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Contents

Saturs

TRENDS IN RIVER RUNOFF IN LATVIA FOR THE PERIOD 1951–2020

LATVIJAS UPJU NOTECES ILGTERMIŅA TENDENCES LAIKA POSMĀ NO 1951. LĪDZ 2020. GADAM

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Abstract

A time series of monthly, seasonal and annual mean specific runoff of rivers in Latvia are analysed in order to detect trends for the period 1951–2020. Trend analysis is performed by applying the Mann-Kendall test and the trend slope is calculated using Sen's method. There were significant seasonal changes in the time series of specific runoff measured at 32 stations during the study period. In all hydrological regions, the trend values obtained for the winter season are statistically significant, but they are relatively weaker in the Eastern region. At the same time, river runoff in April and May has notably decreased, indicating a shift of the runoff maximum to an earlier time. Long-term changes in specific runoff are statistically significant in April in all hydrological regions, and only in May for the Eastern region. Generally, statistically insignificant trends in specific runoff are observed for the summer and autumn months. Annual mean specific runoff has not revealed any strong trends in spite of the increased precipitation and temperature. Clear seasonal changes have been found in several earlier studies in the Baltic countries, and they are confirmed by the current one.

Keywords: *runoff of river, climate changes, Latvia*

Introduction

The Baltic Sea basin is among the most sensitive regions in the world to global warming, which was stated in the first BACC (2008) assessment and is still valid in the current situation (Meier et al., 2022). This has encouraged the development of many studies of the warming climate and its impact upon hydrological processes at various spatial and temporal scales. The highest number of studies are summarised in the assessment of BACC Team (2008; 2015) and by Meier et al. (2022), which also includes the Baltic countries. The authors of these studies found that increasing trends in river runoff were characteristic of the winter season during the 20th century (Jaagus et al., 2017) and the beginning of 21th century. By contrast, the spring season is characterised by a decrease in runoff. By applying different hydrological models, changes in river runoff in this region were modelled for the case of continuous climate warming. The results indicated continuous increase in runoff in winter and decrease in spring, which could lead to drought and flood conditions in different seasons at the end of this century.

Long-term fluctuations in climatic parameters are reflected in the dynamics of river runoff that has a relatively short residence time (Jaagus et al., 2017). River runoff in Latvia is characterised by significant seasonal and interannual variability. It is mostly caused by precipitation variations and snow conditions during winter and the period of melting in spring. The runoff regime is also affected by physiographical conditions, including hydrographical and hydrogeological ones, where relatively large differences can be found among different rivers' catchment areas in Latvia. Long-term changes and variability in river discharge in Latvia has been analysed by many authors within the context of the Baltic countries (Reihan et al., 2007; Kļavinš et al., 2009; Reihan et al., 2012; Kriaučiūniene et al., 2012; Sarauskiene et al., 2015) and within the context of a single country (e.g. Kļaviņš & Rodinovs, 2008). One recent study was conducted by Apsīte et al. (2013), during which two periods of study (1951–2009 and 1881–2009) were analysed. The study revealed that a long-term trend analysis of two periods of study for the same river and hydrological station mostly indicated the same significant changes in the monthly, seasonal and annual discharge regime.

This study represents a new contribution, and is motivated by a scientific interest to find out if the last ten years have changed the nature of the trends. In order to answer this question, the objective of our study is an analysis of long-term seasonal changes, i.e. trends, in specific runoff of rivers in Latvia within four hydrological regions, using the updated time series for the period 1951–2020.

Data and methods

A data series of daily discharge registered by 32 river hydrological station was used in this study (Figure 1). The data were obtained from the Latvian Environment, Geology and Meteorology Centre (LEGMC). Missing data were taken from CD (Zīverts & Strūbergs, 2000) or calculated from adjacent monitored river basin, using linear regression analysis where the coefficient of determination is $r^2 \geq 0.7$.

Specific runoff of rivers was used because it allows observed data from river basins of different size to be compared and results of statistical analysis to be assessed. Specific runoff was calculated as follows: discharge value distributed with catchment area and multiplied by 1,000. Monthly, seasonal and annual specific runoff values for the period of 1951–2020 were used. Seasons were defined as three months, as is usual in hydro-climatological studies: spring (MAM), summer (JJA), autumn (SON) and winter (DJF).

As a rule, hydrological data are not normally distributed and are characterised by positive skewness. Therefore, the non-parametric Mann-Kendall test is applied to detect trends in time series. The test is distribution-free and robust to missing data and outliers (Libiseller & Grimvall, 2002). In Europe, the Mann-Kendall test is the most widely used test of discharge trend analyses (Madsen et al., 2014). The trend magnitude was calculated by applying the non-parametric linear Sen's slope estimator.

The Theil–Sen estimator is more robust than the least-squares estimator because it is much less sensitive to outliers. Trend values are presented by changes per decade. The $p<0.05$ level was used for critical significance. Trends are considered statistically significant at $p<0.05$, $p<0.01$ and $p<0.001$ levels were presented in the results. The computer software program MAKESENS was used for calculating trends (Salmi et al., 2002).

The classification of hydrological regions by Glazacheva (1980) was used, according to which the country is divided into four regions: Western, Central, Northern and Eastern.

Figure 1. **Location of river hydrological stations and hydrological regions of Latvia. Hydrological regions: I- Western; II- Central; II- Northern and IV- Eastern** (I. Vinogradov's figure based on data from the LEGMC and Glazacheva, 1980)

Results and discussion

Results of the trend analysis by applying the Mann-Kendall test are presented in Table 1 in a generalised form within the four hydrological regions and in Latvia as a whole. If the mean trend value was positive, then all trends at the stations would also be positive and vice versa.

In the middle latitudes snow accumulation and melting presently dominate in the hydrological regime. Warmer winters are naturally related to higher runoff in winter and early maximum in spring after the snowmelt that is typical for the Baltic countries. Also in this study during 1951–2020, a major significant changes in specific runoff of rivers have observed in the winter and spring seasons in all hydrological regions and total in Latvia (Figure 2). In winter season the runoff of rivers increase (trend values

varies from 0.55 to 1.22 L s^{-1} km^{-2} per $decade^{-1}$) and the trends are upward due to milder winters and early snowmelt. All changes are statistically significant at $p < 0.001$, but in the Eastern region at $p < 0.01$. At the same time, the trends obtained for the spring season are statistically insignificant, as the spring months (March, April and May) do not reveal the same pattern of change.

Table 1. **Trend values of spatially averaged monthly, annual and seasonal mean specific runoff of rivers (L s^{-1} km^{-2} per $decade^{-1}$) within each hydrological region and in Latvia as a whole in the period 1951–2020. Total number of stations for each hydrological region and Latvia as a whole is indicated in brackets** (authors' calculations based on data from the LEGMC and Zīverts & Strūbergs 2000)

	Hydrological region				Total in Latvia (32)
	Western (7)	Central (7)	Northern (10)	Eastern (8)	
Jan	1.49***	0.98***	1.00***	0.59**	1.01***
Feb	1.18**	0.88***	0.93***	0.63***	0.95***
Mar	1.11*	0.96**	1.46***	1.01***	1.17**
Apr	-1.13**	-1.72**	-1.46**	-1.30**	-1.37**
May	-0.10	-0.22	-0.35	-0.49*	-0.32
Jun	0.07	0.05	0.11	-0.07	0.03
Jul	0.08	0.08	0.12	0.03	0.08
Aug	0.02	0.01	0.00	-0.03	0.01
Sep	-0.03	-0.03	-0.07	-0.07	-0.08
Oct	0.03	-0.03	-0.10	-0.06	-0.04
Nov	0.25	0.15	0.43	0.16	0.31
Dec	0.42	0.40	0.52	0.27	0.45
Annual	0.19	0.03	0.22	0.01	0.12
Winter	1.22***	0.86***	1.04***	0.55**	0.92***
Spring	-0.36	-0.48	-0.30	-0.40	-0.39
Summer	0.05	0.04	0.09	-0.01	0.05
Autumn	-0.04	0.00	0.04	0.01	0.02

** $p < 0.05$ level of significance*
*** $p < 0.01$ level of significance*
**** $p < 0.001$ level of significance*

In the Western hydrological region, specific runoff of rivers increased more significantly in January and February. Moreover, in the Central, Northern and Eastern regions, more significantly runoff increase in January, February and March. All changes are at $p < 0.001$ and $p < 0.01$ levels of significance. The highest increase was detected in the Western district: trend values vary from 1.11 to 1.49 Ls^{-1} km^{-2} per

decade^{-1}. The lowest increase was obtained in the Eastern region where trend values vary from 0.59 to 1.01 L s^{-1} km^{-2} per decade^{-1}.

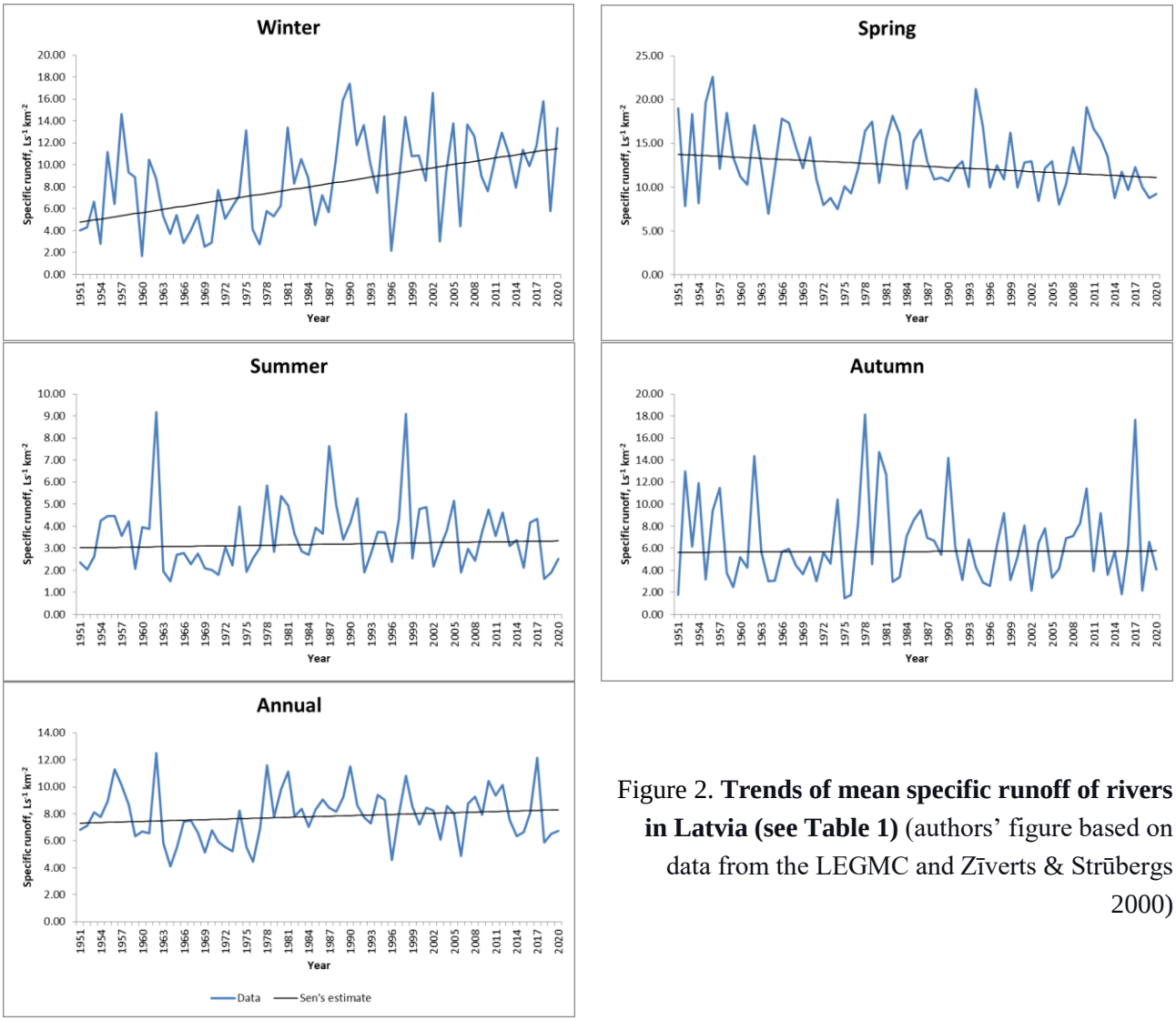

Figure 2. **Trends of mean specific runoff of rivers in Latvia (see Table 1)** (authors' figure based on data from the LEGMC and Zīverts & Strūbergs 2000)

Downward trend in streamflow was detected in April and May in all hydrological regions. Long-term changes are statistically significant at $p < 0.01$ in April and at $p < 0.05$ in May for the Eastern region. In April the highest decrease in specific runoff was detected for the Central region, where the trend value is -1.72 L s^{-1} km^{-2} per decade^{-1}. The lowest decrease in runoff was observed for the Western region, where the trend value is -1.13 L s^{-1} km^{-2} per decade^{-1}.

In the Western part of Latvia, greater impact of meteorological processes occurring over the North Atlantic and the Baltic Sea on the river hydrological regime is observed than for other parts in Latvia. This influence decreases from west to east with the eastward increase of continentality. Furthermore, in western and central hydrological regions comparatively shorter ice-cover and thinner snow cover was also

observed, resulting in earlier onset of spring flooding. The Eastern region is characterised by more continental climate conditions than the others, i.e. warmer summers and colder winters with thick snow cover. Spring floods of rivers begin later and their duration is longer (Apsite et al., 2013).

Generally, statistically insignificant trends in specific runoff are observed for summer and autumn months. However, mean specific runoff has significantly increased in some rivers (e.g. in the rivers Venta, Imula, Lielupe, Mūsa, Salaca and Aiviekste) in June and July. This could be due to an increase in precipitation in June for the Western, Central and Eastern regions for the period 1950–2020. Another specific feature emerges: the river runoff decreased in September and October. The highest decrease in trend values was detected in the Eastern region while the lowest decrease was seen in the Western region. According to Jaagus et al. (2016) this could be explained by warmer autumns, and increased evapotranspiration and decreased precipitation in September.

Similar to the findings in a study conducted in Estonia (Jaagus et al., 2017), our results indicate that, despite the increase in precipitation and temperature, the annual mean specific runoff did not show any significant trends. A statistically significant change in runoff was found in some rivers (the rivers Lielā Jugla, Salaca and Vaidava) and in Western region (the rivers Irbe, Užava and Rīva).

The results of this study are in line with previous studies in the Baltic countries (e.g. Kļavinš et al., 2009; Reihan et al., 2012; Kriaučiūniene et al., 2012; Apsīte et al., 2013; Jaagus et al., 2017), indicating major significant long-term changes in river runoff during the last few decades between the winter and spring seasons.

Conclusion

Changes in streamflow during the 20th century and the beginning of the 21th century revealed a redistribution of runoff over the year, with a significant increase in winter in all hydrological regions and a tendency for decreasing spring floods particularly in the Central and Eastern hydrological regions. In this study, by using the updated time series of 1951–2020, the trends in river runoff duration in Latvia has not changed very much in comparison with the results of the previous study for the period 1951–2009. The obtained results of trend analysis could be considered as logical consequences of the climate warming that is projected in Latvia.

Kopsavilkums

Tas, ka globālais klimats kļūst aizvien siltāks, ir būtiski ietekmējis hidroloģiskos procesus, tajā skaitā upju noteces ilgtermiņa pārmaiņas vai trendus pēdējās desmitgadēs. Šajā pētījumā ir analizētas Latvijas upju īpatnējās noteces mēnešu, sezonu griezumā, kā arī ikgadējie trendi par 32 upju hidroloģiskajām stacijām no 1951. līdz 2020. gadam, izmantojot Manna-Kendella testu un Sen’s metodi. Rezultāti apkopoti un analizēti četros hidroloģiskajos

rajonos: Rietumu, Centrālajā, Ziemeļu un Austrumu, kā arī Latvijā kopumā. Pētījums parādīja, ka būtiskākās upju noteces pārmaiņas ilgtermiņā notikušas ziemas un pavasara sezonā visos hidroloģiskajos rajonos. Palielinoties izkritušo nokrišņu daudzumam ziemā, upju īpatnējā notece ir augusi no 0,6 līdz 1,2 L s^{-1} km^{-2} desmit gados, kur lielākās pārmaiņas novērotas Rietumu hidroloģiskajā rajonā, bet mazākās – Austrumu. Savukārt upju notece samazinājusies pavasarī no 0,32 līdz 0,46 L s^{-1} km^{-2} desmit gados. Noteces samazinājums galvenokārt ir noticis aprīlī un maijā, kas norāda, ka gada maksimālā notece sāk veidoties agrākos mēnešos. Vasarā upju īpatnējā notece ir nedaudz palielinājusies, jo ir kļuvis lielāks izkritušo nokrišņu daudzums tieši jūnija mēnesī. Savukārt rudeņiem kļūstot siltākiem un sausākiem, upju notece samazinājusies septembrī un oktobrī. Salīdzinot iegūtos rezultātus ar agrāk veiktajiem pētījumiem Baltijas valstīs, var secināt, ka Latvijas upju noteces trendu galvenās raksturiezīmes saglabājas tādas pašas un tādas tās turpinās attīstīties līdz ar klimata pasiltināšanos.

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GEOLOGICAL DEVELOPMENT OF THE ZEBRUS-SVĒTE DEPRESSION DURING THE LATE GLACIAL AND THE HOLOCENE

ZEBRUS-SVĒTES IEPLAKAS ĢEOLOĢISKĀ ATTĪSTĪBA LEDUSLAIKMETA BEIGU POSMĀ UN HOLOCĒNĀ

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Abstract

The research area, the Zebrus–Svēte depression, is located in the southern part of the Eastern Kursa Upland in western Latvia and is one of many glaciodepressions of similar size and shape characteristic of this upland. All the glaciodepressions are bounded by glacial marginal formations, with their characteristic glacigenic landforms and glaciotectonic structures, which are additionally complicated by the formation of glaciolacustrine sediments. To get an understanding of the geological development and developmental stages of this depression, this study also compiles and clarifies information on the positive landforms around the glaciodepression. Nowadays the largest part of the glaciodepression is occupied by two separate lakes: Lake Zebrus and Lake Svēte. Studies of the depression relief isolines, as well as Lidar data and sediment composition characteristics, it can be concluded that at the end of the Late Glacial, there was a large single lake of glacial origin in the depression, which gradually divided into two separate lakes due to a level decrease. On the elevated belt between the two lakes, sediments – gyttja, silt and carbonatic clay – were covered by the low decomposed peat, and Elku Mire developed.

Keywords: *Eastern Kursa upland, marginal formations, lakes, gyttja, peat*

Introduction

Studies of depressions in Pleistocene sedimentary areas, including radial uplands, are very complicated, as the study area includes not only the lower part of the depression, but also the positive landforms surrounding it, or at least the slopes facing the depression. Each of these depressions is characterised sequentially over time, from the end of the Late Glacial to the present, with the accumulation of genetically distinct sediments and also landforms. Studies of individual, local depressions, especially the study of Holocene sediments and their comparison, provide an idea of the course of geological processes and paleogeographical conditions in at least one natural area: the upland.

The Zebrus-Svēte depression is located in the hilly area of the Eastern Kursa Upland, Western Latvia (Figure 1).

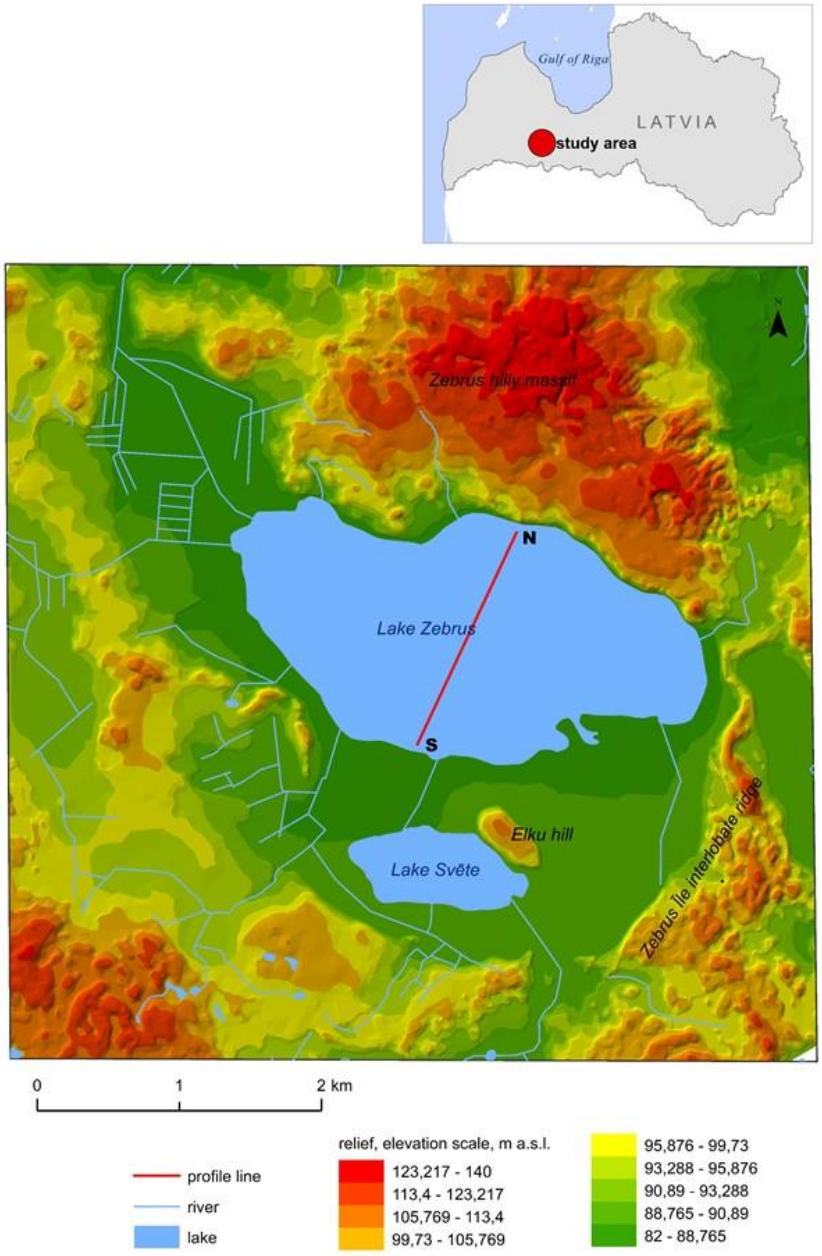

Figure 1. **Location of study area Zebrus hilly massif and Zebrus-Svēte depression** (authors' figure based on open geospatial data collections of LVM Geo, LGIA and Envirotech GIS Latvija 10.2)

It is the one of the morphologically significant glaciodepression in this upland that lies among the moraine ridges and the Zebrus hilly massif; the relative height of the slopes reaches 30–54 m. The glaciodepression has northwest-southeast linearity, corresponding to the direction of ice flow. The study includes an investigation of the lowest part of the depression, including the stratigraphy of the lake and bog sediments, and the genetically connected landforms around the depression, and in adjacent

areas. The study of sediments in the glaciodepression is very important not only in the study of the development of the depression itself, but also provides important information on climate and environmental changes in the Holocene in the southern part of the Eastern Kursa Upland. This area is fascinating from a geological and historical point of view, but still not thoroughly investigated; therefore, the study aim was to find out the nature of the geological development of the Zebrus-Svēte depression during the Late Glacial and the Holocene.

