollination, also improve the agricultural environment, which promotes the development of agriculture and plant diversity [6]. However, tourism activities in nature are often associated with environmental pollution [7]. The aim of this study is to assess the impact of tourists on the environment by analyzing various aspects related to the creation of nature trails, active tourism, pollution, and economic factors. The study will use various information sources, research and practical examples to provide a comprehensive insight into the impact of tourism on the environment and the opportunities for sustainable tourism development in Latvia.

II. MATERIALS AND METHODS

During the study, various sources of information about nature trails and environmental quality were explored, and the results obtained were supplemented with insights from research and practical examples over several years.

The results obtained during the development of the work were processed using three research methods:

- economic analysis method;
- the method of graphically displaying data;
- descriptive method.

III. RESULTS AND DISCUSSION

Tourism is a dual industry. Tourism brings profit if the tourism product is sold profitably. However, tourism also has another side, i.e. its impact (both positive and negative) on the environment and local society. [7] (Fig.1). In order to attract tourists and visitors, it is recommended to combine the visit of the tourist trail with the educational and practical part about nature [6]. Currently, the creation of various nature, cognitive and educational trails is popular. There is a lack of information on how often environmental and tourism specialists are involved in the development of nature trails and other types of routes. As a result, for the purposes of "environmental improvement", the undergrowth which is important for birds and other species is cut down, for example, by turning the forest into a park [8] Overall, the development of nature trails and related tourism infrastructure can be assessed positively (Fig. 1). In addition, developing a trail is also a kind of tool for reducing the negative impact of tourism on the environment. However, man-made tourist attractions often degrade the environment if they are not maintained properly or are neglected [9].

Article 1 of the Tourism Law states that "Active tourism is a type of tourism aimed at active recreation and physical activities during travel" [1]. Active tourism (cycling, hiking, water tourism, etc.), where a person is most closely connected to the natural environment, i.e., moves through natural habitats and "wild" places where there is no infrastructure and is in closer contact with wild animals, can, in summary, cause much more negative impacts and consequences than a motorist who moves mainly through urbanized and semi-improved territories [8]. Therefore, the belief that active tourism types –

cycling, hiking, water tourism, etc. – are environmentally friendly, while car tourism is an environmentally unfriendly type of tourism, is not always true.

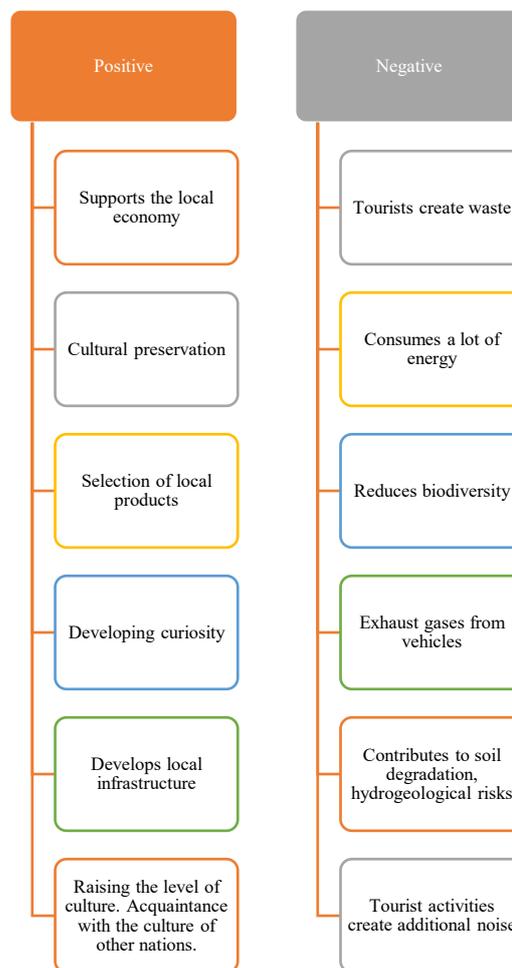


Fig. 1. Assessment of the impact of tourists on the environment [5], [7] - [8].

Humans cause environmental pollution through their activities, resulting in:

- Heavy metals are found in living organisms, for example, the presence of heavy metals in plants of the same field can be found in spring and not in autumn [10] – [14].
- By polluting the air, thereby worsening its quality [15] – [19].
- Using pesticides [20], which also contain substances hazardous to human health and nature [21].
- In the measurements carried out by the Center for Environment, Geology and Meteorology of Latvia, have found that in several sources and boreholes, pesticides have been detected in groundwater monitoring, the amount of which exceeds the permissible concentration norms, for example, in Vidzeme, Cēsis district, in two public sources - Lielā Ellīte and Dāvida dzirnavas source, where people like to take drinking water,

an excess of 10 and 50 times the norm of the herbicide bentazone has been found [22] – [23].

This pollution can negatively affect biodiversity, ecosystem stability and human health (Fig.2). In Latgale, which is rich in natural areas and popular with tourists, the problem of pollution is particularly acute. It is necessary to strengthen environmental monitoring and control to ensure that pollution levels are not exceeded, as well as to promote tourists' understanding of responsible behavior and environmental protection principles.

Tourism is a significant economic driver that can promote regional development by creating new jobs, increasing revenues from tourism services and attracting investment. As the price decreases, demand increases, which in turn encourages an influx of tourists, resulting in lower prices per tourist, which can make a given country or region more attractive to tourists, resulting in increased economic revenue. In turn, income generates wages, the more tourists, the higher the wages that will be paid, the more money will be returned to circulation. As income increases, there are also greater opportunities to attract investments. As a result, more money will be spent in local businesses, which will again contribute to the development of both the region and the country. However, 2016 in Latvia was marked by a negative trend, when income in the rural tourism sector decreased by 10 - 15%, which was facilitated by the state's tax policy, as there was an increase in the prices of services, including electricity, etc. [24]. Currently, Latvia is also experiencing an increase in prices, which is related to political decisions.

In the tourism industry, it is recommended to create competitiveness indicators in the following four categories [3]:

- indicators that measure tourism performance and impact;
- indicators that monitor the destination's ability to provide high-quality and competitive tourism services;
- indicators that monitor the attractiveness of a tourist destination;
- indicators that characterize support policies and economic opportunities.

A number of steps must be taken to create a nature trail, but it is important to remember that the choice and configuration of the site play a significant role in this process, as the trail must be accessible, safe, with a diverse nature, interesting, and, importantly, easy for visitors to navigate. The ideal length of a tourist trail is 3 km [6].

A nature trail is an attractive, valuable sequence of natural objects in a natural area, where a trail suitable for visitors has been created and the goal of which is to attract people to nature, to give them the opportunity to enjoy and explore it in an environmentally friendly way [26]. By creating a nature trail, tourists and visitors can not only enjoy the proximity and beauty of nature, but also gain

new knowledge by exploring nature, plants, etc. [6]. One of the most influenced and interesting habitats in Latvia are caves – both natural and man-made. The life living in caves, accustomed to the constant underground world, is unable to adapt to their regular visits and disturbance, which is why the invisible part of the underground world has been lost – not only the lower plants and animals, but also bats, which in Latvian caves have decreased several times over the past ten years [8].

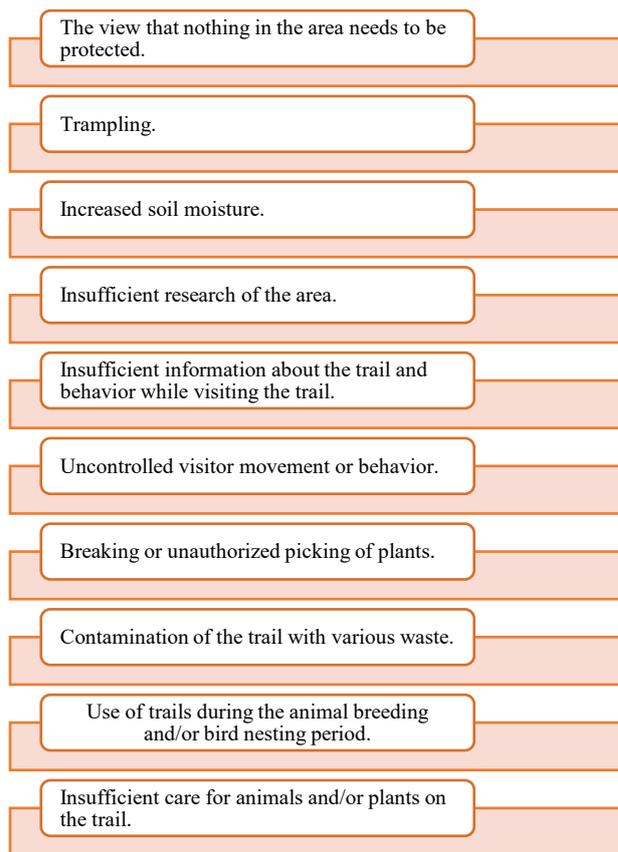


Fig.2. Conditions that pose threats to the environment on various trails [6] - [8], [13], [15], [25].