Materials and methods

The article is based on analysed unpublished research data from previous studies (Strautnieks et al., 2016; Daņiļēvičs, 2013), including information available at the State Geological Survey, and information from the latest research has been described. This study of the depression includes studies on glacigenic and glacial sediments, sedimentation conditions, deformation structures and relief formation during the Late Glacial. In order to understand and evaluate the geological processes during the Holocene in the last 11,700 years, sediment probing, coring and sampling were carried out in Lake Zebrus and Lake Svēte and on the elevation between them where the Elku Mire formed.

Lake Zebrus is the largest lake (420 ha) in the Eastern Kursa Upland; 86.5 m above sea level, it is located in an inter-hill depression, which is surrounded from the south by a hillside on the edge of the Eastern Kursa Upland and stretches in a west-east direction to the lake. South from Lake Zebrus is located the significantly smaller (55 ha) Lake Svēte, and after reclamation works, both lakes were connected. Additionally, the small River Zušupīte was deepened, which resulted in the water level dropping by 0.80 m. This also contributed to the intensification of bogging processes and the formation of Elku Mire.

Multidisciplinary study methods have been used, including field studies and laboratory analyses, as well as studies and interpretation of cartographical materials. Field studies include measuring of linear and plane - shaped and spatial structural elements, morphogenetic analyses of landforms, corings and sediment sampling. A statistical analysis of the planar structural elements measurements was carried out using the Stereonet programme. Laboratory analyses include: sediment composition analysis; the loss on ignition (LOI) method; and macroremain, pollen and mollusc analyses", as well as peat botanical composition and decomposition analysis (Krūmiņš et al., 2012).

Results and discussion

In general, the study area includes a complex of glaciotectonic negative and positive landforms that could be classified as a combination of Zebrus-Svēte ice-scooped basin and ice-shoved composite ridge, located distally from the depression.

According to previous investigations (Strautnieks, 1998; Strautnieks et al., 2016; Meirons et.al., 1976), the depression is bounded by marginal formations – a transverse ridge to the south of the depression, and an interlobate ridge and hilly massif on the north-eastern and eastern side. The Zebrus-Svēte depression is elongated and 5.5 km long. Its width varies from 1.2–1.6 km in the north-west to 3.0–3.5 km in the south-eastern part. Its linearity from north-west to south-east coincides with the direction of local ice movement, as evidenced by the opening of the glaciodepression in the northwest and the compression-displacement forms in the southeast. The morphology and genesis of glaciodepression are undoubtedly associated with the formation of pushed moraine ridges and massifs. The hilly slope of the Zebrus (Silakalni) composite massif is adjacent to the glaciodepression in the north for 4 km; its absolute height varies from 86.5 m above sea level at the level of Lake Zebrus up to 136–142 m above sea level, and thus the relative height reaches 30–55 m. Similar steps on the slopes are also observed on the slopes of the hills in the southern and southeastern part. On the slope of the Zebrus massif, the pseudo-terraces are very distinctive at several levels: 100–102, 107–110, 115–117, 120–123 m above sea level, which become progressively older as the height increases. All stair surfaces can be traced both as narrow (50–80 m) pseudo-terraces and as 120–300 m wide strips of lightly wavy morainic plains. The sloping slopes between the pseudo-terraces are the slopes of active ice contact, and were apparently formed during the deglaciation of the Vistula glaciation, decreasing the thickness of the glacier and its activity, and marking the active and passive ice contact. The highest part of the Zebrus massif is the central part, where the height of the undulating surface is mostly 130–135 m above sea level, and glaciofluvial sediments are exposed at the top. The 10–12 m thick walls of the quarry there reveal mainly sand, with a sloping layer characteristic of glaciofluvial deltas and a fall azimuth to the west/north-west (Figure 2). Accordingly, the presence of a delta and local glacial basin at this level means that the Zebrus-Svēte basin was filled with ice blocks. Signs of runoff from a local glacial basin are observed in the proximal part of the hilly massif, north of the glaciofluvial delta. The northern slope is interspersed with a number of dry erosion valleys, while sand and other erosion beds reveal sand with significant amounts of boulders on the surface, indicating sand eroded by an eroded till. In the final, most recent phase of the active glacier, the lowest part of the Zebrus-Svēte glaciodepression developed.

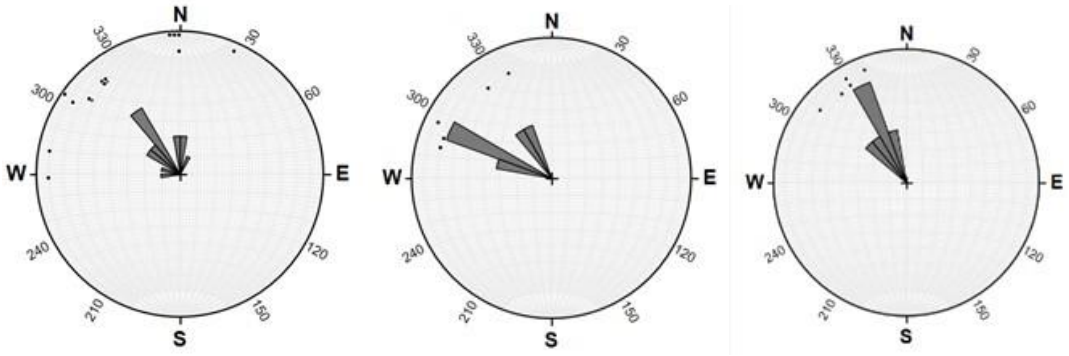

Figure 2. **Strata slope contact lines on the upper part of the Zebrus hilly massif in glaciofluvial sediments according to statistical analysis of measurements of planar structural elements** (authors' figure using Stereonet software)

The beds of the two lakes are separated by an elongated morainic hill (Elku Hill), which is thought to have formed beneath active ice, between glacial micro-tongues (Strautnieks, 1998). The lower part of the glaciodepression is bounded by steep, 10–12 m high ice contact slopes. In the northern and north-eastern part of the depression, the slope reaches 35–45º, and in some places even becomes vertical walls. It can be seen that the morphology of the coastal slopes has been influenced by the slope processes, which were facilitated by wave erosion at higher Zebrus-Svēte palaeolake levels. Along the current shoreline, boulders washed out of the till can be seen, but there are especially many of them near the steep slopes, the ancient erosion cliffs, where a lake terrace can be traced around the depression at an altitude of about 1–1.5 m above the current water level. Depressions on the slopes below the soil, but in places also on the surface, reveal the till of the Vistula with pebbles and erratic boulders. Till and individual boulders can also be seen in the wide shallow water zone in the northern part of Lake Zebrus. Nowadays, two lakes remain in the depression: Lake Zebrus and Lake Svēte.

The surface of the lakes in the depression is 86–87 m a.s.l. The thickness of lake sediment layer reaches 12 m accumulated above till or glaciolimnic clay and fine sand sediments. Studies of depression relief isolines, and use LIDAR data, it can be concluded that at the end of the Late Glacial, there was one large lake of glacigenic origin in the depression, which gradually divided into two separate lakes due to level decrease. In the top interval of gyttja layer in the shallower parts of both lakes, as well as in the overgrown fen area between these lakes, a layer of gyttja with an aquatic gastropod mollusc of the Valvatidae family (*Valvata piscinalis, Valvata pulchella*, also *Lymnea ovata* and *Bithynia tentearlata*) and ostracod remains can often be traced at a similar altitude. The interlayers traceable in the sediments of studied lakes characterise the changes in the sediment composition, indicating the fluctuations of the water level in both lakes. This is also proved by data from sediment composition analyses (LOI) method; and macroremain, pollen and mollusc analyses, as well as a

peat botanical composition, and decomposition analysis. These facts lead us to believe that it was a single lake at this time. The area between both lakebeds excludes the morainic hill, and is covered by clay and sandy-calcareous gyttja, an 8,000 years ago during the Early Holocene, due to the lowering lake level, the formation of reed and sedge fen peat started. Nowadays, a 500–600 m wide transition mire between the lakes with a peat layer more than 2 m thick has developed. The largest and deepest part of the depression is occupied by Lake Zebrus, which takes up 4.43 km^2, and the thickness of the organic lake sediments represented by different types of gyttja reaches 7–11 m (Figure 3). However, currently, it is a relatively shallow lake, so the average depth is 1.5 m, but the deepest point reaches 3.9 m.

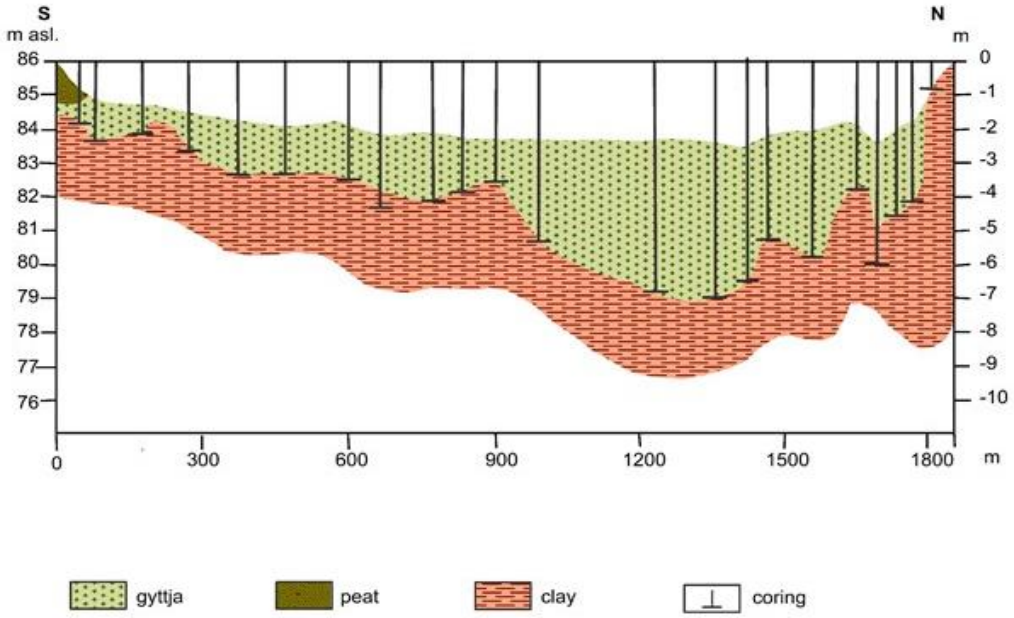

Figure 3. **Geological cross-section S-N of Zebrus Lake. Location shown by profile line in Figure 1** (authors' figure)

Lake Svēte is much smaller than Lake Zebrus, with a water surface of 55 ha and a maximal water depth of 2.2 m. In the western part of Lake Svēte, a layer of gyttja has accumulated above the bluish-grey dense clay, the thickness of which varies from 1.5 m in the shallowest part of the lake to 12 m in the deepest part,

The studies of the geological cross-section of Svēte Lake and Zebrus Lake (shown by the profile line in Figure 1) reveal different lake sediments at their beds – different kinds of gyttja, sand layers and carbonatic clay. Low decomposed peat has been found in an elevated area between the lakes, but beneath it, the limnic sediments lie – gyttja, silt and carbonatic clay, as are found in both lakes. This shows that the sedimentation conditions in this area were the same as in the two lakes, and that during the Late Glacial and the early Holocene, when the water level in the depression was higher, both lakes, as well as the elevation between them, were a single basin.

Conclusion

The sequence of lake sediment accumulation in the Zebrus-Svēte depression has common features. Their composition and distribution indicate that a significant part of the sediments have accumulated over a relatively long period in a single large water body, rather than in two separate ones. Results of the macroremain and pollen analysis indicate similar plant composition pointing to the gradual filling in of the lake with organic sediments rich in carbonates since the Early Holocene, when vegetation developed rapidly on the shores of the lakes and forests formed.

Results of the study indicate very complicated formation conditions for the depression. Therefore, more detailed investigation of the internal structure of landforms is necessary.

Kopsavilkums

Zebrus–Svētes ieplaka atrodas Austrumkursas augstienes dienvidu daļā un ir viena no līdzīga lieluma un formas ledāja ieplakām, kas raksturīgas šai augstienei. Visas glaciodepresijas norobežo ledāja malas veidojumi ar tiem raksturīgajām glacigēnajām reljefa formām un glaciotektoniskajām struktūrām, ko papildus sarežģī arī glaciolakustrīno nogulumu veidošanās. Lai izprastu šīs depresijas ģeoloģisko attīstību, šajā pētījumā apkopota un precizēta arī informācija par pozitīvajām reljefa formām ap glaciodepresiju. Mūsdienās lielāko ledāja depresijas daļu aizņem divi atsevišķi ezeri: Zebrus ezers un Svētes ezers. Izpētot depresijas reljefa izolīnijas, kā arī izmantojot LIDAR datus un nogulumu sastāva raksturojumu, secināts, ka Vislas apledojuma beigās depresijā atradās liels vienots glaciālas izcelsmes ezers, kas, tā līmenim pazeminoties, pakāpeniski sadalījās divos atsevišķos ezeros. Paaugstinātajā joslā starp abiem ezeriem nogulumus – gitiju, dūņas un karbonātiskos mālus – pārsedza zemā sadalījusies kūdra un izveidojās Elku purvs.

Nogulumu, kā arī tajos sastopamo makroskopisko atlieku un putekšņu analīzes rezultāti liecina par līdzīgu augu sastāvu, kas norāda uz pakāpenisku ezera piepildīšanos ar karbonātiem bagātiem organiskiem nogulumiem kopš agrīnā holocēna, kad ezeru krastos strauji attīstījās veģetācija un veidojās meži.

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SEDIMENTARY EVIDENCE OF PALEOVEGETATION AND HUMAN ACTIVITY AT POPE MANOR IN THE 17TH–19TH CENTURIES

LIECĪBAS NOGULUMOS PAR PALEOVEĢETĀCIJAS RAKSTURU UN CILVĒKA DARBĪBU POPES MUIŽĀ 17.-19. GS.

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Abstract

Sediments are an important archive, containing evidence of natural events and human activity in a given place. For this reason, a 49-cm-long sediment monolith of a section from the slope of an elevation at Pope, where the hunting castle is situated, was taken during archaeological excavations with the aim of finding out the environmental conditions during formation of the cultural layer. Samples were studied using a multidisciplinary approach, including sediment composition, granulometric and mineralogical composition analysis, as well as paleobotanical analysis of plant macroscopic remains and pollen analyses. The results obtained in all analyses complement each other and give the impression that naturally accumulated sediments were mixed by human activity. This is evidenced by their similar composition throughout the section. The results of analyses of macroscopic plant remains and pollen contained in the sediments indicate the environmental conditions at the time during the existence of the hunting castle at Pope. According to the data of paleobotanical analyses, and the considerable amount of grasses, especially weeds, the landscape was relatively open and cultivated.

Keywords: *sediment composition, cultural layer, palaeobotanical analysis, artefacts*

Introduction

The Pope uplift or Pope Island is a moderately undulating elevation on the north side of the Ugāle Plain in the Kursa Lowland. It is oriented in the WSW-ENE direction and rises 40 m above the surrounding Baltic Ice Lake plain, reaching 70.4 m above sea level (asl.) at its highest point. The top of the elevation is subdivided by elongated drumlin-like landforms. The Pope uplift has a very complicated geological formation and structure. It consists of deposits of natural origin, formed by Weichselian till and the glaciolimnic sediments of an ice-dammed lake. During the existence of the Baltic Ice Lake, the Pope uplift rose above the water level and became an island. The shoreline of the Baltic Ice Lake at the north end of Pope Island is characterised by a 30-metre-high ancient coastal erosion cliff. For the rest of the shorelines, the ridges are marked at a lower level. The territory of Pope manor

occupies the south-eastern part of the island, where the absolute height marks are 60 m asl., while the hunting castle was built at the top of the island's slope at an elevation of 57.7 m asl.

The aim of the archaeological research was to find possible evidence of previous habitation in the immediate vicinity of the oldest building at Pope manor – the hunting castle. In order to gain a broader insight into history, as well as archaeological research, information about the natural conditions in which the people of that time lived is also needed. Therefore, the aim of the research is, using a multidisciplinary approach, to find sedimentary evidence of the paleovegetal character and human activity at the hunting castle at Pope in the 17th–19th centuries. Field work includes sediment section description and sampling for laboratory analyses: sediment composition (LOI), granulometric (grain size), mineralogical, macroremain and pollen analysis.

Data and methods

In order to obtain information about the interaction between nature and humanity during the period of active use of the hunting castle, during archaeological research on 27 July 2019, a 49-cm-long sediment monolith was taken. Sediments for further analyses in the laboratory were obtained from the excavation site, located 4 m to the west of the west facade of the hunting castle building and 3 m from the slope of the ravine. (Figure 1). It was determined that sediment interval 0.80 m–1.30 m had formed during human activities and can be defined as a cultural layer. These sediments were studied.

Field work: The sediment sample monolith was taken from the excavation area in the B/1 square of profile A at a depth of 0.80–1.30 m from ground surface.

Figure 1**. Sampling site in the archaeological research area, measured 4 m to the west of the west façade of hunting castle building at Pope. The white arrow indicates the top of the sediment sample – monolith at a depth of 0.80 m** (authors' figure)

In order to have more information, the general characteristics of the whole section were also determined and described during the field work.

Top layer at a depth of 0–0.10 m: sod, saturated with clay brick/tile fragments, pebbles, 20th century fragments of iron objects. Exposed layer: dark grey soil, saturated in places with tile fragments. The first sediment layer is characterised by dark grey soil saturated with clay brick in some places and tile fragmen[ts], iron nails and screws (20th century), animal bones.

The second layer: in the central part, a stone structure is exposed, which covers the square crosses diagonally in a south-easterly direction. A row of boulders laid in red clay. The clay layer itself is visible on the east side of the square, with separate red clay fragments of bricks and tiles.

The third layer: on the east side, a layer of blue clay appeared under the red clay, in which there were tile fragments, some small glazed ceramic shards, dark green glazed fragments of kiln pots, and animal bones.

The fourth layer covers the cultural layer, and is characterised by reddish clay sand (thickness 0.2–0.3 m). It is exposed, and saturated with charcoal, bones and small fragments of tiles. These clays, levelling the area, are placed on top of a dark-grey uniform layer, in which there were no finds within the boundaries of the area. In part A of the area, the base soil – yellowish loam – was reached at 1.1–1.3 m deep.

Cultural sediment layer, depth 0.8–1.3 m: characterised by sand, int. 0.8–0.9 m with an admixture of orange-coloured Fe hydroxides; the lower part of the layer, which is with a small admixture of gravel grains, and is lighter and yellowish-grey has been studied in detail, applying a multidisciplinary approach.

Laboratory investigations

Loss on ignition (LOI) analysis is a widely used method to estimate the organic matter, carbonate and mineral content of sediments. The method is based on heating samples in muffle furnaces at +550 °C and +950 °C, which is currently accepted as a worldwide standard (Heiri et. al., 2001). After analysing the heating loss, the percentage ratio of organic substances accumulated in sediments and precipitated carbonates and mineral substances can be determined, which allows us to judge the environment in which the sediments accumulated, as well as the factors affecting them.