In every settlement, the number of tourist visits must be regulated in order to ensure both public order and a clean environment (Fig. 3). In order to regulate the number of tourists in a certain place, it is necessary to conduct research on the given region and plan the reception of tourists depending on the number of local residents, the number of accommodations, the level of service, catering options, the level of infrastructure development, and communications [7].

A popular compromise method is the creation of high-quality nature tourism infrastructure [8]:

- Directing the flow of tourists in the right direction at the right time, thus satisfying both the interests of tourists and the requirements of nature

protection. This is currently being successfully implemented in Latvia in specially protected nature areas.

- develop a tourism impact assessment or methodology for each specific location, case or object separately.
- Everyone should think (and, within their means, act) about creating nature tourism infrastructure.

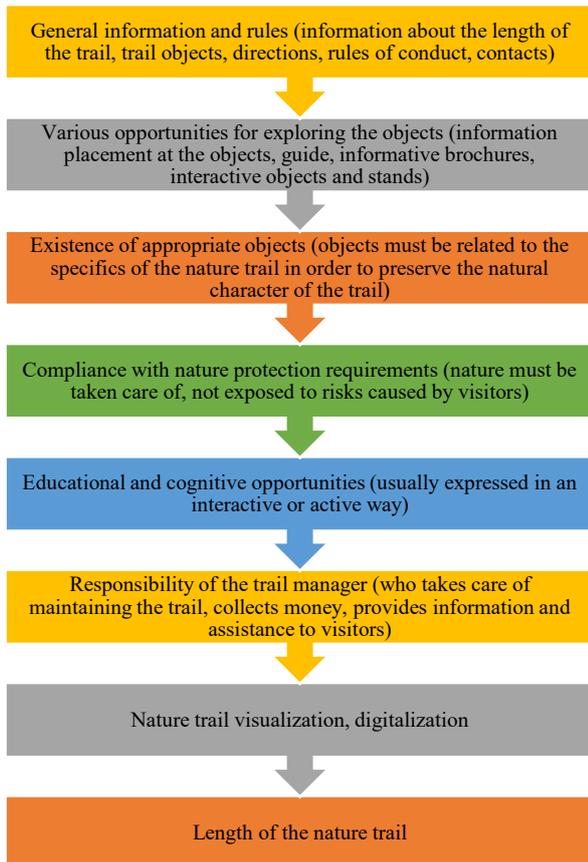


Fig. 3. Elements of nature trails [6] - [8], [15], [25].

There are several challenges in the tourism industry, such as providing a high level of service; positioning one's country as a tourist destination; building the tourism industry as part of the experience economy, developing tourism in a sustainable way; increasing the value of existing tourism resources by learning to earn more with them; and maintaining the cleanliness and naturalness of the surrounding environment.

In order for tourists not to cause negative behavior to the surrounding environment, it is also important for tourists to observe several conditions (Fig.4). Correct behavior of tourists is:

- Choose a certified tour operator.
- Travel out of season: this helps reduce tourist concentration and pressure on the environment.
- Use public transport: it reduces carbon dioxide emissions.

- Buy local products: it supports the local economy and reduces transportation costs.
- Respect local culture: follow local rules and traditions.