Analysis of the grain size composition of sediments show the amount of grain size particles that make up the composition of sediments, expressed as a mass percent of the total rock mass. Depending on the grain size, several sediment fractions can be distinguished. In this study, as part of the granulometric or grain size analysis, the sediment grain size fractions (mm) are: >1.0; 1.0– 0.5; 0.5–0.25; 0.25–0.1; 0.1–0.05. A set of sieves with mesh diameter >1.00 was used for sediment analysis, as well as 1.0–0.5; 0.5–0.25; 0.25–0.10; 0.10–0.05; <0.05 mm. Each fraction was weighed and data was processed in the MS Excel programme, creating grain size curves on a semi-logarithmic scale and determining the granulometric coefficients as first quartile, median and third quartile, or cumulative curve values at 25%, 50% and 75%.

The results of the mineralogical composition analysis of heating losses show that the composition of the sediments does not change significantly throughout the studied section; however, visually small differences can be observed, and therefore an analysis of the grain size and mineralogical composition of the sediments was carried out, and other materials found in the sediments were also determined.

Analysis of plant macroscopic remains was performed for nine samples with a sampling interval of 5 cm. The initial sediment volume of each sample is 20 millilitres. The generally accepted methodology (Birks, 2007) was used in the pre-treatment of sediments. Macroremains were soaked in water and collected in a sieve with a mesh of 0.25 mm. For the identification of macroremains a stereoscopic microscope, Zeiss Stemi-2000-C, was used, as well as modern seed collections and publications (Bojnansky & Fargašova, 2007; Cappers et al., 2006; Katz et al., 1965; Rasiņš, 1954).

The essence of spore-pollen analysis is that pollen accumulates with sediments. Therefore, spores and pollen in the relevant sedimentary layer provide evidence of the plant species of the relevant time (Galenieks, 1935). Pollen analysis was performed on 11 sediment samples at 3 cm intervals. Sediment samples were processed according to

internationally approved methodology (Bennett & Willis, 2002). The analysis was performed at a magnification of 400–1000 times using a light microscope, Axiostar plus. At the same time, other microfossils and charcoal dust were also detected and recorded, which can be an important indicator of human activity. Using the obtained results, a pollen percentage diagram was created in the TILIA programme.

Results and discussion

In the course of the archaeological excavations organised by Ventspils Museum (directed by A. Vijups, G. Skagale) in 2019, no structures related to the oldest (17th century) constructions except the hunting castle of the manor territory were found. The pile of stones which stands out in the centre of the excavations field diagonally in the south-north direction immediately below the top layer at a depth of 0.1 m in the western part of the field and continues in the ground, was formed by strengthening the edge of the slope with stones and clay and transforming the initially steep hills into a flat plane, where the oldest stone building at the manor is also situated. The time of construction of the building cannot be determined precisely, but it could hypothetically be in the 19th century. Most of the artefacts found in the course of the research are from the 19th-20th centuries; the oldest find is a fragment of a green-glazed stove tile with a flower vase motif, which is one of the 17th century motifs commonly found on tiles in Kurzeme. Fragments of black glazed stove tiles, a primitive iron key, and flintlock flint generally date from the 19th century.

A general dating of the cultural layer attributes it to between the 17th and the end of the 19th century, and the third and fourth layers to the 17th–18th century.

Laboratory investigations

The results of Loss on ignition (LOI) analysis, obtained during the LOI analysis, indicate a clear dominance of minerals in the sediment composition (96–97%) and a small amount of organic matter (2.5–3%), and less than 1% of carbonates (Table 1). According to the results of the analysis, the sediment composition does not show significant change throughout the studied section of cultural layer.

Table 1. **The composition (%) of the analysed sediments of the cultural layer section** (authors' calculations)

Sample no.	Depth from surface (from analysed sediment section top), m	Organic matter, %	Carbonates, %	Mineral matter, %
1	0.81 (0.1)	3.00	0.80	96.20
2	0.97 (0.17)	2.33	0.59	97.08
3	1.06 (0.26)	2.75	0.79	96.46
4	1.17 (0.37)	2.36	0.51	97.13

The results of the granulometric analysis show that the sediments at the western facade of the hunting castle at Pope are made up of sand of different degrees of coarseness; however, the grain size fractions of 0.25–0.10 mm, which, according to the classification, correspond to fine-grained sand (58%), are strongly dominant. There is a smaller proportion (19%) of the fraction 0.5–0.25 mm, which corresponds to medium-grained sand. Graphs were created for all the analysed samples, in which the variations of the grain size composition of the sediments and the cumulative curve were displayed. It should be noted that the created graphs are similar to the sample Pope 1 (Figure 2), which allows us to conclude that throughout the entire studied section the sediments are relatively well-sorted, and that their accumulation was probably influenced by water flows.

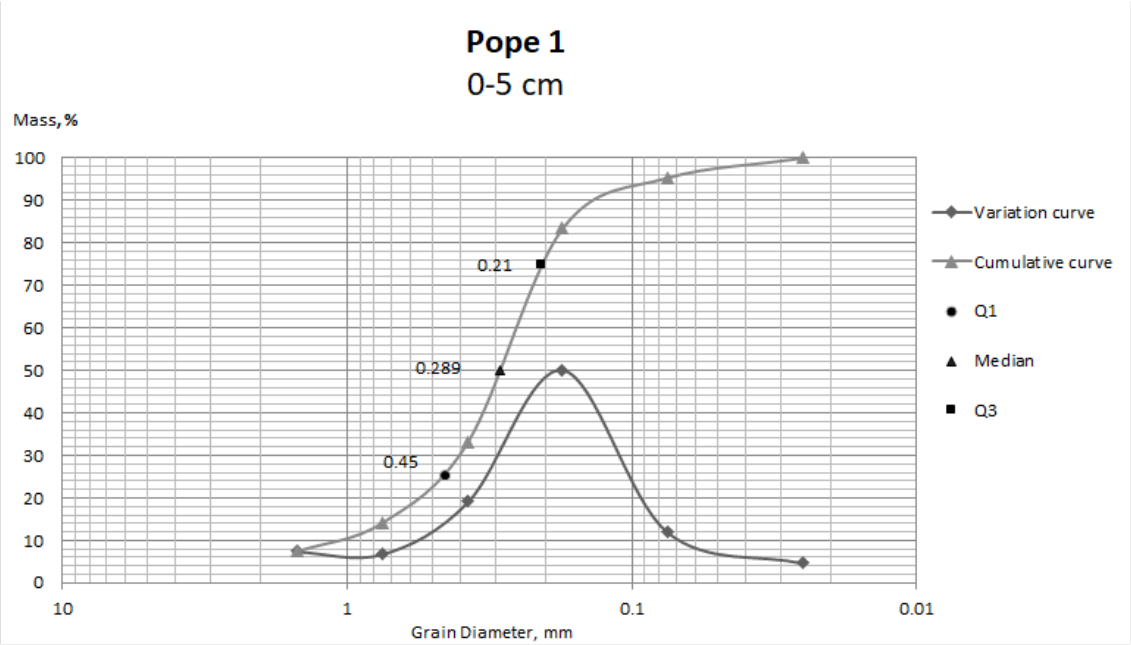

Figure 2. **Variations and cumulative curve of the grain size composition of the analysed sediment sample 1 (depth from the ground surface 0.8 m)** (authors' figure)

The aim of the mineralogical analysis was to clarify the general association of minerals, and therefore their belonging to a group – quartz, feldspar, mica, sedimentary rocks, crystalline rocks, calcined ($CaCO_3$) roots, artefacts, other (organic materials etc.) – was determined.

Quartz grains dominate (43–72%) in the sandy sediment samples. Their amount is significantly higher in the particle size fraction 1.0–0.5 mm than in the largest size fraction of > 1.00 mm. A relatively large share (31–46%) is made up of crystalline rocks, among which granites dominate (see Figures 3 and 4). However, there are also differences in their composition in different size fractions. The amount of crystalline rocks significantly decreases in the smallest fractions, while the amount of sedimentary rock debris directly increases.

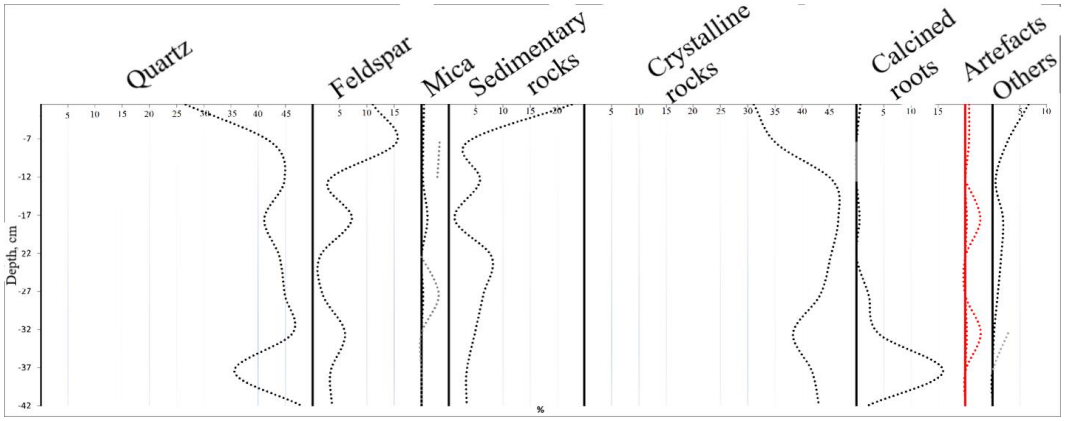

Figure 3. **Mineralogical composition of sediments, grain size fraction > 1.00 mm** (authors' figure)

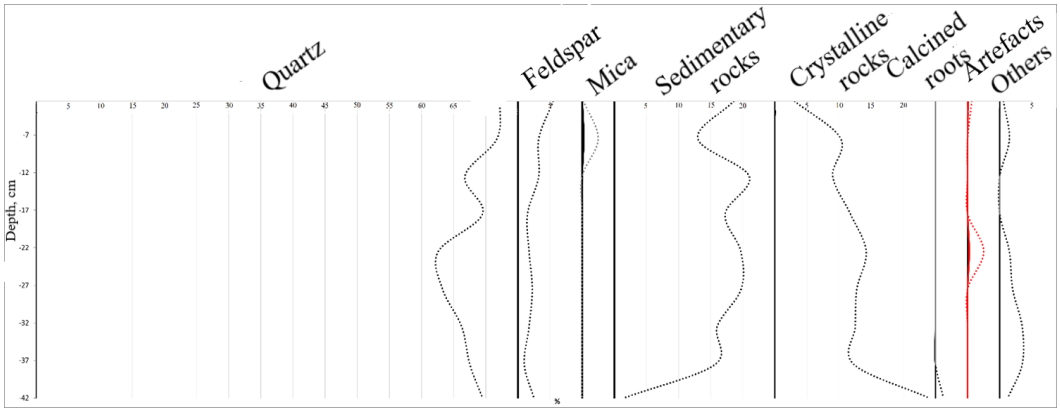

Figure 4. **Mineralogical composition of sediments, grain size fraction 1.00-0.5 mm** (authors' figure)

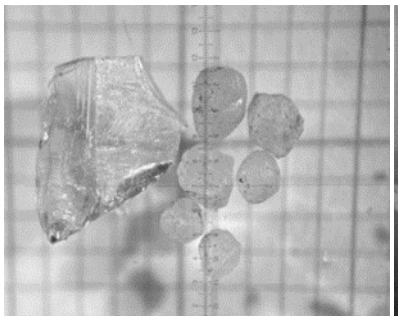

Figure 5. **Window glass fragment from the left, quartz grains from the right**

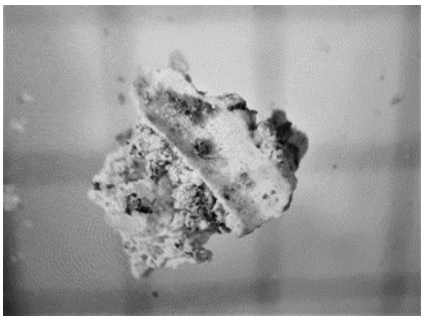

Figure 6. **Calcinated root, >1.00 mm**

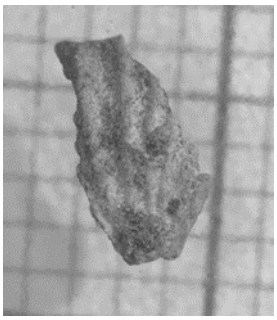

Figure 7. **Oyster shell fragment, > 1.00mm**

In total, 11 artefacts have been identified in the samples, most of which are fragments of window glass (6) (Figure 5). Glass fragments were found in Samples 1, 2, 4, 5 (0–10 cm and 15–25 cm deep). In the >1 mm fraction of the first sample, one red clay brick fragment and one possible building mortar fragment were found. Among the artefacts, organic matter formations were found – a fragment of a possible fish scale (at a depth of 0–5 cm) and a fragment of a possible oyster shell (at a depth of 29–34 cm) (Figure 7).

Starting from Sample 6 to Sample 9 (depth of 25–49 cm), but mostly in Sample 8, a relatively large proportion of calcinated roots was found (up to 15.9%) (Figure 6). Individual roots are cemented to quartz crystals. The accumulation of carbonate around the roots can be related to both biogenic processes (activity of bacteria, fungi or actinomycetes) and soil formation conditions.

Results of macroremain analysis show that the sediments are dominated by fine wood charcoal and well-preserved spherical black sclerotia of mycorrhizal fungi *Cenococcum geophilum* (Table 2). Occurence of *Cenococcon geophillum* is in peaty soils rich in organic substances (Gedda et al., 1999) in temperate climate belt regions and is a predominantly conifer mycorrhizal fungus (Benedict, 2011). Probably the presence of fungal sclerotia and small charcoal is associated with the time when deforestation of the area took place, as well as the intensification of soil erosion processes (Wohlfarth et al., 2002).

Seed coats are strongly eroded and thin (often only their fragments are found), which makes it difficult to determine whether the seeds belong to specific species. Predominant among plant remains are fat-hen (*Chenopodium album*) seeds (in 7 samples) (Table 2). White goosefoot is a widespread annual weed in gardens, found almost everywhere in loose and unshaded soils. In Sample 6, seeds of *Chenopodium hybridum* were found. Unlike the above-mentioned species, the bastard balanda *Ch. hybridum* (syn. *Chenopodiastrum hybridum*) is rarely found in Latvia (in gardens and lawns, and on roadsides and riverbanks (Petersone & Birkmane, 1958)).

As a result of sediment pollen analysis, three local pollen zones are separated in the diagram (Figure 8). In the lower interval of the monolith, 0.40–0.32 m, the pollen zone Pope 1 is subdivided. The main components of the pollen spectrum are pine (*Pinus*) and alder (*Alnus*), as well as cultivated land plants, including ruderal plants – Chenopodiaceae and nettles (*Urtica*) – and other annual plants, mainly cereals (*Poaceae*). The presence of microscopic charcoal dust was also found. Pollen from the ruderal herbaceous baland and nettle, as well as the presence of microscopic charcoal particles, probably indicate human presence in the area and a semi-open mixed tree forest landscape.

The sedimentary monolith in the middle interval of 0.32–0.22 m is in a separated pollen zone; the pollen composition indicates changes in the landscape. The proportion of pines in the composition of the forest is decreasing, but the share of

birches is increasing, as is the diversity of evergreens. The ratio of trees and herbaceous plants indicates a more open landscape compared to the lower interval analysed.

Table 2. **Results of plant macrofossils** (authors' calculations)

Plants	**Sample No.**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**Total**
	Depth, cm	80–85	85–90	90–95	95–100	100–105	105–109	109–114	114–119	119–122	
Chenopodium album Fat-hen	seed	1	1	2	3	3		1	2		13
	charred seed	1									1
Ch. hybridum maple-leaved Goosefoot	seed						2				2
Ch. foliosum? leafy goosefoot	seed fr.						1	6	1		8
Ch. rubrum red goosefoot	charred seed							1			1
Chenopodium sp. goosefoot	seed fr.	6	5	14	4	5	6	3	9	6	58
Brassica campestris? wild turnip	seed	2	1								3
Galium? Bedstraw	charred seed							2			2
Stachys palustris marsh woundwort	seed	1									1
unknown	charred seed fr.								1		1
Total		**11**	**7**	**16**	**7**	**8**	**9**	**13**	**13**	**6**	**90**
Other											
Cenococcum geophilum ectomycorrhizal fungi	sclerotia	18	35	27	20	43	15	17	26	31	232
wood charcoal	fr. >3-5 mm	2	6	1	3	6	7		4		29
wood charcoal	fr. <1-3 mm	>50	30	50	50	>50	>50	20	>50	32	>382
CaCO3 incrustations around the root	fragments					*	*	*	*	*	

* - presence

In the upper interval of the sedimentary monolith (0.22–0.02 m) in the separated pollen zone Pope 3, the pollen composition has changed drastically compared to the previous zone. The birch pollen curve is falling, but the pine is climbing. The alder curve remains at the same level, with slight fluctuations at the top of the zone. The diversity of herbaceous pollen increases. Possible agriculture is indicated by the presence of cereal pollen, rye, barley and wheat, as well as an increase in the number of *Polygonacae* and *Chenopodiaceae* weeds, and nettles (*Urtica*), which, together with the increase in the curve of the amount of microscopic carbon particles, indicate relatively intense human activity in this area.

The preservation conditions for pollen in the analysed sediments were not favourable, so most of them are significantly corroded. However, a careful analysis revealed that some *Apiaceae* pollen probably belong to the *Carum carvi* species. It is thought that this plant grew in the vicinity of Pope manor. The seeds of this plant were used for pickling vegetables and baking bread, and added to cottage cheese and meat dishes. A continuous curve is also formed by the pollen of the rose family plants (*Rosaceae*), among which apple (*Malus* spp.) pollen can be tentatively recognised. In this zone, pollen from the family *Caprifoliaceae* also form a continuous curve, among which some are recognisable as elder tree (*Sambucus*) pollen. Taking into account that the elder tree has been cultivated on the territory of Latvia since the 17th century, it can be assumed that the pollen determined is the pollen of the black elder tree (*Sambucus nigra*) or red elder tree (*Sambucus racemose*).

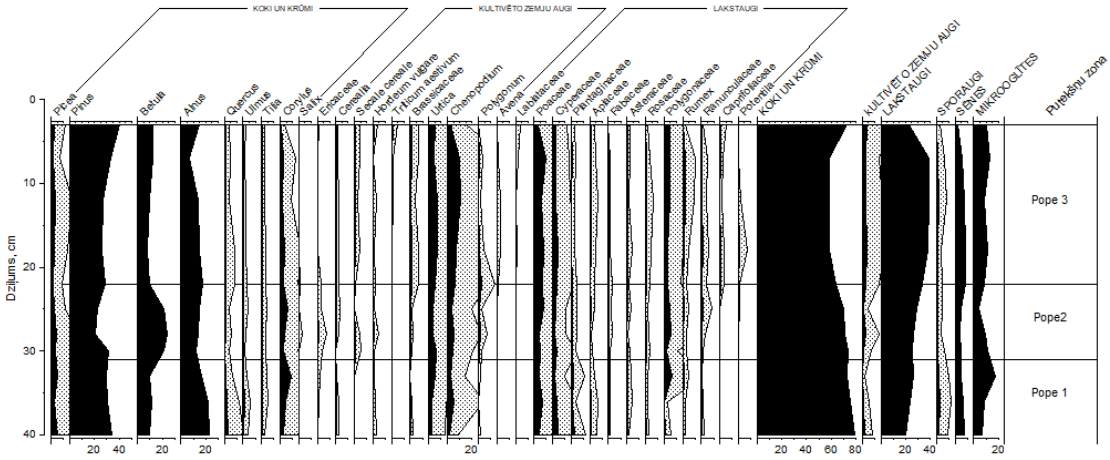

Figure 8. **Pollen percentage diagram of the sediments from the hunting castle at Pope** (authors' figure)

The results of the pollen analysis allow us to conclude that, during the accumulation of sediments of the analysed cultural layer, there was agriculture on the site, and that the landscape has become more and more open, except for the upper 5 cm, where the proportion of tree pollen, especially pine, increases.

Conclusion

The 49-cm-long sample of the sediment section from the hunting castle at Pope – the monolith, taken as part of the archaeological excavations, was studied using a multidisciplinary approach, applying sediment composition, grain size and mineralogical composition analysis, as well as paleobotanical analysis – plant macroscopic remains and pollen analyses. The results obtained in all the analyses complement each other and give the impression that the sediments had naturally accumulated in an environment affected by some water flow, but were later mixed by human activity. The results of the analyses of macroscopic plant remains and pollen contained in the sediments indicate a considerable amount of grass, especially weeds,

showing that the landscape was relatively open and cultivated during the manor's existence.

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Kopsavilkums

Arheoloģisko izrakumu ietvaros paņemtais Popes Medību pils nogāzes nogulumu griezuma 49 cm garais paraugs - monolīts pētīts, pielietojot multidisciplināru pieeju, izmantojot nogulumu sastāva, granulometriskā un mineraloģiskā sastāva analīzes, gan arī paleobotāniskās analīzes – augu makroskopisko atlieku un putekšņu analīzes. Visās analīzēs iegūtie rezultāti papildina viens otru un sniedz priekšstatu par to, ka nogulumi dabiski ir uzkrājušies ūdens ietekmētā vidē, tomēr vēlāk tie cilvēka darbības rezultātā ir sajaukti. Par to liecina to līdzīgais sastāvs visā griezumā. Kā rāda paleobotānisko analīžu dati un ievērojamais zālaugu, it sevišķi nezāļu daudzums, ainava muižas darbības laikā ir bijusi salīdzinoši atklāta un apstrādāta.