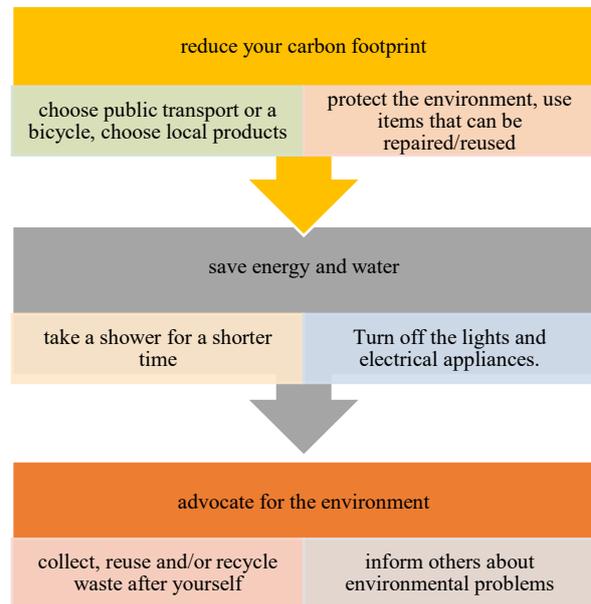


Fig. 4. Environmental improvement measures for tourists.

There is growing interest in the study of the relationship between people and the environment worldwide [27]. There is an increasing trend towards sustainable development in tourism that does not endanger natural, cultural and social resources [28], therefore it is important to seek environmentally and people-friendly and educational solutions. Action 1 of the Tourism Law [1] provides explanations of the terms used in the law, stating that “Nature tourism is a type of tourism whose purpose is to explore nature, view characteristic landscapes and habitats, observe plants and animals in natural conditions, as well as to educate oneself on nature conservation issues.”

Virtual reality (VR) technologies are increasingly applied in sustainable tourism communication as a tool to provide emotionally engaging, informative, and non-invasive experiences of natural and cultural sites [29]. These immersive solutions allow users to explore protected areas, nature trails, or ecologically sensitive locations without physically being present, thereby reducing environmental degradation and visitor pressure on fragile ecosystems [30]. For example, VR-based tours of national parks or conservation zones can simulate real-world exploration while promoting environmental awareness and responsible tourism behaviour [31].

Moreover, VR enables the development of interactive educational programmes that simulate the consequences of environmental choices, helping users understand sustainability principles in a more impactful way. By combining learning with emotional engagement, such

experiences can foster long-term environmental consciousness and inspire visitors to adopt more sustainable behaviours in real life [32].

Integrating VR technologies into cultural tourism initiatives opens new possibilities for presenting lesser-known heritage – including minority traditions, endangered languages, and local customs – in an engaging and accessible format [33]. Interactive VR experiences can reconstruct historical scenes, traditional crafts, and everyday life practices, helping preserve intangible cultural heritage and make it more visible to a broader audience. Crucially, the creation of such content should involve local communities to ensure authenticity, cultural sensitivity, and shared ownership of the narrative [34].

These initiatives not only enhance the visitor experience but also contribute to reinforcing local identity and community pride [35]. By offering new platforms for storytelling and participation, VR tourism can empower regional actors, especially in areas with limited access to conventional tourism, supporting local economies and cultural entrepreneurship in alignment with sustainability goals [36].

The leading state institution in the tourism sector, responsible for the development and implementation of the state policy for tourism development, is the Ministry of Economics. The competences, functions and tasks that are binding on the Ministry of Economics in the field of tourism are determined by a number of regulatory acts, the main ones being the Tourism Law and the Ministry's regulations. The Department of Business Competitiveness of the Ministry of Economics is responsible for the tourism sector. The state administrative institution responsible for the implementation of tourism policy is the Investment and Development Agency of Latvia, which is directly subordinate to the Ministry of Economics and whose main task is to promote the recognition of Latvia as an attractive and safe tourism destination abroad, as well as to stimulate the development of the local tourism sector [37], which is also one of the main priorities of the tourism sector, in accordance with the Latvian Tourism Development Action Plan for 2021-2027, where great emphasis is also placed on the preservation of local values [38].

Nature tourism as a component of the tourism sector (industry) with its diverse opportunities and types has great potential, because Latvia, with its geographical location and rich natural resources, could attract not only local tourists, but also tourists from other countries. It is increasingly being said that the government should be more involved in regional development, however, support from the state and local governments is still not sufficient to make maximum use of the available resources.

IV. CONCLUSIONS

The creation of nature trails is a promising opportunity for the development of nature tourism, but requires professional planning and a sustainable approach.

Active tourism can have both positive and negative impacts on the environment, so it is important to exercise caution and adhere to the principles of sustainable tourism.

Pollution is a serious problem that can negatively affect the natural environment and the sustainability of tourism, therefore effective control and monitoring are necessary.

The economic potential of tourism must be balanced with the requirements of environmental protection and sustainable development.