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ONE NATURE – MANY VALUES FOR ALL: GAUJA NATIONAL PARK

VIENA DABA – DAŽĀDAS VĒRTĪBAS KATRAM: GAUJAS NACIONĀLĀ PARKA IEDZĪVOTĀJU DABAS VĒRTĪBU IZPRATNE

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Abstract

The ideas underlying nature conservation have changed over time, from a very narrow view regarding the protection of specific species to the integration of nature conservation into the context of global development. Different coexisting perceptions of natural values can also be observed within the same area, in this case the Gauja National Park. The establishment of the park was implemented within the framework of a different political regime, in the 1970s, in which the protection of cultural landscapes was prioritised. While today the state's official stance represents the modern ideas of nature conservation, public opinion about nature protection is ambiguous. By studying the historical context and implementing other research methods, an insight was gained into the society's coexisting, often different visions of what is valuable in nature. Ethical considerations, which are often expressed both in the media and in the opinions of the residents, show a lack of understanding of the existing nature protection system and its methods.

Keywords: *Gauja National Park, nature conservation, Kellert's values, public participation*

Title reference to the inscription "One law, one truth for all" on the wall of the Cabinet of Ministers of the Republic of Latvia in the title.

Introduction

The understanding of nature's value and the need to protect certain species or ecosystems has changed over time. The first conservation activities were related to the implementation of the privileges of the materially prosperous part of society in relation to game animals. Today, protected areas represent efforts to preserve declining biological diversity and ensure the regulation of environmental processes. For implementation of nature protection goals set out in various international and regional planning documents, the most frequently used tool is the creation of protected areas (Adams et al., 2019; Hill et al., 2020). Since the 1970s, as anthropogenic impact on the environment has become more visible, the proportion of protected areas have begun to increase significantly (West et al., 2008). In 2020, the total share of protected areas in the world reached 16.64% (Protected Planet, 2020). The rapid pace of creating new protected areas is starting to raise questions about the maintenance of protection in

those that already exist and their impact on reversing the course of general environmental degradation.

The Gauja National Park (GNP), with its various protection regimes that form a cartographic mosaic, for reasons including its establishment within the framework of a different political regime, in the first half of the 1970s, is a complex example of conservation governance. According to Aija Melluma, one of the researchers involved in the creation of the park, the inspiration for the establishment of the GNP came from Yosemite National Park's centennial materials (Melluma, 1971). Yosemite Park served as a global precedent (Gillespie, 2020) for the rapid development of national parks in other countries. In the national parks created at the end of the 19th century and the beginning of the 20th century, the protection of various values of nature was implemented (Harper et al., 2012). The aims of the creation of the GNP, along with the protection of ecosystems, were also largely related to the protection of the local cultural landscapes and traditions related to them (Latvijas PSR Mežsaimniecības un mežrūpniecības ministrija, 1977; Генеральная схема национального парка "Гауя", 1973) from inconsiderate transformations. Today, the main goal of GNP as an area included in the Natura 2000 network is the protection of biological diversity. Considering the historical shifts in the GNP's goals, as well as changes in nature protection policy in the country, what versions of "valuable nature" or "multiple natures" (Lorimer, 2015) regarding conservation coexist in society today? Does public perception of these values differ from the official position?

By using the framework of social constructivism to conduct the research, the results can be compared to a photograph depicting part of the currently relevant nature values for the residents, the media and the institutional space. Values are one of the most important elements in what determines the choice in favour of one of the actions (Minang 2018), and their analysis can serve as a tool in the management of problems of various scales. Various methodologies (Jones et al., 2016) have been developed to categorise nature values into scientifically and practically applicable units. The version of typology of nature values developed by S. Kellert (1996) is based on the biophilia hypothesis by Wilson (1984), which claims that individuals have a predisposition towards nature and the processes taking place in it. Over time, experiencing several clarifications and changes (Ross et al., 2018), Kellert's division of nature values into ten classes is applied in case studies, covering various topics.

Data and methods

Various spatial and temporal factors influencing the research area determined that it is necessary to carefully, but at the same time, multifacetedly select the data and methods to be used to discover what are the understandings of protected nature values. Using the paradigm of social constructivism, the basic principle of which is that reality and knowledge are socially constructed (Mertens 2015; Creswell & Creswell, 2018;

Guba & Lincoln, 1989), the research was largely initiated and further developed based on the opinions and observations expressed by society (Figure 1). In-depth, semi-structured interviews with the residents of the GNP were conducted while analysing the current regulations and planning documents. Based on the various statements of the residents, aims for field observations were developed. To supplement the interview materials and gain insight from a wider part of society, a media content analysis was carried out. Further interpretations were complemented with historical context analysis using materials from the private archive of one of the founders of the GNP, Aija Melluma, which contains unpublished studies and the first nature protection plan of the GNP.

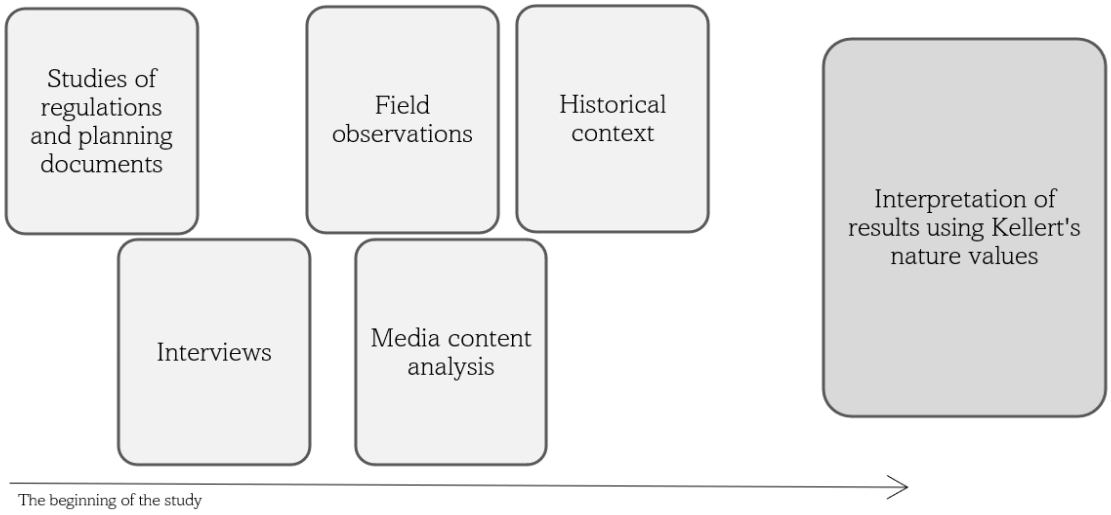

Figure 1. **Timeline of research** (author's figure)

The selection of respondents was done by posting a call on social media for GNP residents to apply for an interview. Ten interviews were conducted, with an average duration of about an hour. Regarding respondents' education and occupation: for three participants these were related to natural sciences, while the rest were engaged in business, or worked at private or state-owned companies or NGOs. The archive of the national information agency LETA, which is the largest online media archive in Latvia, was used in the media content analysis. The keywords "Gaujas Nacionālais parks" were used for the search, and articles from 2004 to 2022 were selected from the results. This archive includes both national media articles available in print and available online. From more than 2,000 records, 30 records of unique conflict situations were chosen. The reflection of conflicts was chosen because such situations represent clashes of different values (Redpath et al., 2013). The period chosen for the selection of articles, the beginning of which marks Latvia's entry into the European Union, can be considered a turning point in the process of adopting new,

international nature conservation policies and practices. The main goal of the field observations was defined considering the statements of the respondents, the majority of whom claimed that the area of the park does not differ from areas outside of it. To study these statements photographs of the GNP boundaries were taken every 7 km, showing both sides of the boundary.

Interviews and media content were coded using the software MaxQDA. Interview analysis was conducted deductively using Kellert's typology of nature values (see Table 1). The coding of articles was done following an inductive approach, noting the themes reflected in the conflicts and later linking them with types of values in Kellert's typology.

Table 1. **Kellert's relational values in social-ecological systems** (Kellert, 1996; Kellert, 2012)

Nature value	Description
Aesthetic	Aesthetic experience of nature *Function:* inspiration, harmony, peace, security
Dominiostic	Desire to master the natural world *Function:* mechanical skills, physical prowess, ability to subdue
Ecologic/scientific	Systematic study of structure, function and relationship in nature *Function:* knowledge, understanding, observational skills
Humanistic	Strong affection, emotional attachment, love of nature *Function:* group bonding, sharing, cooperation, companionship
Moralistic	Strong affinity, spiritual reverence, ethical concern for nature *Function:* order and meaning in life, kinship and affiliational ties
Naturalistic	Satisfaction from direct experience/contact with nature *Function:* curiosity, outdoor skills, mental/physical development
Negativistic	Fear, aversion, alienation from nature *Function:* security, protection, safety
Spiritual	The pursuit of meaning and purpose through connection to the world beyond our selves
Symbolic	Use of nature for metaphorical expression, language, expressive thought *Function:* communication, mental development
Utilitarian	Practical and material exploitation of nature *Function:* physical sustenance/security

"Gauja Park is not a jungle"

The national park movement in the Soviet Union was facilitated by various factors, e.g., rivalry with Western countries in the conditions of the Cold War, opportunities for scientists to obtain more information about nature conservation practices (Roe, 2016; Zaharchenko, 1990), as well as the need for places created by rapid urbanisation to experience direct contact with nature (Melluma, 1971). In contrast to the form of *zapovedniki* – "protected areas or nature reserves" – which had been widespread in the Soviet Union until that point, recreation is an essential

component in the idea of national parks. The use of nature for tourism also coincided with the hegemonic discourse of the Soviet Union. This was based on the supremacy of man over nature, and in the event of its implementation, nature produces new meaning. From "numb emptiness", "guardian of wealth" (Bolotova, 2004) and "jungle" (Skudra, 1975), it becomes a resource.

The founding materials of the GNP also show this producing of new meaning for nature through the framework of a national park. In the scientific research materials published before the establishment of the park, the main goal for the establishment of the GNP is mentioned as being "to protect the selected areas from progressive, but unplanned and often casual transformation" (Melluma, 1971). The ill-conceived transformation of areas during the Soviet period, introducing new agricultural and dwelling practices, tended to change cultural landscapes made up of farmsteads (Figure 2), which had a close relation to issues of national identity. Publicly, this "preservation of picturesque, typical landscapes and historical structures" (Latvijas PSR Mežsaimniecības un mežrūpniecības ministrija, 1977) was interpreted rather negatively. The preservation of cultural and historical elements would, by maintaining the architecture of a specific historical period, serve as a point of comparison to the growth of socialism.

Figure 2. **The landscape of the Gauja National Park in the 1970s** (Melluma, 1977)

When creating the GNP, an example was taken from the experience of other countries in the development of zoning, in which national parks mostly consisted of two parts – central zones and buffer zones. This factor was the reason why the so-called "inner park" and "front park" were differentiated in the original zoning. The

existing agricultural use was preserved in the buffer zone, with certain restrictions regarding landscaping. The main goal of this area was to reduce the anthropogenic load on the central part of the park, creating additional recreation opportunities in the protected zone, as well as higher requirements for the construction of new facilities (Latvijas PSR Mežsaimniecības un mežrūpniecības ministrija, 1977).

Values of nature and (also) biological diversity

Moralistic values were mentioned most often during the interviewing process. The respondent's ethical considerations and sense of responsibility towards nature were often associated with the intensive forestry practices observed in GNP: "The nightingales don't sing here anymore. There is no place for them to sing. Everything was cut down." In the context of political ecology, protected areas are defined as political projects that change the right of use and access to an area (Adams, 2017), and from the perspective of residents, such areas are most often associated with prohibitions and restrictions (Aastrup, 2020; Bauer et al., 2017). The frequent clearcut landscapes (Figure 3) create contradictions with society's assumptions; the importance of forests and individual trees is an essential part of the identity of the Latvian nation (Schwartz, 2007). The clearcut landscapes in the GNP are also one of the reasons why residents often mention the feeling that the area in the GNP does not visually differ from the area outside it. When conducting the boundary survey, in 17 out of 24 images taken, it was observed forest and other management practices didn't differ significantly within the park limits and outside them.

Figure 3. **GNP border before Līgatne (GNP on the left)** (author's photo, 2022)

Residents mention the direct use of natural resources in both positive and negative contexts. Forms of business supported in the GNP are those that are small in scale, such as logging for personal use and responsible tourism practices. Large-scale resource extraction, such as intensive forestry or industrial agriculture, is evaluated neutrally or negatively. In the media, especially in the conservative newspaper

Latvijas Avīze, restrictions on resource extraction are characterised as unfair, and nature conservation practices compared to a form of business. Such opinions and similar views in the media, which depict the "inefficient use" of natural resources for the implementation of nature protection, are related to the nature discourse highlighted by K. Schwartz (2006): agrarian nationalism. This took shape during Latvia's first period as an independent state in the 1920s, and its central element is the homeland, in which the owner of the land is the determining factor in shaping the landscape. The basic provision of well-being in this discourse is served by utilitarian values.

Scientific nature values take primary place in the institutional nature protection system, which is due to the location of the GNP within the Natura 2000 network. Both GNP nature protection plans (accepted in 2004 and 2023) which include the overall vision of the area's development, include very little information about other natural values in the area except scientific. The wide resonance in the media of the project "Forest Habitat Restoration within the Gauja National Park" (2011–2016) illustrates the inconsistency between the nature values existing in society, and the opinions of the decision-making authority, where scientific values dominate. Due to strong public opposition a nature protection method that is little-known and rarely practiced in Latvia today, prescribed burning, was not implemented. During the media analysis, not all types of nature values were found, and a clash between utilitarian and scientific values was most often observed. In the interviews, reference to scientific values as personally important was recorded mostly in cases where residents had received education related to ecological issues.

In cases where local inhabitants referred to personally important species or ecosystems, they were mostly not related to institutionally protected nature values. Expressing deep respect and reverence handed down from generation to generation, humanistic and spiritual nature values are associated with species such as nightingales, frogs and squirrels, whose populations have been observed to decrease in number compared to respondents' childhood. Symbolic values are not often mentioned; moreover, they are usually closely related to spiritual or moral values, for example, when expressing concern about intensive forestry practices, the respondent quoted a folk song about pine trees. It was also often observed that the respondents refer to a general connection with nature, which is not related to any of its constituent elements. This tendency can also be observed in the media, where public opinions are expressed through emotionally intense statements: "Any burning is incomprehensible to the mind and unacceptable to the heart, let alone intentional burning" (Krivma, 2014).

A close relationship between dominionistic and negativistic nature values was observed. Manifestations of superiority are often interpreted as responses to fear and lack of control experienced in nature. The desire to make nature accessible and easy to understand is illustrated by the Nature Observers' Garden created in Līgatne in 2020, where its visitors are given the opportunity to "see, feel and get to know the nature of

the region more closely" (ALPS Ainavu darbnīca, S.a.). Līgatne is surrounded by countless protected habitats, where it is possible to experience the nature of the region. From the point of view of the respondents, negative nature values are most often associated with an increase in the amount of fallen deadwood in forests, as well as possible threats to forest animals. Fallen deadwood, which was recognised as the habitat of the year in Latvia in 2023, can be compared to the "new black" of nature conservation in protected nature areas, which confronts the traditional utilitarian use of deadwood and the understanding of aesthetic values.

Local inhabitants rarely mention naturalistic nature values or mostly describe them sentimentally, referring to childhood memories. This could be related to residents' perception of the place, a feeling well described by Russian poet and essayist Joseph Brodsky in his book *Watermark* (1993): "Of course, nothing could be further from the locals' agendas as they scurry and bustle about on their daily rounds, properly oblivious or even allergic to the surrounding splendor. The closest they come to using a gondola is when they're ferried across the Grand Canal or carrying home some unwieldy purchase-a washing machine, say, or a sofa". Respondents more often express concern about the growing demand for tourism, which significantly affects the quality of the park. The importance of tourism in the GNP is illustrated by the fact that the official park website is dedicated to describing tourism opportunities.

Aesthetic nature values are more often mentioned in a negative context. For example, the effect of the eight-toothed European spruce bark beetle (*Ips typographus*) on forest landscapes is often pointed out. The chaos and "dirt" caused by bark beetles is comparable to the negative impact on aesthetic values caused by waste pollution. In the nature protection plan of the GNP completed in 2023, attention is paid mostly only to the creation and management of viewing points, which are related to the development of tourism.

Conclusion

A study of the foundation materials of GNP allows us to claim that the purpose of the park's creation at the turn of the 1960s and 1970s was largely related to the protection of cultural landscapes from uncontrolled and thoughtless changes as a result of the implementation of political ideas. The continuity of the park's historical boundaries and zoning, which covers an area of more than 90,000 ha, partly explains the difficulty of residents and park visitors in seeing significant differences between the GNP and the areas outside it. Along with the inclusion of the area in the Natura 2000 network in the early 2000s, the protection of biological diversity was defined in regulatory acts as the park's primary aim.

The prioritisation of scientific nature values through the creation of new norms and behaviours largely neglects the existing understanding of societal values in the GNP. The evolutionary, path-dependent nature of values (Manfredo et al., 2017)

means that the process of their formation is slow. Ignoring these features not only creates a wide range of conflicts, but it also establishes situations where individuals feel redundant, powerless, or without opportunities to shape the further development of the territory (Mathevet et al., 2016). Thus, for example, the increase in the number of fallen deadwood in forests often does not correspond to the aesthetic values of nature, and is associated with the creation of unsafe conditions, which also makes it difficult to implement such widespread recreational practices as mushroom-gathering and berry-picking. Frequent references to moralistic nature values also emphasises the coexistence of different understandings in society due to various ethical considerations raised by the current management of the park. Negative attitude towards restrictions on the use of utilitarian nature values, both in the answers of the respondents and in the media, is mostly related to the discourse of agrarian nationalism still present in the public nature discourse.

Acknowledgement

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Kopsavilkums

Dabas aizsardzības pamatā esošās idejas laika gaitā ir mainījušās, sākot no ļoti šaura skatījuma uz konkrētu sugu aizsardzību līdz pat dabas aizsardzības integrēšanai kopējās attīstības kontekstā. Dažādu līdzās pastāvošu izpratni par aizsargājamām dabas vērtībām iespējams novērot arī vienas teritorijas ietvaros, šajā gadījumā Gaujas Nacionālajā parkā. Tā dibināšana īstenota citā politiskajā režīmā, kurā prioritāri tika izvirzīta kultūrvēsturisko ainavu aizsardzība. Kamēr mūsdienās valsts politiskās nostādnes pārstāv modernās dabas aizsardzības idejas, sabiedrības viedokļi par dabas aizsardzību Gaujas Nacionālajā parkā nav viendabīgi. Veicot vēsturiskā konteksta izpēti un īstenojot citas pētnieciskās metodes, tika gūts ieskats par sabiedrībā līdzās pastāvošajiem, nereti atšķirīgajiem redzējumiem par to, kas dabā ir vērtīgs. Ētiski apsvērumi, kuri nereti pausti gan medijos, gan Nacionālā parka iedzīvotāju viedokļos, pauž neizpratni par esošo dabas aizsardzības sistēmu un norāda uz dažādiem vides degradācijas aspektiem.

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WORK ENVIRONMENT RISK MANAGEMENT AT PETROL STATIONS

DARBA VIDES RISKU PĀRVALDĪBA DEGVIELAS UZPILDES STACIJĀS

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Abstract

Work environment risk factors have a big influence in the daily life of employees at every company and work environment. In this study, a wide-ranging work environment risk assessment was carried out, using qualitative, quantitative, and semi-quantitative risk assessment methods, comparing the obtained results, and influencing factors, as well as evaluating the work environment management system and recommending possible improvements in its future development. The importance of the topic is justified by the fact that petrol stations are sites of heightened danger, where employees must pay greater attention to ensuring and maintaining a safe and secure environment to prevent the transformation of potential risks into real accidents or incidents. The work was developed at a company in Riga, Latvia, and station surveys were conducted in March 2021. As part of the work environment risk assessment process, four petrol stations in Pardaugava, Riga, were chosen for the risk assessment and measurements. In addition to station evaluations, an employee survey was conducted at 66 petrol stations throughout Latvia.

Keywords: *gas stations, work environment risks, qualitative and quantitative assessment, environmental risk management*

Introduction

Even though alternative energy sources are increasingly replacing traditional fuel, petrol station networks in Latvia continue to develop; currently 516 petrol stations of various types are registered in Latvia. As the number of petrol stations increases, so does the number of people employed there, which means that safety in these facilities requires more attention, as they become much more complex, combining an ever-wider range of services and equipment (Gas Stations Latvia, 2020).

According to data from the State Labour Inspectorate, the industries with the most accidents in recent years have been the manufacturing industry, the transport and storage industry, and construction. Fuel retail does not appear among the most dangerous sectors; however, as the network of petrol stations expands, as does the range of services provided, the number of risks that employees in this sector may face only grows and expands with every year. An important factor to consider is that the average age of employees in the industry is decreasing as more and more young

people are hired. This is often their first job, and so there is a lack of general understanding of how to work safely (2020. gadā darbā notikušo nelaimes gadījumu statistika, 2021).

Fuel is considered dangerous to the environment and employees because the presence of fuel creates an explosive environment; moreover, an accident or a leak at a petrol station can, depending on its volume, cause serious environmental pollution. Petrol station employees are also exposed to various and numerous risks, a large number of which are not regulated by legislation at all: for example, the standards set for moving weights are recommendatory, and psycho-emotional risk factors cannot be measured at all. In order for employees to feel safe in such an environment, and not to endanger employees' or customers' health, life and safety, it is very important to sufficiently quickly identify and eliminate both existing and potential risks in the work environment which could pose any kind of threat to employees or customers (Chijioke, 2020; Ahmed et al., 2014; Dispensing petrol, S.a.).

In creating a safe working environment, it is very important to ensure a relevant work protection and work environment management system, which in the context of this paper is perceived as continuous monitoring of the existing situation to assess the real work environment, and not based on the subjective opinion of a work protection specialist. Equally important is the involvement of employees and analysis of the obtained data, which also helps with getting a much broader picture of the situation (Covello et al., 2013; Ramos, 2019).

The purpose of this work is to assess the diversity of risks in the work environment, to improve the risk management system by preparing a comprehensive risk assessment of the work environment for petrol station employees, and to develop preventive risk reduction measures. At the beginning of the research, it was assumed that the methods used in the assessment of the risks of the working environment and the requirements set forth do not fully characterise the level of risk in the working environment, and they are insufficient to evaluate the situation objectively and critically.

Data and methods

Semi-quantitative, quantitative and qualitative methods were used in the risk assessment, which was carried out for risks related to employee training, physical risks, chemical risks, biological risks, mental or psycho-emotional risks, and physical and mechanical risks. In order to make the risk assessment more complete, measurements were made of parameters such as microclimate, noise level and lighting. Data was obtained using direct measurement methods that characterise the data of this moment, but do not provide information about the correlation of data over time (Moraru et al., 2014; Klotiņa, 2011).

To perform this risk assessment, four petrol stations located in Riga, in Pardaugava region, were selected for the work: X (56º54'44.926; 24º7'23.312), Y (56º54'34.434; 24º5'4.014), Z (56º55'39.391; 24º6'24.864) and Q (56º56'4.302; 24º0'23.27). The schematic arrangement of these stations can be viewed in Figure 1, where the stations are marked with dots.

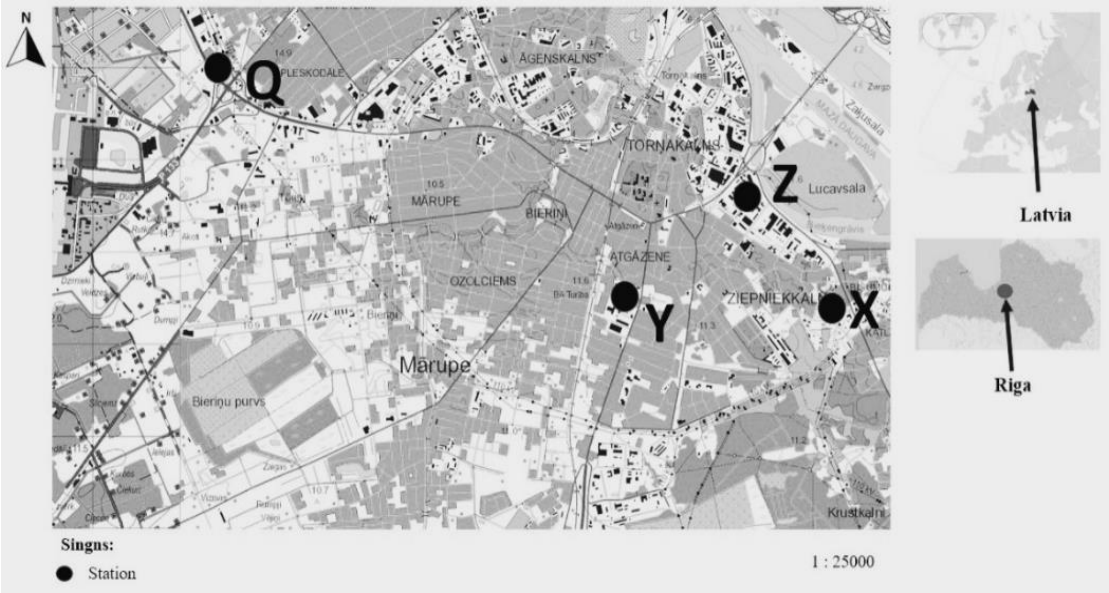

Figure 1. **Schematic arrangement of stations in Pardaugava** (author's figure using LGIA topographic basemap)

In the period from 8 March 2021 to 18 April 2021, direct measurements of the parameters of air temperature, relative air humidity, noise and lighting were carried out at each of the four selected stations. Measurements were repeated twice at each of the stations during the indicated time. The Multi-Functional Environment Meter PCE-EM882 was used to measure relative air humidity, temperature, noise and lighting.

A qualitative risk assessment was carried out at all stations using the results of the obtained indicative measurements, as well as assessing each station, the risk factors of the work environment were assessed according to the Finnish 5-point method, according to which risk factors are evaluated with a level from 1 (insignificant risk) to 5 (unbearable risk). For each level of risk, appropriate preventive measures must be taken to reduce the level of risk. No measures are necessary for insignificant risks, and it is not necessary to document the risk. For an acceptable risk, special measures should not be taken to reduce the risk, but the risk must still be controlled. If, however, some measures are to be taken, then it is necessary to evaluate what they could be in order to use as little funds as possible. For severe risks, it is necessary to find and take measures to reduce the risk, but their implementation is not urgent, and the reduction measures can be taken within 3–5 months of the risk being eliminated. In case of significant risks, the work must not be carried out until measures

have been taken to reduce or eliminate the risks. If it is not possible to stop the work immediately, the extent of the consequences and the number of employees should be considered, but measures should be taken within 1–3 months. In case of an intolerable risk, work is not allowed until the risk factor is reduced (Kaļķis, 2008).

To verify the author's accuracy in determining risk factor values according to the Finnish 5-point method, risk factors were also evaluated according to the semi-quantitative Finnish method in order to assess whether the use of different methods affects how high a risk level each specific risk is assessed. The semi-quantitative Finnish method is also very similar to the Finnish 5-point method. In this case the risk index R_i is determined, after which the belonging to the risk level from I to V is evaluated, like the above-mentioned 5-point method. To obtain the risk index, it is necessary to evaluate the likelihood/probability of the accident and explanation of the consequences of the accident. Once these parameters are obtained, a risk index can be calculated. To determine the risk index (R_i) it is necessary to use a special matrix. Using this matrix, according to the probability of the accident and the possible consequences of the accident, R_i attention is determined, which shows what the level of the determined risk is (Darba vides riska …, S.a.).

In total, in the period from February 15th 2021 to February 26th 2021, the survey was completed by 66 petrol station managers, who expressed not only their own opinions, but also the general opinion at their station on the various risks of the work environment.

To assess the relationship between the work environment and risk levels, data on risk levels and categories were entered into the statistical analysis programme JASP. Descriptive statistics were obtained with the JASP programme, and a univariate non-parametric analysis and Poc-Hoc test were carried out to determine whether there were statistically significant differences between workplaces and the risks assessed there. Risk assessment environments were divided into six basic categories:

1. employee training; 2. physical risks; 3. chemical risks; 4. biological risks; 5. psycho-emotional risks; 6. physical/mechanical risks.

Looking at the summary of risk categories and their distribution by risk level throughout the stations (Figure 2), it can be observed that the most stable are employee training and physical factors. The explanation for why these two categories of risks are best managed is that it is related to the fact that these are clearly internal risks, because the level of training depends on the company's internal training system. In the same way, physical risks are also considered to be easily regulated internally, because by carrying out regular measurements it is possible to monitor changes (temperature, relative air humidity, lighting) and, if necessary, deviations can be relatively easily eliminated. The category of risks which in general is the closest to level III and has the highest potential to move to level IV (significant risks) is mental risks. This result was also reflected in employee surveys, where most employees acknowledged that they

faced stress at work every day or at least every week. An increased mental load for station employees is not only due to customer service. It should be mentioned that station employees can quite regularly find themselves in various crisis situations, such as fuel or LPG leaks.

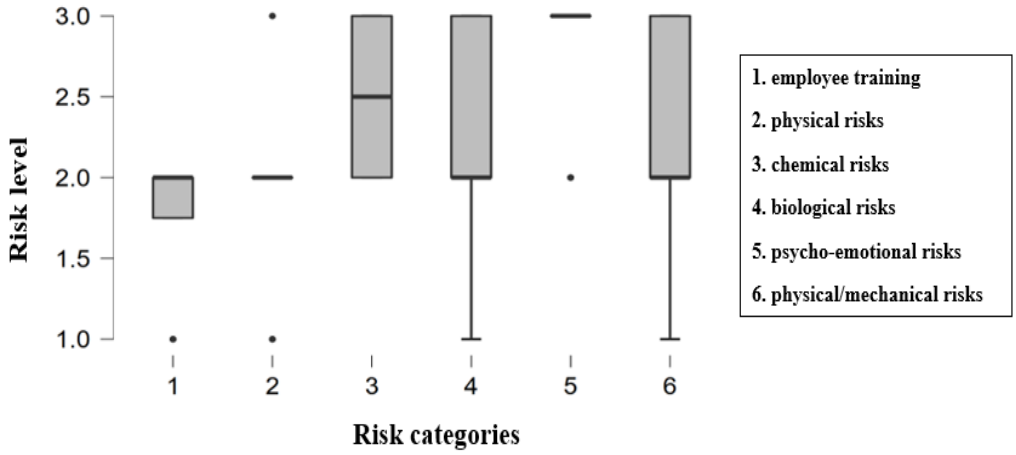

Figure 2. **Distribution of risk categories by risk levels at stations** (author's figure using JASP programme, 2022)

When carrying out a non-parametric data analysis test to determine whether there are statistically significant differences between risk levels in different petrol station environments (Figure 3), the null hypothesis remains valid as the obtained test significance values are greater than 0.05. The post hoc test shows that environment 1 (work inside station) and environment 2 (work on the premises of the station) are more like each other, because in both environments employees are constantly in contact with customers and risks associated with inappropriate behavior on the part of customers.

When analysing work at the station offices, the risk factors for lighting, according to the Finnish 5-ball method, were assessed at risk level II (acceptable risk). Although employees do not mention lighting among the most frequent risk factors that they have to deal with which are considered disturbing, the experience of recent years at companies in Latvia shows that in only 50.8% of cases does lighting in the workplace meet the legislative requirements (Darba apstākļi un.. 2018). Although the currently observed situation is appropriate, no threats to the health of employees are visible; at the same time, if the established requirements for providing adequate lighting are not met in the long term, there is a possibility that this risk may change from acceptable to severe (III). When evaluating this risk factor according to the semi-quantitative method, the probability of the accident is assessed as unlikely (Q2) and the consequences of the accident are assessed as acceptable (p2). According to these

results, the risk index is 4, which means that the risk is identifiable as an acceptable risk (II).

Table 1**. A non-parametric test to determine whether there are significant differences between risks in work environments at different stations** (author's figure using JASP programme, 2022)

ANOVA					
ANOVA – risk level					
Case	Sum of Squares	df	Mean Square	F	p
Vide	0.767	2	0.383	0.857	0.428
Residuals	39.387	88	0.448		
Note. Type III Sum of Squares					
Post Hoc Tests					
Standard					
Post Hoc Comparisons – work environment					
		Mean Difference	SE	t	P_{tukey}
1	2	0.010	0.171	0.056	0.998
	3	0.200	0.173	1.158	0.481
2	3	0.190	0.171	1.111	0.510
Note. P-value adjusted for comparing a family of 3					

Factors of psychological overload for the manager of petrol stations according to the Finnish 5-point method are assessed with risk level III. As previously mentioned, psycho-emotional risk factors have become the most common risk category in recent years, and have a tendency to worsen. This is also confirmed by trends in recent years in Latvia, since according to 2018 data, 75.8% of employers cite psycho-emotional risk factors as decisive (Psychosocial risks in.. 2014; Darba apstākļi un.. 2018). Evaluating these risk factors according to the semi-quantitative method, the accident the possibility is evaluated as possible (Q4), and the consequences of the accident are evaluated as permissible (p2). According to these results, the risk index is 8, which means that the risk can be identified as a bearable risk (III).

When evaluating work in indoor spaces at petrol stations, the influence of microclimate is a risk factor which according to the Finnish 5-ball method is assessed at risk level 2, which is considered an acceptable risk. Although air temperature and relative air humidity are considered to be parameters of the working environment for which compliance with regulatory requirements in Latvia is considered to be very high, as in 79.8% of cases the air temperature and in 63.4% of cases the relative air humidity correspond to the regulatory limits set in workplaces, however, in the long

term, an inadequate microclimate can cause serious health problems (Darba apstākļi un.. 2018). When evaluating the risks created by a microclimate according to the semi-quantitative method, the probability of an accident is considered unlikely (Q2), and the consequences of the accident are assessed as acceptable (p2). Summarising these results shows that the risk index is 4, and so this risk can also be identified as an acceptable risk (II).

Of all the risks of the work environment that petrol station employees may encounter, ergonomic risks are very significant, considering the work specifics, which involve long-term work at the cash register, irregular rest breaks, active work in the store and warehouse, when to replenish the goods. The fact that working in a forced posture is a significant risk factor is also confirmed by the fact that in a survey of the employed population in Latvia conducted in 2018, 75.1% of employed people admitted that they spend their working day in a forced posture (Darba apstākļi un.. 2018). In the case of petrol stations, it is long-term work while standing at the cash register, as well as monotonous movements when operating the cash register. According to the Finnish 5-point method, this risk is assessed as bearable (III). When evaluating according to the semi-quantitative method, the probability of the risk is assessed as rare (Q3) and the consequences of the accident are assessed as significant (p3). From this the risk index is 9, the risk can be identified as bearable (III). However, when it comes to ergonomic risks, when evaluating the probability of an accident, it could also be Q4 in many cases, which means that the occurrence of the risk is very likely. This is since the regulations do not strictly define the permissible maximum weight the employee can move. Furthermore, in a situation where two different workers lift the same box, one of them may be able to do it without any effort and with lasting consequences, while the other one may find it too heavy; injuries can also be obtained during the lifting process, which in the long run can have a significant impact on the health of the worker and ability to work. Therefore, when developing a risk assessment of the working environment and regularly following up on the functionality of the management system, it is essential to include risk-mitigating factors that would equally protect all employees.

When evaluating work in the outdoor area of petrol stations, one of the most serious risks of the work environment, which according to the Finnish 5-ball method is assessed as an acceptable risk (II), is the risk factor associated with the use of personal protective equipment, because it is very important that, when carrying out any kind of cleaning work, for example at pumps, where workers may come into contact with fuel, which is a dangerous and carcinogenic substance, workers use appropriate personal protective equipment. In general, the use of personal protective equipment is one of the simplest ways to protect employees from various risks, and as both employers and employees recognise, the main cause of accidents in the workplace is precisely inappropriate behavior on the part of employees, failure to follow instructions and

non-use of personal protective equipment (Darba apstākļi un..2018). When evaluating this same risk according to the semi-quantitative method, the probability of an accident is assessed as unlikely (Q2), because all employees are properly instructed and have the necessary qualifications to perform the work properly. The consequences of the accident can be assessed as acceptable (p2) because it is most likely that in such a situation the damage to the employee's health would not be immediate and irreversible. In this case, the total risk index is 4, which means that this risk is also considered acceptable (II) according to the semi-quantitative method.

Comparing the assessed risk level according to the Finnish 5-ball method and the semi-quantitative Finnish method, the obtained results are the same and it is possible to determine the same risk level. The usual 5-point method is faster and more convenient to apply, however, in cases where there is doubt as to what level of risk to apply to a given factor; the semi-quantitative method is a good way to base the choice not only on subjective experience, but on a slightly broader risk review.

Good risk management of the work environment is related to the ability to adapt a system to a specific situation, so it is essential that the responsible persons are ready and able to develop the system by combining various risk assessment methods, employee involvement and assessment of the environment around them. It is also very important to monitor changes both in the working environment itself and in the legislation, to prepare preventively and prevent risk, or if the risk turns into an accident, ensure the consequences are as minimal as possible. A very important part of a successful risk management system is support from the company's management, both at the level of ideas and financially. Preventive, structured and timely action can significantly reduce the financial resources needed. This means supplementing the existing labor protection system, in which the risks of the working environment are assessed once a year, with several preventive and very important measures: for example, regular monitoring of risk factors and surveys at stations, supplemented with long-term environmental parameter measurements, which are statistically analyzed, thus ensuring even the smallest changes and deviations from the norm are noticed, the necessary actions are applied, and the risk factor is prevented from developing. Furthermore, the previously mentioned employee interviews and surveys, if they are not formal, but carried out with the aim of obtaining in-depth information, can provide timely and very relevant information. By proactively noticing a risk factor that has not yet developed, or caused accidents or employee health problems, it is possible to eliminate it immediately by making only organizational changes in the work process or by training employees to work according to a specific situation. On the other hand, if the risk is allowed to develop, significant changes in the work process, equipment or technologies are required.

Conclusion

1. During the development of the work, it was seen that the Finnish 5-point method is good enough to objectively assess the risks of the work environment; however, in cases where it may be difficult with this method to determine the level of a risk factor, because the specialist's opinion may be too subjective, it is recommended to use the semi-quantitative method to ensure the objectivity of the chosen risk level. Likewise, in cases where one of the determined risk levels is on the borderline, if reduction measures are not taken, there is a possibility that this risk may move to a higher level, it is very important to carry out regular inspections specifically to monitor this risk – including indicative measurements, visual assessment onsite and employee surveys.

2. For the risk management system in the company to function better, it is very important to involve the company's employees in it, regularly conducting surveys and finding out their opinion about the risks of the work environment. When analysing the survey data, employees' opinions do not always coincide with the results of the measurements – there are cases when the measurements do not show the limit values being exceeded, yet employees still complain of discomfort.

3. To ensure good management of the risk management system, monitoring should be carried out not only for factors of the working environment, such as microclimate, a noise and lighting, for which regulations are defined in the legislation, but also for those risk factors for which no specific regulations have been developed.

4. After developing the work, it can be concluded that the proposed hypothesis has been partially confirmed, because the generally used method of assessing the risks of the working environment (in this case, the Finnish 5-point method) is sufficient to assess the risks of the working environment; however, in order for the working environment management system to be more complete, it is important to supplement the assessment with interviews of employees, taking measurements and a regular daily survey of the workplace, in order to be able to follow up, monitor and predict possible changes in the level of risk as a preventive measure.

Kopsavilkums

Apkopojot darba izstrādes procesā iegūto informāciju, ir skaidrs, ka darba vides risku pārvaldība ir ļoti komplicēts process, kura veiksmīgas uzturēšanas pamatā ir nevis vienas konkrētas sistēmas izmantošana, bet gan starpdisciplināra pieeja, kas apvieno gan visaptverošu un mērījumos pamatotu risku novērtēšanu, gan regulāru un aktīvu nodarbināto iesaisti. Šādi veidota darba vides risku pārvaldības sistēma ne tikai pildīs formālās funkcijas, ko nosaka likumdošanas prasības, bet ilgtermiņā arī uzlabos darbinieku darba apstākļus.

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EMPLOYMENT OF GEOGRAPHY STUDY GRADUATES IN LATVIA

ĢEOGRĀFIJAS STUDIJU ABSOLVENTU NODARBINĀTĪBA LATVIJĀ: MONITORINGA DATI

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Abstract
Geography is an interdisciplinary field that explores human-nature interactions. Critical thinking and a knowledge of diverse interrelations are required for the study of geography. Geography graduates must be adaptable and quick learners in order to meet the needs of a continuously changing employment market. The aim of this paper is to investigate the nature of employment for geography graduates. The paper gives an overview of the field of geography and labour market demand for geography graduates. This study is based on the data of the 2021 census, labour market data from the Ministry of Economics, monitoring data from the Ministry of Education and Science on graduates in 2017–2020, and also State Revenue Service data on occupations. The findings demonstrate that higher levels of education lead to better job chances. Graduates of geography study programmes receive qualifications that allow them to work in science-intensive sectors of the economy, such as the professional, scientific, and technical services sector of the quaternary economy.
Keywords: *geography studies, employment, labour market, competences, higher education*

Introduction

Geography is an interdisciplinary field that studies the interaction between people and nature. The study of geography cannot do without critical thinking or an understanding of patterns. Geography graduates need to be flexible and quick learners in order to adapt to the demands of a rapidly changing labour market (Gedye & Chalkley, 2006). GIS is an energetic, growing field with many opportunities. The demand for GIS professionals is increasing as technology becomes more widespread and integrated into our daily lives. The number of available vacancies is forecast to increase by 50% within five years (Simplilearn, 2023). The employment of geographers is difficult to study because this multifaceted discipline can prepare students for a variety of jobs, but there is no clear career profile beyond teaching and using cartographic skills (Hennemann & Liefner, 2010).

In Latvia, the Ministry of Economics report on medium- and long-term labour market projections states that occupational relevance is relatively high in science, mathematics and information technology (78%). If the current structure of higher

education supply is maintained, the most significant labour shortage in the higher education group is expected to be for professionals with a background in engineering, science and ICT (STEM) fields (Ministry of Economics, 2022).