Sustainable tourism is possible if measures are implemented that promote environmental awareness, regulate tourist flows, develop environmentally friendly infrastructure, and promote cooperation between all stakeholders.

REFERENCES

- [1] Tūrisma likums, Latvijas Republikas likums, 1998. [Online]. Available: <https://likumi.lv/ta/id/50026-turisma-likums>. [Accessed: Dec. 05, 2024].
- [2] N. Musayeva, and I. Silinevica, "Tourism Development Impact on the Economy of Azerbaijan". *Latgale National Economy Research*. vol.1, No.8, pp. 61-68, 2016.
- [3] I. Silinevica, "Competitiveness Opportunities for Tourism in Latgale Region". *Latgale National Economy Research*. vol.1, no.8, pp. 102-116, 2016.
- [4] Lauku ceļotājs. Lauku tūrisms. [Online]. Available: https://www.ceлотajs.lv/cont/prof/assoc/definition_lv.html?0&lang=lv. [Accessed: Sept. 25, 2024].
- [5] O. Nikodemus, Dabas resursu ilgtspējīga izmantošana Latvijā. *Nacionālā enciklopēdija*. 2024. 18 sept. [Online]. Available: <https://enciklopedija.lv/skirkklis/7292-dabas-resursu-ilgtsp%C4%93j%C4%ABga-izmanto%C5%A1ana-Latvij%C4%81>. [Accessed: Jan. 28, 2025].
- [6] I. Justs, L. Poiša, T. Vīksna, V. Pole, K. Ivanova, J. Vīksna, and A. Skromulis, Characteristics of the Beekeeping Industry in the Latvia. *Environment. Technology. Resources. Rezekne, Jun 2024, Latvia. Proceedings of the 15 th International Scientific and Practical Conference*, vol. 1, pp. 182–188, Jun. 2024. <https://doi.org/10.17770/etr2024vol1.7990>.
- [7] I. Siliņēviča, Tūrisms, vide, apkārtējā sabiedrība. *Environment. Technology. Resources, Rezekne, Jun 1999, Latvia, 1999*. pp. 177-179., 1999.
- [8] J. Smaļickis, Tūristu radītās ietekmes uz vidi. 2014. Gada 23. Decembris. [Online]. Available: <https://videsvestis.lv/turistu-raditas-ietekmes-uz-vidi/> [Accessed: dec. 20, 2024].
- [9] N. Ņitavska, and D. Skujāne, "Re-branding landscapes of forgotten resorts. Case of the healing resort Kemeris in Latvia", *Landscape Architecture and Art : Scientific Journal of Latvia University of Life Sciences and Technologies, Latvia University of Life Sciences and Technologies, Jelgava, 2019*. vol. 15, No.15, pp. 57-64, <https://doi.org/10.22616/j.landarchart.2019.15.06>
- [10] E. Cubars, and L. Poiša, Analysis of Composite Biomass Fuels Properties, *Environment. Technology. Resources. Rezekne, Jun 2019, Latvia. Proceedings of the 12 th International Scientific and Practical Conference*, vol. 1, pp. 39–43, Jun. 2019, [doi: 10.17770/etr2019vol1.4043](https://doi.org/10.17770/etr2019vol1.4043).
- [11] R. Platace, L. Poisa, and A. Adamovics, Reed canary grass (*Phalaris arundinacea L.*) productivity and quality depending on agro-meteorological conditions, 11th International scientific