Currently, the degrees awarded at the Faculty of Geography and Earth Sciences of the University of Latvia are bachelor's and master's degrees in geography. No scientific research has been conducted on geography graduates, but research of this kind would significantly contribute to understanding the employability and usefulness of geographers in the labour market, as well as application of the acquired skills and competences in everyday work. The authors of this study analyse the data on graduates from geography study programmes at the Faculty of Science of the University of Latvia in the period from 2017 to 2022. The period chosen for the analysis is a result of the Ministry of Education and Science's monitoring of graduates, which is available starting from 2017.

The aim of the paper is to investigate the nature of employment for geography graduates.

Employment of geographers worldwide

Geography is a constantly evolving field, and so career opportunities for geographers are also constantly evolving. There has been a boom in geospatial careers, which is clearly linked to geographers acquiring technical skills in various geotechnologies, including GIS and geovisualisation. In 2004, the US Department of Labour identified geotechnology as "one of the top three most important emerging and developing fields" (Arrowsmith et al., 2011). Today, geographers are increasingly important. While awareness of the value of geography has increased dramatically over the past decade, much less is known about the everyday practices of geographers and the ways in which they apply their knowledge in their daily work (Schlemper et al., 2014).

It is said that geography is seen less as a subject and more as a definition of technical competences that give an edge in the labour market. This is due to the extensive skills that geographers have developed through studying and learning subjects through hands-on learning activities: laboratory work, practical work and fieldwork, as well as group work (Arrowsmith et al., 2011). However, research shows that geography graduates with "non-vocational" degrees can face difficulties in gaining relevant employment with their qualifications (Brown, 2004). The geography profession is not regulated in Latvia.

Geography graduates are sufficiently qualified to obtain suitable jobs in a wide range of professions, for example, GIS analyst/manager/specialist, spatial planner, technician, analyst, coordinator, lecturer, research assistant, teacher, scientist, cartographer, consultant, project manager, researcher, environmentalist, topographic draughtsman, synoptic surveyor, photogrammetric engineer, etc. (Solem et al., 2008;

SRS, 2022). Geographers also often work on projects with people from other fields. For instance, geographers may work with urban planners, civil engineers, legislators or real estate agents to determine, for example, the best location for new public transport infrastructure (Bureau of Labor Statistics, 2023).

Job opportunities for professional geographers are expanding. Geographers are in demand for the perspectives they offer, their understanding of economic interdependence and the associated forces of globalisation, their understanding and knowledge of human cultures and the environment, and the integrative and interdisciplinary approaches that geographers use in their work (Murphy, 2007; Solem et al., 2013a; Solem et al., 2013b).

According to the United States Department of Labor, on a daily basis, geography graduates:

- gather geographical data using field observations, maps, photographs, satellite images and censuses
- conduct research through surveys, interviews and focus groups
- create and modify maps or other visual representations of geographical data
- analyse the geographical distribution of physical and cultural features and events
- collect, analyse and display geographical data using GIS
- write reports and present research results
- assist, advise or guide others in the use of GIS and geographic data
- link geographic data with economic, health or other data (Bureau of Labor Statistics, 2023).

Employment in Latvia and employment opportunities for graduates

In Latvia in 2021, there were 877.1 thousand employed persons, accounting for 55.2% of all permanent residents aged 15 and above (see Figure 1 for the employment rate in Latvia). The highest employment rate among the population aged 15 and over was in the Pieriga region, where it was 58.8%; it is especially high in the Marupe, Adazi and Kekava regions, where 65.7%, 64.4% and 64.1% respectively are employed, which is also due to there being a higher share of the population aged 15 and over. The lowest share of employed persons was in Latgale, where it was 48.8% (in Ludza, only 46.6% of the population over 15 is employed). The employment rate was 57.1% in Riga, 54.5% in Vidzeme, 54.3% in Zemgale and 52.7% in Kurzeme (CSP, 2022).

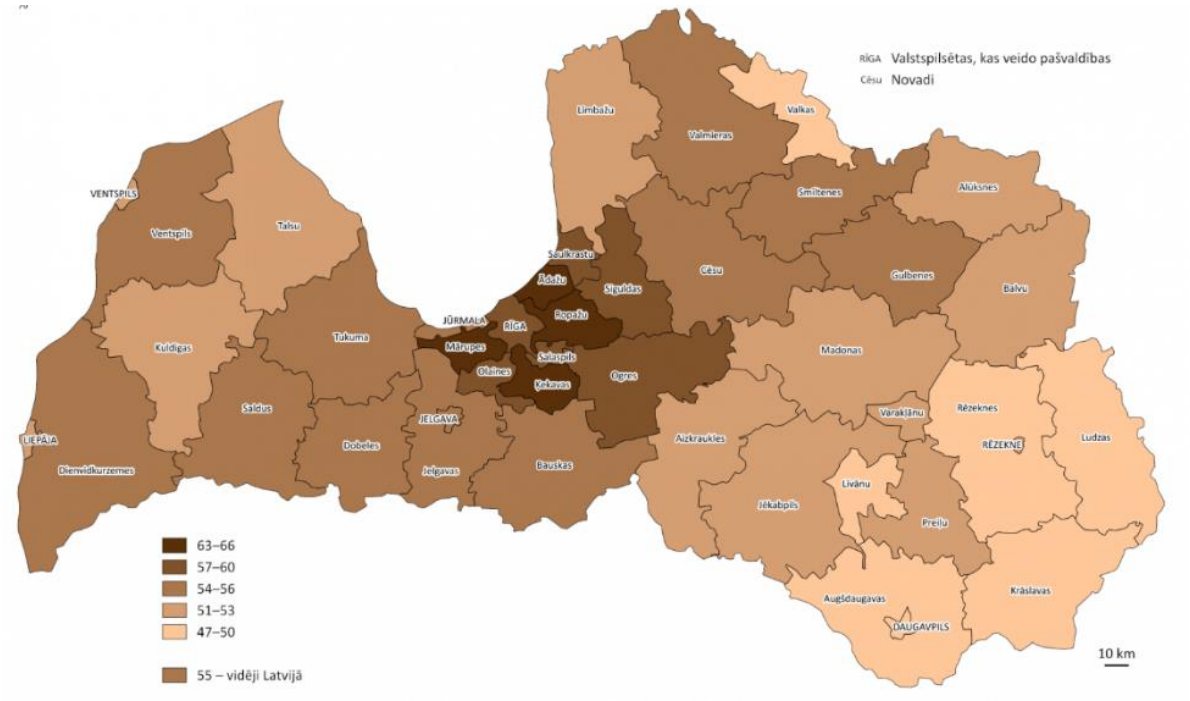

Figure 1. **Employment rate for persons aged 15 and over in cities and regions in Latvia at the beginning of 2021** (authors' figure based on data from CSB)

The challenges of recent years – the Covid-19 pandemic, geopolitical escalation – have left a visible "footprint" on the labour market, with employment and employment rates still lagging behind 2019 levels. The labour market situation is gradually stabilising, with an increase in economic activity, but at the same time labour supply is tightening and labour shortages are increasing (Ministry of Economics, 2023).

Given demographic trends, overall unemployment will continue to fall in both the medium and long term, and could fall below 7% as early as this year. The highest unemployment risks are expected among parts of the population with low educational attainment and without professional skills/vocational qualifications (Ministry of Economics, 2023).

Higher education in Latvia has three levels: bachelor's, master's and doctoral. Universities and higher education institutions provide academic and professional study programmes, as well as scientific activities, research, and artistic creativity (Ministry of Education and Science, 2020). Graduates with higher education qualifications have higher employment rates in almost all fields (see Figure 2.3). The exceptions are the education and services sectors (Ministry of Economics, 2022). The situation regarding higher employment for graduates from secondary vocational education programmes in the education sector is unusual. The labour shortage in the education sector explains this situation, as there was also a shortage of teachers in Latvian schools in 2022, with 360 positions unfilled (Līcīte & Spundiņa, 2022).

Data and methods

For this study, graduate monitoring data from the Ministry of Education and Science available from 2017 onwards were used. In the graduate monitoring data, geography, earth sciences, and chemistry and physics fall under the thematic area of physical sciences, according to Cabinet of Ministers Regulation No. 322. Life sciences, environmental science, physical sciences, mathematics, and statistics, and computer science, which fall under the thematic group "natural sciences, mathematics and information technology", are taken separately. Since 2020, geography has been separated from geology in the graduate monitoring data, and data without chemistry and physics graduates are available. In addition, data, reports and surveys on the labour market in Latvia, and short-, medium- and long-term labour market forecasts from the Ministry of Economics of the Republic of Latvia were also used. The study used data from the State Revenue Service on jobs in Latvia for the period in question, according to the occupational classification, as well as data from the Central Statistical Office on employment in Latvia. The study also uses data from a survey of graduates of geography study programmes at the Faculty of Geography at the University of Latvia. Various literature sources on international employment of geographers, changes in labour demand, etc. were also used.

Faculty graduates' employability

This chapter describes the employment rate for geography graduates, the economic sectors and industries in which graduates are employed, professional qualifications and average incomes in different occupational groups according to the Ministry of Education and Science graduate monitoring data and data from the State Revenue Service.

The latest graduate monitoring data from the Ministry of Education and Science shows that graduate employment is increasing year on year. The graduate monitoring data includes the subject of physical science education, which includes geography and earth sciences (geography and geology), chemistry and physics. Since 2020, the curriculum groups have been monitored separately, with 97% employment in the geography and earth sciences group.

The largest number of graduates from the University of Latvia from 2017 to 2020 was in the social sciences, with more than 570 students graduating each year. In 2017, social science graduates had the highest employment rate, at 85%; the employment rate for natural science graduates was 81%, for healthcare graduates it was 77%, and for humanities graduates 73%. In 2018, health graduates had the highest employment rate, at 91%, but with only 45 graduates; followed by social sciences at 84% employment, natural sciences at 79% and humanities at 73% employment. In 2019, health graduates have the highest employment at 90%, followed by natural sciences at 87%, social sciences at 84% and finally humanities at 78%. The share of

natural sciences employment exceeded that of social sciences in 2019 and continued to do so in 2020: healthcare with 89% employment, natural sciences with 86%, social sciences with 72% and humanities with 65%. Figure 4.1 suggests that even if a subject group in education has a high number of places and a high number of graduates, this does not necessarily mean that there will be high employment after graduation. It is advisable to look at the forecasts of the Ministry of Economics in order to choose a profession or field of study that will be in demand in the future.

The Ministry of Education and Science's graduate monitoring data showed that the employment rate of geography bachelor graduates in 2017–2020 ranges from 84% to 93% (see Figure 1). The highest employment rate was observed in 2020, at 93%. The employment rate for graduates with a master's in geography in 2017–2020 ranges from 89% to 96%. The employment rate for graduates with a master's in geography one year after graduation was the highest in 2020, at 96%There is a correlation that as the level of education attained increases, so do employment opportunities. The employment rate for graduates with a bachelor's degree tends to increase every year, reaching the National Development Plan 2027 (NDP2027) target of 88% employment in 2019. The employment rate for graduates with a master's degree reached the NAP2027 target in 2017.

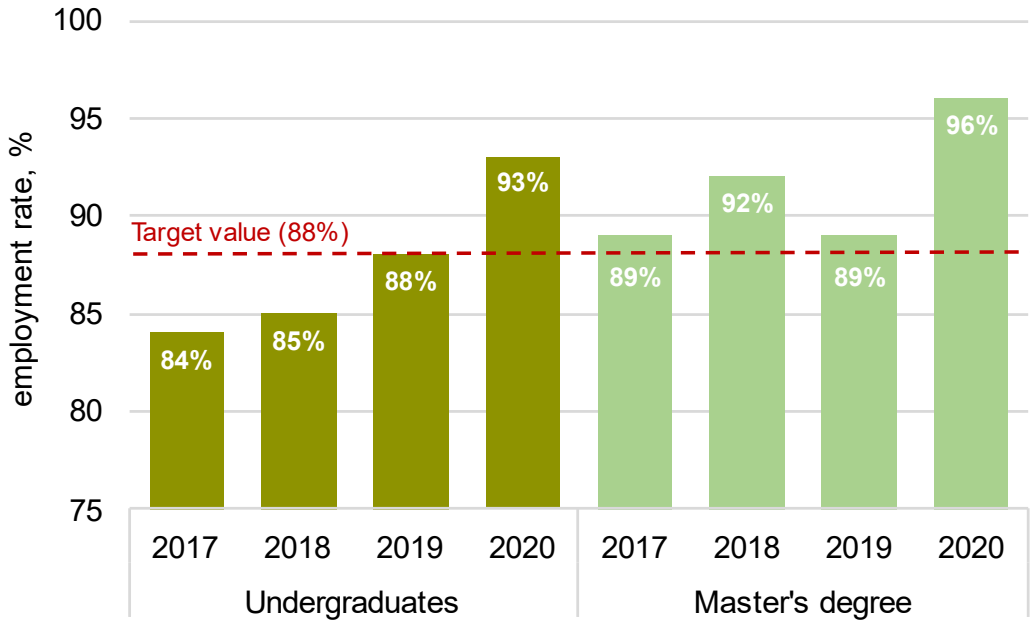

Figure 2. **Employment rate for geography and earth sciences graduates by level of university education, 2017–2020** (authors' figure based on data from the Ministry of Education and Science)

One of the most important indicators for an economy is the unemployment rate, both for the country as a whole and for a particular sector. In the geography sector, 369 out of 425 graduates (graduates with a bachelor's or master's degree), or 87%, are

employed, while 56 graduates, or 13%, are unemployed, which is probably due to the fact that these graduates are pursuing a higher level of education and therefore are not currently working.

Employment of graduates by professional qualification

This section summarises graduate employment by main occupational classification groups, jobs by occupational classification, average earnings of graduates, and a comparison of average hourly earnings by occupation.

The Ministry of Education and Science's monitoring of graduates includes the following main occupational classification groups: managers, professionals, service and sales workers, senior professionals, servants, skilled workers and craftsmen, National Armed Forces personnel, elementary occupations, as well as a section entitled "no information". Figure 3 shows the percentage distribution of occupations in which 2017–2020 geography graduates are working. More than half (52%) of the graduates work as senior professionals, with 31.4% working as specialists.

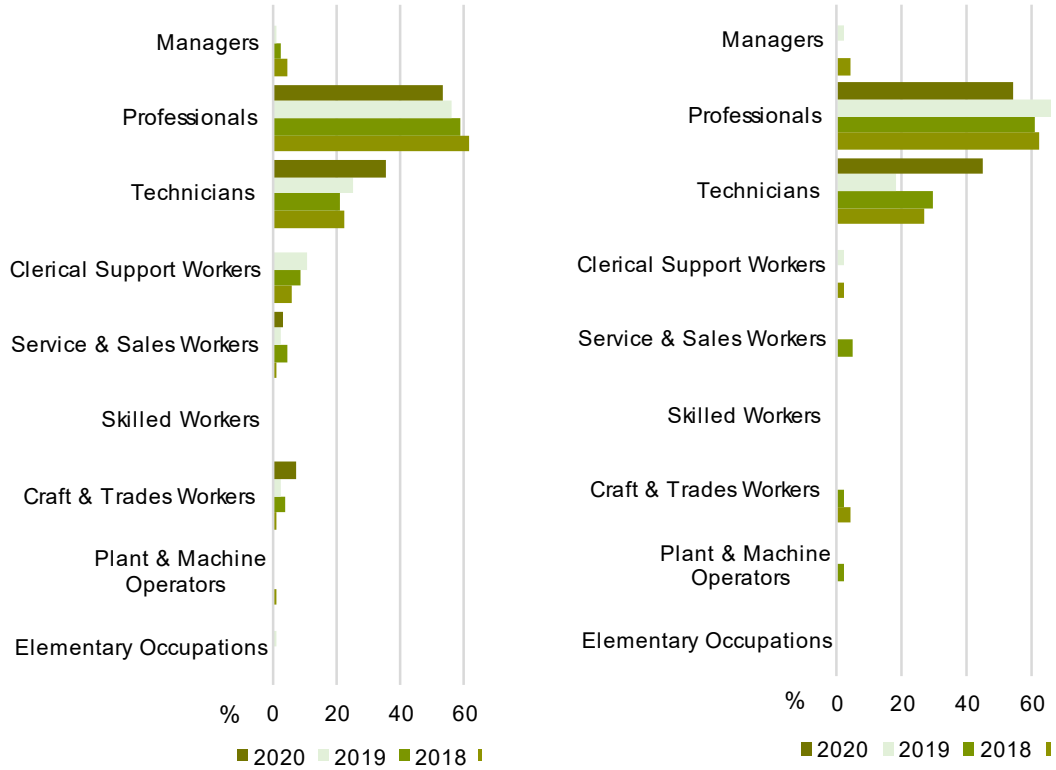

Figure 3. **Professional qualification of geography and earth sciences graduates: bachelor's degree (on left) and master's degree (on right), 2017–2020** (authors' figure based on data from the Ministry of Education and Science)

In 2023, according to the National Revenue Service, the largest number of jobs in the geography sector is for science technicians, with 321; followed by cadastral engineers, with 140; land and spatial development planners, with 124; cartographers

and topographic draftsmen, with 99; cartographic and photogrammetric engineers, with 95; geodetic engineers, with 88; geoinformatics engineers, with 69; senior conservationists, with 50; and finally, GIS specialists, with 47 jobs.

The average annual income among geography graduates varies from €9,312 to €17,630. It is clear that graduates with a bachelor's degree are paid much less per year than graduates with a master's degree. As the level of qualification increases, so does the average annual salary. The highest salary in 2019 was €12,159 for bachelor graduates and €17,630 for master graduates.

The highest number of science technicians and the lowest number of geodesy engineers and GIS technicians, but the salaries are inversely proportional. The average hourly rate in 2019–2023 was highest for surveying engineers, at 9.90 €/h; followed by GIS specialists, at 9.20 €/h; land and spatial planners, at 9 €/h; and spatial development planners at 9€/h; followed by senior nature conservation specialists, geoinformatics engineers, cartographers and topographic draughtsmen, cartographic and photogrammetric engineers, cadastral engineers, and finally science technicians, with the lowest average hourly rate being 5.70 €/h.

Conclusion

Overall, in Latvia the largest number of graduates each year is in the social sciences (more than 500 graduates), while the smallest number of graduates is in the service-learning thematic group (fewer than 60 graduates). The highest employment rates between 2017 and 2020 are in the "health and life sciences" thematic group (above 80%).

Higher levels of education lead to better opportunities in the labour market. This is confirmed by the Ministry of Education and Science's graduate monitoring data, showing that both study programmes (bachelor's and master's in geography) have achieved the target values of the National Development Plan.

Most graduates of the University of Latvia's geography study programmes obtain qualifications that allow them to work in science-intensive sectors of the economy, such as the professional, scientific and technical services sector of the quaternary economy – 64% of graduates with a bachelor's degree and 65% of graduates with a master's degree are employed in this sector. Higher degrees of education also contribute to higher average income, according to graduate monitoring statistics from the Ministry of Education and Science. The average hourly rate is higher for geodetic engineers, GIS specialists, and spatial and spatial development planners, and lower for cartographic and photogrammetric engineers, cadastral engineers, and science technicians.

Acknowledgement

National Research Programme project "New Solutions for the Study of Demographic and Migration Processes for the Development of a Latvian and European Knowledge Society" (DemoMigPro).

Kopsavilkums

Ģeogrāfija ir starpdisciplināra nozare, kas pēta cilvēka un dabas mijiedarbību. Dažādu savstarpējo saistību apzināšana un kristiskā domāšana ļauj ģeogrāfiem izprast parādību komplekso dabu. Ģeogrāfijas studiju programmu absolventiem jāprot pielāgoties, lai spētu apmierināt nepārtraukti mainīgā darba tirgus prasības. Šī raksta mērķis ir izpētīt ģeogrāfu nodarbinātības raksturu Latvijā. Tiek sniegts pārskats par ģeogrāfijas jomu un darba tirgus pieprasījumu ģeogrāfijas studiju programmu absolventiem. Pašreizējā pētījumā tiek izmantoti 2021. gada tautas skaitīšanas dati, Ekonomikas ministrijas darba tirgus dati, Izglītības un zinātnes ministrijas monitoringa dati par absolventiem 2017.–2020. gadā un Valsts ieņēmumu dienesta dati par profesijām. Rezultāti parāda, ka augstāks izglītības līmenis nodrošina labākas darba izredzes un augstāku atalgojumu. Ģeogrāfijas studiju programmu absolventi iegūst kvalifikāciju, kas ļauj strādāt zinātniski intensīvās ekonomikas nozarēs, piemēram, profesionālo, zinātnisko un tehnisko pakalpojumu sektorā.

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SHIFTING INNER-CITY SOCIODEMOGRAPHICS: THE CASE OF RIGA

RĪGAS IEKŠPILSĒTAS IEDZĪVOTĀJU SOCIĀLI DEMOGRĀFISKO RĀDĪTĀJU DINAMIKA

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Abstract

Post-socialist inner cities are rapidly re-urbanising - a process that typically involves major changes in their population composition. The aim of this study was to find out how the sociodemographic status of inner-city residents of Riga changed between 2011 and 2021. In order to do that, this study explored and summarised prior research on the inner city of Riga and expanded on these findings by employing a neighbourhood-level statistical analysis of the most recent population composition and housing data, which was then mapped. The results revealed that not only did the inner-city population grow in size in the second half of the decade, but it also attracted an increasing number of young adults of a high socio-economic status, among other signs of reurbanisation increasingly present in the study period. Most of these reurbanisation processes were spatially fragmented, thus increasing the risk of growing socio-spatial inequalities within the inner city and between the inner city and the outer city.

Keywords: *Riga, inner city, sociodemographic status, reurbanization, gentrification*

Introduction

The dynamics of population size and composition in inner cities have been extensively studied, both regionally and globally. Studies of post-socialist inner cities have often revealed important patterns, such as a generally growing and stabilising urban core and an influx of young and highly educated professionals (Haase et al., 2009; Kubeš & Kovacs, 2020), trends of gentrification and consequential displacement (Pastak & Kährik, 2021), studentification and changing social cohesion (Fabula et al., 2017), and speedy social and demographic change (Temelová et al., 2016). These processes that are central to reurbanisation – the last stage in the urban development model – are still relatively fresh and difficult to generalise, particularly in the post-socialist space, and thus new case studies are useful.

As reurbanisation introduces somewhat optimistic demographic and spatial changes, it is often called the revival or renaissance of the inner city. In the case of Riga, only around 2010 and after a prolonged shrinkage did the inner city start experiencing gradual stabilisation in its population size. Previously, from 1989 to

2011, the proportional population loss in the historic centre of Riga (HCR) was more than double the overall population loss in the city, and from 2000 to 2011, Skanste was the only inner-city neighbourhood to see an increase in population, owing to the construction of high-rise residential buildings there (Krūmiņš et al., 2019; Treija et al., 2020).

Riga has commonly been examined on a city or metropolitan scale, or in comparison to the surrounding suburbanising or non-metropolitan area. This research interest is understandable due to the rapidly growing suburbs and even some evidence of counterurbanisation in the periphery of the agglomeration of Riga (Skadiņš, 2018), but it can sometimes also lead to the inner city being overlooked. Furthermore, a study of left-bank neighbourhoods revealed the presence of social heterogeneity (Bauls et al., 2003), which is likely also the case for the rest of the city; consequently, to detect sociodemographic dynamics a local analysis is needed.

Although neighbourhood-level studies of Riga have not been frequent, some of the existent statistical analysis and survey-based research on spatial and sociodemographic processes has been highly insightful and demonstrated significant differences in population composition between the inner- and outer-city neighbourhoods. Accordingly, the inner city had a higher concentration of highly educated, higher-paid residents in managerial and qualified professional positions. Unsurprisingly, the distribution of highly educated people paralleled the preferred residence areas of managers and skilled professionals, and while households of two and more persons were less likely to reside in the inner city, linked to the second demographic transition, two-person households were more likely to reside in the inner city than the outer city. Additionally, in terms of ethnicity, the inner city had a higher concentration of Latvians (Krišjāne & Bērziņš, 2014; Zhitin et al., 2020; Sechi et al., 2019).

There are various factors that have influenced the changes in the composition of inner-city population. The relative attractiveness of the inner city, especially in regard to its pre-war housing and public space, of particular interest for young adults, has grown (Krūmiņš et al., 2018; Krišjāne & Bērziņš, 2014). Inner-city residents were found to appreciate the cultural, entertainment and shopping opportunities, as well as the safety, but, despite the growing appeal of inner-city aesthetics, were dissatisfied with the noise and expensive and/or outdated housing, including their courtyards, facades, residential services and energy-efficiency, as well as the quantity and quality of green spaces (Treija et al., 2020; Sechi et al., 2022). Moreover, a decreased distance to the downtown was found to be associated with a decreased share of residents liking their neighbourhood (Šolks, 2013). Such contradictory survey-based findings are likely explained by the heterogeneity between and within the neighbourhoods and the change in attitudes toward the inner city being gradual.

While overall socio-spatial differentiation has increased due to economic restructuring, income inequality, housing system and residential mobility, the socio-economic and residential segregation has remained comparatively low, with limited separation of the wealthy. Riga has a high level of social mixing and a low level of socio-economic spatial divisions. This is typical of the post-socialist space, as low segregation levels have been linked to a shortage of new housing; they are also impacted by a time lag, as income inequality does not immediately affect space. However, as the wealthier city residents seek better housing, segregation is likely to grow between and within neighbourhoods (Hess et al., 2018; Musterd et al., 2016; Sechi et al., 2022). The inner city has experienced fragmented gentrification, with selective residential upgrading and revitalisation in middle-to-upper-class areas being driven by intensifying gentrification, followed by re-investment in the inner city. Between 2006 and 2015, all of the more than 600 newly built residential housing units in the HCR were financed privately and aimed at upper-income earners. Naturally, next to this selective gentrification, there was also an ongoing deterioration of the pre-war housing stock (Treija et al., 2020; Sechi et al., 2022; Krišjāne & Bērziņš, 2014).

Furthermore, the above-average inner-city residential mobility rates boosted socio-spatial differences in the city (Krišjāne & Bērziņš, 2014; Treija et al., 2020). High residential mobility has also likely affected sense of place, as roughly half of the HCR population felt a sense of belonging to their neighbourhood or community (Treija et al., 2020). However, this could have been magnified by inept criteria for setting the administrative neighbourhood boundaries; there are likely to be divergent spatial and social processes within those boundaries (Ušča, 2010).

On the one hand, reurbanisation was hindered by the soaring suburbanisation levels, which, characteristically for the post-socialist space, have a comparatively short history in CEE countries. Accordingly, it has been too soon for the suburbanites to return to the inner city. On the other hand, reurbanisation was slowed down by the "adverse social environment" in some of the inner-city neighbourhoods, e.g., Grīziņkalns and Maskavas forštate. The latter had little investment in development and the lowest social affluence in the inner city. Nevertheless, it has been predicted that reurbanisation should be just a matter of time (Šolks, 2010; Sechi et al., 2019). Since the residential satisfaction of younger Riga residents has been influenced by mobility modes and neighbourhood quality perception, while sociodemographic factors have remained non-significant (Krūmiņš et al., 2018), these neighbourhoods are likely to experience a turnaround in the near future.

A substantially changing population composition might indicate that the inner city is to expect a more mature level of reurbanisation and new waves of revitalisation. An early insight into the dynamics of sociodemographic change can be very important for future planning. Thus, this paper examines the most recent temporal change of sociodemographic characteristics of the inner-city residents of Riga, employing

statistical analysis to answer the research question "How has the sociodemographic status of the inner-city residents of Riga changed between 2011 and 2021?"

Data and methods

This study used neighbourhood-level data from population census collected by the Central Statistical Bureau of Latvia (CSB). Under focus in the study were the 11 inner-city neighbourhoods, but in order to provide a more comparative and comprehensive view of the city, data about all 58 neighbourhoods was used. Riga is administratively divided into 58 neighbourhoods, of which typically nine – i.e., Centrs, Vecpilsēta, Skanste, Brasa, Grīziņkalns and Avoti (all on the right bank of the River Daugava) and Ķīpsala, Āgenskalns and Torņakalns (all on the left bank of River Daugava) – are considered the inner city. In this study, another two neighbourhoods (Maskavas forštate and Pētersala-Andrejsala, both located on the left bank of the River Daugava) were included due to their sociodemographic character, built environment and physical proximity to the inner city. While the HCR makes up just 1.43% of the city's area, these 11 neighbourhoods make up 10.7% of the city, and 21.8% of the city's residents live in these neighbourhoods (Central Statistical Bureau, 2023; apkaimes.lv, 2017).

A set of main factors was chosen to provide insight into the changing sociodemographic characteristics, including data on the share of residents of age who hold a degree, median net income, population size, average population age and age structure, household size and marital status, ethnicity, and residential mobility. These are factors that have been both reviewed in earlier literature and are associated with reurbanisation, allowing for a better comparison and assessment of trends. In order to capture the most recent changes, the chosen time period was the decade between 2011 and 2021. In addition, housing statistics related to years of construction, rental versus owner-occupied, and empty versus occupied were briefly analysed to provide an overview of the housing situation in the inner city. This statistical data was categorised as experimental due to having been collected using new data sources and methods. While this ensured availability of the most current data, these methods are not constant or internationally harmonised. Finally, to analyse the changes and depict the spatial patterns, new variables were calculated using the compiled dataset and expressed as fractions, which were then grouped and mapped.

Results

In terms of population size, after the prolonged population decline, a notable return to the inner city became evident only in the second half of the decade between 2011 and 2021. In most inner-city neighbourhoods between 2016 and 2021 the population increased by 1.8% to 4.9%, but in some by as much as 21.0% (Ķīpsala) or 45.9% (Skanste). There were also relatively small decreases, of 2.8% and 1.7%, in

Brasa and Grīziņkalns respectively, while Āgenskalns, Maskavas forštate and Torņakalns experienced larger losses (Central Statistical Bureau of Latvia, 2023). Between 2011 and 2021, the concentration of expatriates in the inner city almost doubled – an increase of 38% to 538% depending on the neighbourhood. Generally, moving to the inner city from abroad and vice versa was increasingly frequent in comparison to the rest of the city (Central Statistical Bureau of Latvia, 2023).

The share of residents in the city aged 18 and over holding a degree reached 40.3% in 2021, up from 33.0% in 2011 (Central Statistical Bureau of Latvia, 2023). Figure 1 shows the percentage point variation from the average level in the city. In 2011, all the inner-city neighbourhoods, except Torņakalns and Maskavas forštate, were within or above the average level. While the overall pattern was similar in 2021, the gap between the inner- and outer-city neighbourhoods grew larger and more of the inner-city neighbourhoods rose significantly above the average level.

Figure 1. **Percentage point variation (from average level in the city) in the share of residents aged 18+ that hold a degree** (author's figure based on CSB data)

The inner city not only had a smaller share of residents with elementary occupations (except Pētersala-Andrejsala, Maskavas forštate, Āgenskalns and Avoti), with a particularly large difference from the rest of the city in Brasa and Centrs, but also had a higher concentration of residents paid above the median income in the city in both 2011 and 2021. The median net income in the city in 2021 was 716 EUR, and about 1.2 times higher in most of the inner-city neighbourhoods, only being lower in Torņakalns and Maskavas forštate (Central Statistical Bureau of Latvia, 2023). Again, the gap between the inner city and the outer city kept growing during the period (Figure 2).

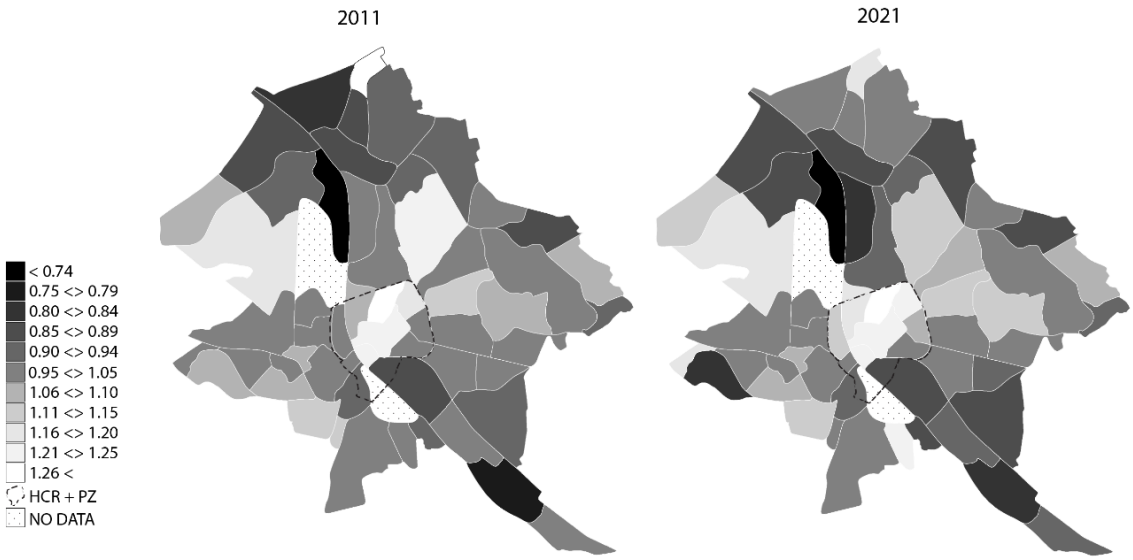

Figure 2. **Net income in Riga (Riga = 1.00)** (author's figure based on CSB data)

The average age of the inner-city population also decreased. Remarkably, the average population age in Riga increased from 41 to 42 between 2011 and 2021, but despite this overall ageing trend the inner city was getting considerably younger on average, as young as 33 in Skanste (2021). (Figure 3) In line with the previous research, the inner city was increasingly attracting young adults, demonstrating a growing divergence between the inner- and outer-city neighbourhoods. In 2021, the share of millennials, or 25-to-44-year-olds, in the inner city was between 0.29 (Maskavas forštate) and 0.37 (Skanste). Although the share of 15-to-24-year-olds in the inner city decreased during the period, there was an upward trend when comparing 2021 to 2016 – likely a sign of studentification (Central Statistical Bureau of Latvia, 2023).

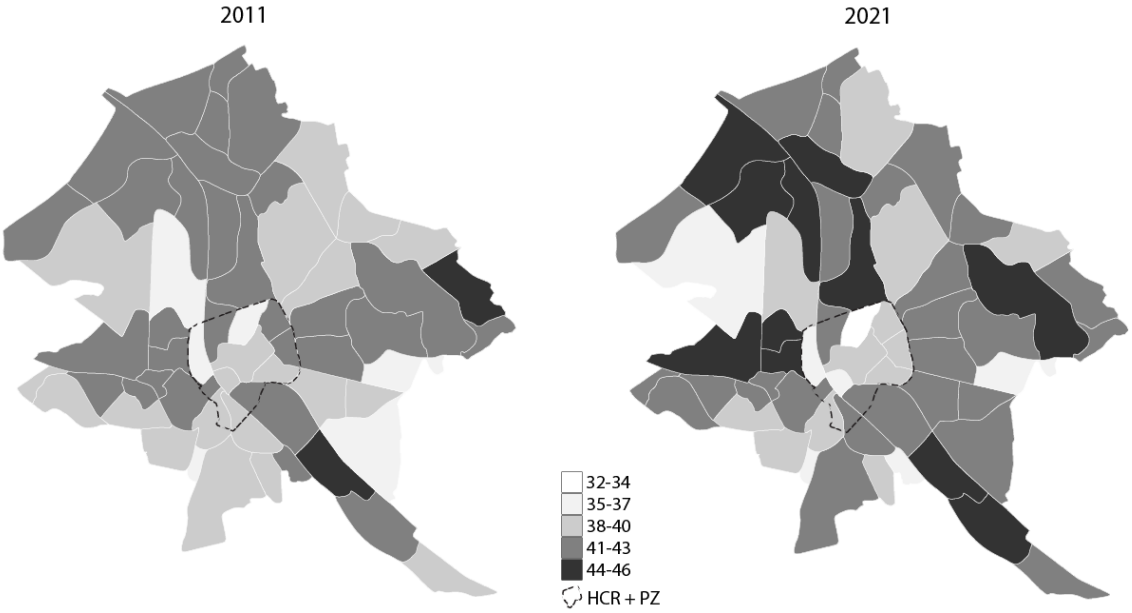

Figure 3. **Average age in Riga** (author's figure based on CSB data)

Between 2011 and 2021, the share of two-or-more-person households decreased in all inner-city neighbourhoods, as the share of one-person households was the only group to grow – though, in most inner-city neighbourhoods, this increase was smaller than the city average. Additionally, the share of persons with the marital status "unmarried" in the inner city was between 0.44 and 0.63, above the average level of 0.42 in the city in 2021 (Central Statistical Bureau of Latvia, 2023).

In the context of reurbanisation, an essential subject is housing. With a few exceptions, there was little newly built housing in the inner city. (Figure 4) From this perspective, since the inner city is densely built-up already, an increase in segregation linked to development of new housing should not be significant. In 2021, about 15.6% of housing was empty in Riga; in the inner city the share varied from 21.8% in Brasa to 52.0% in Vecpilsēta, and mostly applied to buildings that were built before 1945 (Central Statistical Bureau of Latvia, 2023). Empty housing creates a risk of degradation of the environment, as well as a risk of social and cultural decline. While it also provides some potential space for revitalisation, it would most likely lead to an increase in socio-spatial differentiation.

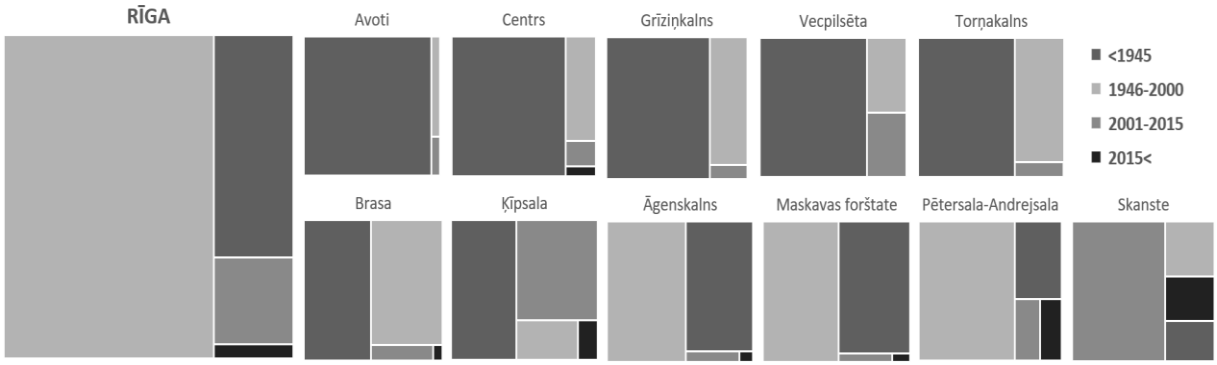

Figure 4. **Housing stock in the inner city by construction period** (author's figure based on CSB data)

High residential mobility in the inner city was an ongoing trend in 2021. Within the span of a year, the place of residence remained unchanged for 0.80 to 0.89 of the population in the inner city – more "inner" neighbourhoods had higher mobility compared to the average level in the city of 0.90 (Central Statistical Bureau of Latvia, 2023). One of the requirements for high residential mobility is availability of rental housing. While the concentration of rental housing in the inner city is higher than the city average (Figure 5), from 2011 to 2021 the share of owned housing increased in Avoti, Centrs, Grīziņkalns, Ķīpsala and Vecpilsēta, while the share of rental housing increased in Āgenskalns, Maskavas forštate, Pētersala-Andrejsala, Skanste, Torņakalns and Vecpilsēta (Central Statistical Bureau of Latvia, 2023).

Figure 5. **Share of rental versus owner occupied housing in 2021** (author's figure based on CSB data)

The results allow detailed spatial sociodemographic changes in the city to be seen, as well as an increasingly divergent population composition both within the inner city and between the inner city and the outer city. The majority of these findings are in line with prior studies but demonstrate more pronounced patterns, e.g., the growing share of young, highly educated and well-paid residents and expatriates in some previously declining inner-city neighbourhoods is closely associated with gentrification.

Conclusion

The sociodemographic status of inner-city residents in Riga changed significantly between 2011 and 2021, not only confirming the observations regarding the dynamics of the population composition of the inner city in the literature review, but also signalling the existence of a more mature form of reurbanisation and gentrification. Not only did the inner-city population grow noticeably in the second half of this period, but, throughout the decade, the inner city was also increasingly favoured by affluent younger and highly educated residents. The inner city both maintained its status as the most socially affluent part of the city and increasingly diverged from the outer city.

Data analysis also revealed significant differences within the inner city; the performance of a neighbourhood seemed to be determined by its "innerness". The neighbourhoods that stretched further out from the boundaries of the HCR had consistently lower rates of reurbanisation, thus a separate micro-level analysis would be beneficial in order to investigate the rising socio-spatial inequalities and their implications within and between the inner-city neighbourhoods – more precisely, to see if increased levels of segregation are likely due to the changing sociodemographic environment in the inner city, as these processes have been quite fragmented. At the

same time, the prevalence of the trend of reurbanisation must not be generalised about or overestimated but examined in interaction with such processes as the still-increasing suburbanisation and possible counterurbanisation.

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Kopsavilkums

Postsociālisma pilsētu iekšpilsētās noris strauja reurbanizācija – process, kas parasti ietver būtiskas pārmaiņas iedzīvotāju sastāvā. Šī pētījuma mērķis bija noskaidrot, kā laika posmā no 2011. līdz 2021. gadam ir mainījies Rīgas iekšpilsētas iedzīvotāju sociāli demogrāfiskais statuss. Lai to izdarītu, tika apkopoti iepriekš veiktie pētījumi par Rīgas iekšpilsētu un, ņemot par pamatu to sniegto ieskatu, tika veikta statistiskā analīze apkaimju līmenī, izmantojot jaunākos iedzīvotāju sastāva un mājokļu datus, kas pēc tam tika attēloti kartēs. Rezultāti atklāja, ka desmitgades otrajā pusē ne tikai palielinājās iekšpilsētas iedzīvotāju skaits, bet iekšpilsēta arī piesaistījusi arvien vairāk gados jaunu pieaugušo ar augstu sociālekonomisko stāvokli, līdzās citām arvien izteiktākām reurbanizācijas pazīmēm pētītajā periodā. Lielākā daļa no šiem reurbanizācijas procesiem bija telpiski sadrumstaloti, tādējādi radot risku sociāli telpiskās nevienlīdzības kāpumam gan pašā iekšpilsētā, gan starp iekšpilsētu un ārpilsētu.