- conference "Engineering for rural development" : proceedings, Jelgava, Latvia, May 24 - 25, 2012, Latvia University of Agriculture. Faculty of Engineering, Jelgava, pp. 195-198, 2012.
- [12] E. Cubars, L. Poisa, G. Noviks, R. Platace, and S. Bumane, Analysis of heavy metal content in the dry matter of different energy, Environment. Technology. Resources. Rezekne, Jun 2015, Latvia. Proceedings of the 10 th International Scientific and Practical Conference, vol 2, pp. 91-95, 2015. <https://doi.org/10.17770/etr2015vol2.242>
- [13] L. Poiša, A. Adamovičs, L. Antipova, G. Šiaudinis, D. Karčauskienė, R. Platače, A. Žukauskaitė, S. Malakauskaitė, and Ē. Teirumnieka, The chemical content of different energy crops, Environment. Technology. Resources. Rezekne, Jun 2015, Latvia. Proceedings of the 8 th International Scientific and Practical Conference, vol 1, pp. 191-196, 2011. <https://doi.org/10.17770/etr2011vol1.913>
- [14] A. Adamovics, and L. Poisa, Evaluation of chemical content in different energy crops. The 8th International scientific conference "Rural development 2017: Bioeconomy Challenges": abstracts book, Kaunas, Lithuania, 23-24th November, 2017, Aleksandras Stulginskis University, Ministry of Agriculture of the Republic of Lithuania - Kaunas, pp. 199.-202, 2017. DOI:10.15544/RD.2017.143
- [15] A. Skromulis, I. Matisovs, and G. Noviks, Complex Evaluation of Air Quality in Rezekne, Environment. Technology. Resources. Rezekne, Jun 2015, Latvia. Proceedings of the 8 th International Scientific and Practical Conference, vol. 1, pp. 160-168, Aug. 2015, doi: 10.17770/etr2011vol1.920.
- [16] A.Skromulis, J. Bredids, and E. Teirumnieks, "Effect of atmospheric pollution on air ion concentration". Energy Procedia 113, 2017, pp. 231-237.
- [17] L. Poisa, and A. Adamovics, Ash melting behaviour oxidizing atmosphere in energy crops . 11th International scientific conference "Engineering for rural development" : proceedings, Jelgava, Latvia, May 24 - 25, 2012 [elektroniskais resurs] / Latvia University of Agriculture. Faculty of Engineering. - Jelgava, 2012. - 506.-510.lpp.
- [18] N. Dolchinkov, and N. Nichev, Gamma-Background Radiation Control Systems as a Factor Of Bulgaria's National Security, Environment. Technology. Resources. Rezekne, Jun 2024, Latvia. Proceedings of the 15 th International Scientific and Practical Conference, vol. 4, pp. 83-88, Jun. 2024, doi: 10.17770/etr2024vol4.8225.
- [19] N.T. Dolchinkov, and M.P. Pavlov, Influence of Meteorological Elements in Accidents in Enterprises with Radioactive Elements or Dangerous Chemical Substances in Bulgaria. Environment. Technology. Resources. Rezekne, Jun 2023, Latvia. Proceedings of the 14 th International Scientific and Practical Conference, vol. 1, pp. 49-54, 2023. DOI:<https://doi.org/10.17770/etr2023vol1.7221>.
- [20] L. Poiša, and L. Antypova, Evaluation of the Effects of Herbicides on the Weeds and the Productivity of Hybrids Maize. Environment. Technology. Resources. Rezekne, Latvia. Proceedings of the 14 th International Scientific and Practical Conference, vol. 1, pp. 195-199, Jun. 2023, doi: 10.17770/etr2023vol1.7204.
- [21] L. Poiša, A. Adamovičs, K. Ivanova, and L. Antypova. The significance of bees (*Apis mellifera* L.) in preserving the natural environment. Продовольча безпека України в умовах війни і післявоєнного відновлення: глобальні та національні виміри : тези доповідей учасників міжнародної науково-практичної конференції, м. Миколаїв, Україна, 30-31 травня 2024 р. / Міністерство освіти і науки України. Миколаївський національний аграрний університет - Миколаїв, 2024, pp. 121-123. DOI: <https://doi.org/10.31521/978-617-7149-78-0-38>.
- [22] L. Ābele, Virszemes un pazemes ūdeņu kvalitātes dati (2015 – 2022) attiecībā uz pesticīdiem. Latvijas Vides, ģeoloģijas un meteoroloģijas centrs (LVĢMC), 07.02.2024. [Online]. Available: https://www.permakultura.lv/uploads/6/3/5/3/63536947/vkp_lvgm_c_pesticidi_monitorings.pdf. [Accessed: Dec. 12, 2024].
- [23] Viedā saimniecība. Bez pesticīdiem – tīrai videi un veselīem cilvēkiem. [Online]. Available: <https://www.permakultura.lv/bezpesticidjiem.html>. [Accessed: dec. 12, 2024].
- [24] J. Smalinskis, and A. Auzina, Preconditions for Establishment and Historical Development Stages of Latvian Rural Tourism Association "Country Holidays. Proceedings of the 2017 International Conference: Economic Science For Rural Development, no 45, Jelgava, LLU ESAF, 27-28 April 2017, pp. 221-221.
- [25] A.Maisiņš, Dabas taku ierīkošana un apsaimniekošana īpaši aizsargājamās biotopos, 2005. [Online]. Available: https://lvafa.vraa.gov.lv/faili/materiali/sem_mat/2005/DAP_seminari/DAP_kadiku_Jurkalne/Andris_Maisins.pdf. [Accessed: Nov. 15, 2024].
- [26] L. Blūma, "ES atbalsts ietekmes analīze uz Latgales sociāli ekonomisko attīstību". Tautsaimniecības attīstība: problēmas un risinājumi: studentu un docētāju 10. zinātniski praktiskā konference 2008. gada 3. jūnija rakstu krājums. Rēzekne: RA izdevniecība, 2008, 5.-13.lpp.
- [27] L. Balode, "Dziedošie sajūtu dārzi un parki". Sociālo zinātņu žurnāls. 2013, vol. 1, No 5, pp. 7- 22.
- [28] I. Dembovska, and I. Silicka, "Lauku tūrisma ilgtspējīga attīstība Latgalē", Latgales tautsaimniecības pētījumi. 2014, vol. 1, No 6, pp.20. – 40.
- [29] Camps-Ortueta, L. D. Escolar, and M. F. B. López, New technology in museums: AR and VR video games are coming, Communication and Society, vol. 34, no. 2, pp. 193-210, 2021. <https://doi.org/10.15581/003.34.2.193-210>
- [30] S. Talwar, P. Kaur, R. Nunkoo, and A. Dhir, "Digitalization and sustainability: virtual reality tourism in a post pandemic world," Journal of Sustainable Tourism, vol. 31, no. 11, pp. 2564-2591, 2023. <https://doi.org/10.1080/09669582.2022.2029870>
- [31] S. D. Hoang, S. K. Dey, Z. Tučková, and T. P. Pham, "Harnessing the power of virtual reality: Enhancing telepresence and inspiring sustainable travel intentions in the tourism industry," Technology in Society, vol. 75, 2023. <https://doi.org/10.1016/j.techsoc.2023.102378>
- [32] H. Kanematsu, D. M. Barry, N. Ogawa, K. T. Nakahira, K. Yajima, S. N. Suzuki, H. Miura, T. Kato, and M. Yoshitake, "Application of Metaverse to creative engineering—From Second Life to VR headset projects," in Human-Centered Metaverse: Concepts, Methods, and Applications, pp. 107-127, Elsevier, 2024. <https://doi.org/10.1016/B978-0-443-21996-2.00004-8>
- [33] J. Chen, X. Wu, and I. K. Wai Lai, A Systematic Literature Review of Virtual Technology in Hospitality and Tourism (2013-2022), SAGE Open, vol. 13, no. 3, 2023. <https://doi.org/10.1177/21582440231193297>
- [34] M. Talafubieke, S. Mai, and N. Xialifuhan, "Evaluation of the Virtual Economic Effect of Tourism Product Emotional Marketing Based on Virtual Reality," Frontiers in Psychology, vol. 12, 2021. <https://doi.org/10.3389/fpsyg.2021.759268>
- [35] M. Roman, R. Kosiński, K. Bhatta, A. Niedziółka, and A. Krasnodębski, "Virtual and Space Tourism as New Trends in Travelling at the Time of the COVID-19 Pandemic," Sustainability (Switzerland), vol. 14, no. 2, 2022. <https://doi.org/10.3390/su14020628>
- [36] Y.-S. Chang, J. Y. Kao, and Y.-Y. Wang, Influences of virtual reality on design creativity and design thinking, Thinking Skills and Creativity, vol. 46, 2022. <https://doi.org/10.1016/j.tsc.2022.101127>
- [37] Ekonomikas ministrija (publicēts 2020. gada 12. 12. 2023) Tūrisms. [Online]. Available: <https://www.em.gov.lv/turisms-0>, [Accessed: Dec. 12, 2024].
- [38] Latvijas tūrisma attīstības rīcības plāns 2021.-2027.gadam, 2019. Pasūtītājs: LR Ekonomikas ministrija. Izpildītājs: Latvijas Universitāte. [Online]. Available: https://www.em.gov.lv/sites/em/files/turisma_ricibas_plans_2021_202720brandtour_final201.pdf, [Accessed: Dec. 05, 2023].