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DEVELOPMENT AND LOCATION PATTERNS OF CREATIVE QUARTERS IN RIGA

RADOŠO KVARTĀLU ATTĪSTĪBAS UN IZVIETOJUMA IEZĪMES RĪGĀ

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Abstract

While investigation of the phenomenon of creative quarters in Western cities has long been widespread, city quarter development, both the process itself and discourse on this subject, is rather new in the post-socialist space. The aim of this research is to provide a general insight into the development of creative quarters in Riga, focusing on their evolution in terms of geographical location and development patterns, such as timeline and trajectories. This study identified nine creative quarters in Riga. The findings indicate that six out of nine quarters are located in the inner city of Riga, and seven out of nine are located in industrial areas. Furthermore, this research revealed that most of them have been established during the last six years, with at least one new quarter each year. It also reveals that eventually the creative quarters experience capitalisation and expand beyond creative industries, beginning to offer other services.

Keywords: *creative quarters, creative class, gentrification, inner-city, Riga*

Introduction

The study of urban spaces is continuously experiencing the emergence of new and broad discourses and concepts that seek to brand urban spaces based on ongoing urban development processes. We have seen smart cities (Silva et al., 2018; Batty et al., 2012), global cities (Clark, 2016; Sassen, 1991), eco-cities (Cugurullo, 2018; Joss, 2011) and others. In this paper, the concept of a creative city will be explored through the lens of quarter formation.

It has long been debated that creatives have an impact on shaping urban areas by either creating specific creative enclaves or contributing to various urban development processes (Bader & Bialluch, 2008; Florida, 2017; Gainza, 2017). Creative enclaves – or, as they are known, creative quarters – can be either organically originated or purposefully developed – or both, in cases where a top-down approach is implemented and an organically originated quarter eventually receives an influx of capital to boost its development. Place-making strategies and policies intend to develop spaces for the creative economy (Evans, 2009). However, it is yet to be explored how exactly strategically planned urban spaces and non-planned venues can be compared in terms of "success", their impact on neighbourhood-scale processes and shaping the city as a whole.

While investigation of the phenomenon of creative quarters in Western cities has long been widespread, city quarter development, both the process itself and the discourse on it, is rather new in the post-socialist space (Jocic et al., 2017; Neducin & Krkljes 2022). Whether refurbished industrial heritage sites, perforated urban areas turned into music and arts spaces, or several venues forming a multifunctional creative cluster, creative quarters are no longer limited to large-scale urban metropoles.

With reference to the fast-growing number of creative quarters, Riga is often compared to "Berlin some fifteen years ago" – and the booming trend of quarterisation is hardly unnoticeable. Although the Covid-19 pandemic has left an impact on creative and leisure industries worldwide (Khlystova et al., 2022; Vitalisova et al., 2021), previous research suggests that creative quarters in Riga were able to successfully adapt to these unprecedented struggles, by, for instance, re-structuring their operational strategies and introducing new services, such as delivery during lockdown (Feizaka, 2021). While some were forced to shut down their operations for a while, it is worth mentioning that the pandemic did not reduce the number of creative quarters in Riga – on the contrary, two new quarters were established during the pandemic.

The aim of this research is to provide a general insight into the development of creative quarters in Riga, focusing on their evolution in terms of geographical location and development patterns, such as timeline and trajectories. This case study of creative quarters in Riga was conducted primarily by an analysis of creative and cultural venues in Riga, including publicly available information and media publications, which was followed by semi-structured interviews with representatives of several different quarters.

Location patterns of the creative quarters in Riga

This study identified nine creative quarters of commercial characteristics in Riga: Kalnciema quarter, K. K. fon Stricka Villa, Tallinas Street quarter, Lastadija, Provodnik, VEF quarter, Sporta 2 quarter and Vagonu terrace. Given the scale of Riga, it does seem that calling a venue a quarter has become a trend. There are other venues in Riga carrying the word "quarter" in their name (e.g. Magdalenas quarter, Barona quarter); however, they were developed for other, non-creative reasons, such as commercial and residential purposes.

The location of the creative quarters reveals several patterns. Firstly, six out of nine quarters identified are located in the inner-city of Riga (Figure 1). Andrejosta quarter, Sporta 2 quarter, K.K. fon Stricka Villa, Tallinas Street quarter, Vagonu terrace and Kalnciema quarter are located in inner-city neighbourhoods that are adjacent to the centre, yet are not in the centre itself, which is a common gentrification scenario, as centre-adjacent ex-working-class neighbourhoods are usually undergoing a process of gentrification, and Riga is no exception (Feizaka, 2021). While the other three quarters – Provodnik, Lastadija and VEF quarter – are technically outside the

inner-city, Lastadija and VEF quarter are in close proximity to it. It is also worth noting that only one creative quarter – Kalnciema quarter – is located on the left bank of Riga.

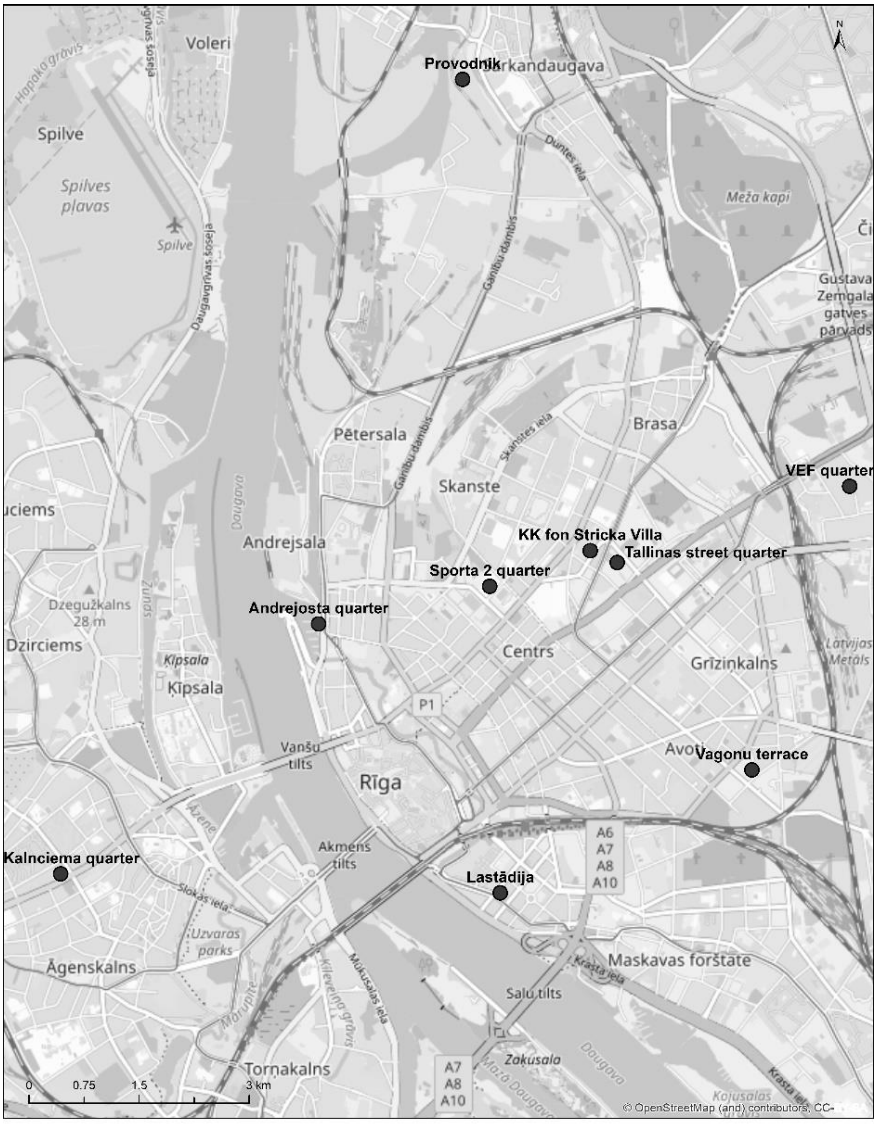


Figure 1. **Location of creative quarters in Riga** (author's figure)

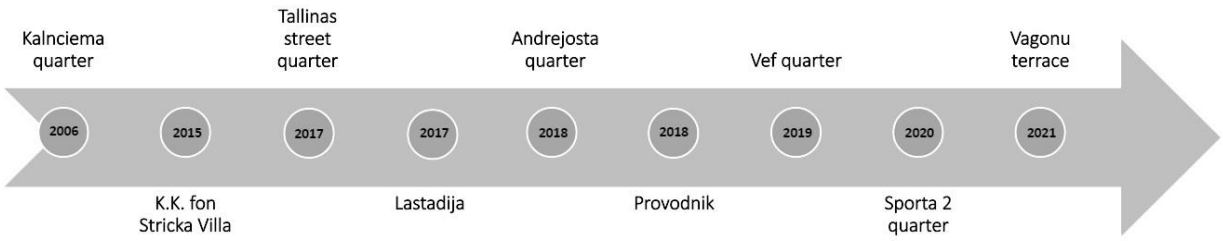
Furthermore, the findings suggest that seven out of the nine creative quarters were established in areas that have either historically been or currently are industrial. These are mainly former factories, breweries or other large-scale production premises that have either undergone renovations and been refurbished, or have simply offered space for creatives. Kalnciema quarter and Lastadija, both of which have no industrial heritage, used to serve as residential premises.

Development patterns of creative quarters in Riga

The findings suggest that more than two thirds of the creative quarters in Riga have emerged over the last six years. The first creative quarter in Riga – Kalnciema

quarter – was established in 2006. An ensemble of wooden architecture, it was a part of government-sponsored refurbishments of Kalnciema Street before the then-upcoming NATO Summit. Moreover, this was the only creative quarter established in 2000s, which can partially be explained by the financial crisis at the end of that decade. More intensive development of creative quarters in Riga emerged some ten years later, especially since 2017, with at least one new quarter emerging every year since then (Figure 2).

Figure 2. **Timeline of the development of creative quarters in Riga** (author's figure)



Creativity, however, is not the only driving force behind their development. Rather, it is used as a catalyst, initially establishing the quarter as a creative venue, with potential for eventual capitalisation, whether this is intended or unintended. First, the idea, the image, the myth of the venue is created. Then, once word has spread and the venue has gained enough attention, it provides a space for creative strategies and manoeuvres for income attraction. The scenarios for eventual capitalisation are diverse. It could be, for example, the introduction of entrance fees, offering to rent their premises for video or movie production, opening more sophisticated bars onsite (e.g. offering gimlets and oysters instead of the usual cider and fries). However, one of the quarters in Riga demonstrates an opposite example. At first, a brewery was established in a historical industrial area, which was then followed by a crowdfunding campaign with the aim of creating a diverse and creative quarter, which, eventually, would be a place for socialising.

Furthermore, the development patterns of some of the creative quarters suggest that it won't stop just there. While they generally start operation as creative, sometimes slightly alternative venues, there is a growing tendency – or maybe even an urge – towards multifunctionality. In other words, after a while, creativity alone is not enough, and thus the quarter experiences further development. This further expansion typically includes options such as offering office space, space for co-working or storage options for creative businesses; hosting NGOs; or even developing residential buildings.

It is worth noting that the quarterisation process in Riga also bears the characteristics of revitalisation. On one hand, the development of creative quarters in gentrifying neighbourhoods positively affects the image of those neighbourhoods, thus contributing to the process of gentrification. On the other hand, at a local neighbourhood scale, they can be regarded as examples of urban revitalisation, contributing to improvement of the quality of life and general conditions for local communities, as some of the quarters were initially established due to active social movements. Besides, it should be noted that Riga has both quarters that emerged and developed somewhat organically, and others that were purposely planned and developed as a part of the culture economy. There is no evidence that one type in some way outshines and outcompetes another, and thus at this point it can be agreed that they co-exist in urban space, providing visitors with a wide range of choices.

Conclusion

The development of creative quarters in Riga has intensified, amounting to nine quarters as of 2023. Given Riga's scale, it does seem that including the word "quarter" in a venue's name has become a trend. Two thirds of the creative quarters in Riga are located in inner-city neighbourhoods of Riga, close to the centre, which correlates with the process of gentrification in these neighbourhoods. Furthermore, seven out of nine creative quarters identified are located in areas that have had industrial characteristics, either currently or historically.

This research revealed that creativity and the arts are the initial purposes for developing creative quarters in Riga. Eventually, as the image and the myth around the venue is created, it enters the stage of capitalisation. In other words, income-generating activities, such as introducing entrance fees or renting out the premises of the venue for various creative activities, become part of the development of the quarter. While this is a common scenario, it does not apply to all the creative quarters in Riga.

The findings also suggest that while creative quarters initially serve as creative venues, there is a growing tendency for further, broader development, eventually transforming them into multifunctional spaces. Potential strategies for further expansion can include – but in the case of Riga are not limited to – offering space for co-working, offering storage space options for creatives and their businesses, hosting NGOs etc.

To sum up, the general development patterns of the creative quarters in Riga so far can be described in three words: inner-city, industrial, evolving. The latter provides room for further debates regarding the strategies and trajectories for further development of creative quarters in Riga; thus, considering the findings of this study, the question can be posed: are capitalised, multifunctional quarters the future of urban development in Riga?

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Kopsavilkums

Radošo kvartālu attīstības un izvietojuma iezīmes Rīgā. Radošo kvartālu pētniecība rietumvalstu pilsētās jau izsenis ir plaši izplatīta, savukārt postsociālisma telpā gan radošo kvartālu attīstības process, gan diskurss ap to ir visai jauns. Šī pētījuma mērķis ir sniegt vispārēju ieskatu radošo kvartālu attīstībā Rīgā, koncentrējoties uz to attīstību, pievēršot uzmanību ģeogrāfiskajam izvietojumam un attīstības tendencēm. Šajā pētījumā tika apzināti deviņi radošie kvartāli Rīgā. Iegūtie dati liecina, ka seši no deviņiem kvartāliem atrodas Rīgas iekšpilsētas apkaimēs, bet septiņi no deviņiem kvartāliem atrodas industriāla rakstura teritorijās. Turklāt pētījums atklāja, ka lielākā daļa radošo kvartālu Rīgā ir radušies pēdējo sešu gadu laikā, katru gadu veidojoties vismaz vienam jaunam kvartālam. Tāpat rezultāti liecina, ka ar laiku radošie kvartāli piedzīvo kapitalizāciju un to darbība attīstās arī ārpus radošajām nozarēm, piedāvājot arī citus pakalpojumus.

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INFLUENCE OF ETHNIC AND SOCIAL FACTORS ON THE RESULTS OF THE 14TH SAEIMA ELECTIONS (2022)

ETNISKO UN SOCIĀLO FAKTORU IETEKME UZ 14. SAEIMAS VĒLĒŠANU REZULTĀTIEM

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Abstract
The aim of this research is to to research the most significant factors that influenced the Latvian parliament (14th Saeima) election results in 2022.
The results of the 14th Saeima elections showed that ethnically non-Latvian citizens of the Republic of Latvia still display a statistically significant negative vote against the political parties included in the previous government of Latvia, which does not promote social or ethnic stability and creates conditions for potential security risks to Latvia in the future.
Keywords: *Latvian parliament elections, non-Latvian citizens, Latvian citizens*

Introduction

The influence of various factors on the results of elections in EU member states has long been the subject of academic research, including modern academic research (Peltoniemi et al., 2023; Meesanthan, 2022; Utami et al., 2022; Zhirnova, 2022; Lysek et al., 2020). The influence of neighbouring territories on election results was studied by Fiorino et al. (2021), as well as Pontarollo & Ricciuti (2021), Lasoń & Torój (2019) and Grabowski (2019). Moreover, electoral factors that influenced the results of Latvian parliamentary elections have been reported in previous scientific publications by the author and co-authors (Paiders & Paiders, 2014; Paiders & Paiders, 2012; Paiders & Paiders, 2011).

Data and methods

The data on the results of the 14th Latvian parliament elections, the number of voters, activity, etc., were obtained from the information on election results approved and published by the Central Election Commission of Latvia, while data on the number of citizens of different ethnicities, and of ethnic Latvians and Russians; as well as on the distribution of national minorities, and on unemployment and other economic indicators, were obtained from the official statistics portal of Latvia, maintained by the Central Statistical Bureau of Latvia.

Taking into account that all the obtained data, according to the Kolmagorov-Smirnov test indicators, correspond to a normal or lognormal distribution, the

comparison of spatial scalar fields was used as the determining method of data analysis. Namely, a linear correlation and regression analysis was carried out, examining which of the spatial scalar fields of the relative ethnic or social parameter was the most relevant to the scalar field of the spatial distribution of votes for parties or groups of parties, for example, in the vote for all the parties that participated in the election which were represented in the previous government, etc.

Results

In total, in the 14th Saeima elections, Latvian citizens expressed a strong lack of confidence in the parties represented in the previous government. Only 36% of all voters who participated voted for any of the coalition parties that were part of the previous government. Out of a total of 43 municipalities in Latvia, only in six (in the counties of Sigulda, Varakļāni, Valka, Smiltene, Mārupe and Valmiera) did the parties of the previous government receive combined majority support. A little less than half of all voters' support (45–50%) was obtained by the parties represented in the previous government in eight municipalities: Cēsis, Madona, Ogre, Ķekava, Alūksne, Saulkrasti, Aizkraukle and Limbaži counties. In all the other local government districts of Latvia, an absolute majority of voters did not support any of the coalition in any of the coalition parties included in the previous government. The voters of Daugavpils and other municipalities in Latgale showed especially low levels of support for the parties towards the parties of the previous government.

For comparison, in 2014, in 106 out of 119 municipalities, more than 50% of the voters who participated voted for the political forces making up the government.

In the 2018 Saeima elections, Latvian citizens' support for government parties was higher than in 2022. In 2018, the parties in the government were supported by a total of 38.7% of all voters.

In the results of the 2018 Saeima elections, we could see a distinct ethnic dimension. Taking together the results of the Latvian Russian Union and the Social Democratic Party Harmony, and performing a regression analysis on the percentage of votes obtained by these parties with the share of ethnically non-Latvians among Latvian citizens, the coefficient of determination was 94%, which meant that the share of ethnically non-Latvians among all citizens explained 94% of the joint results of the Russian Union and Harmony. As the proportion of non-Latvians among all citizens in each municipality increased by one percentage point, the total number of people who voted for the Latvian Russian Union and the Social Democratic Party Harmony increased by 0.96 percentage points. It could be concluded from this that in 2018 the main electorate of the Social Democratic Party Harmony and the Latvian Russian Union were the largest ethnic minorities in Latvia (Paiders, 2019).

On the one hand, it is very easy to compare the results of the Saeima elections with CSB data on the national composition of the population in different

municipalities. Looking at the total percentage of all ethnic Russians, Belarusians and Pole among the local population in each municipality and comparing it with the results of the 2022 14th Saeima elections, we can get the result that the number of votes cast (percentage of all those who voted) for the Latvian Russian Union, the Social Democratic Party Harmony and the Solidarity party as a whole, is almost identical (the coefficient of determination is 89%) with the percentage of ethnic Russians, Belarusians and Poles in each municipality. On the other hand, in municipalities and republican cities cities with a large proportion of Russians, Belarusians and Poles, there was a markedly negative correlation of the total population with the proportion of voters who voted for parties that were part of the previous governing coalition.

However, such comparisons are not quite correct. The majority of Latvian Belarusians and Ukrainians do not have Latvian citizenship and did not participate in the elections. On the other hand, 99.9% of all ethnic Latvians living in Latvia have Latvian citizenship. CSB data show that on 1 January 2022, only 392 ethnic Latvians living in Latvia did not have citizenship of the Republic of Latvia. According to the CSB public data, on January 1 2022, almost 95% of all Roma living in Latvia had Latvian citizenship. Among Latvian Poles and Latvian Jews, a very high proportion were Latvian citizens (more than three quarters), as was also the case among many numerically small ethnic groups. On 1 January 2022, only 37% of Latvian Ukrainians and 45% of Latvian Belarusians had Latvian citizenship. A completely different picture can be observed when looking at Latvian citizenship status among the Latvian Russian minority. On 1 January 2022, 66.5% of all ethnic Russians living in Latvia had Latvian citizenship. In addition, the proportion of citizens of the Republic of Latvia who are Russians tends to increase. In 2018, 64% of all local Russians had Latvian citizenship, but within four years this figure had increased by 2.5 percentage points. The relatively small proportion of Latvian citizens among Latvian Ukrainians and Belarusians, compared to the large proportion of Russians who are citizens of the Republic of Latvia, is connected with the fact that a high proportion of the descendants of Latvian Old Believers (Russians), who have lived on the territory of Latvia since the 17th century, were citizens of the Republic of Latvia in 1940. The descendants of these people had the right to receive citizenship of the Republic of Latvia without any obstacles. On the other hand, Russians, Belarusians, Ukrainians and other peoples who entered Latvia after 1940 had to go through a naturalisation procedure (examination in the national language etc.) in order to obtain citizenship of the Republic of Latvia.

Therefore, the majority of Latvian Belarusians and Ukrainians, although they are permanent residents of Latvia, could not participate in the elections. Since almost all ethnic Latvians have Latvian citizenship, by subtracting the number of ethnic Latvians from the number of citizens of the Republic of Latvia registered in each district, the number of ethnically non-Latvian citizens of the Republic of Latvia in each administrative unit of Latvia can be obtained.

In January 2022, 73.7% of all Latvian citizens living in the city of Daugavpils were not ethnic Latvians. In Augšdaugava municipality (the former Daugavpils district) the proportion of ethnically non-Latvian citizens of the Republic of Latvia was 50.3%, in Rēzekne it was 49%, and in Krāslava district it was 40.8%. In the capital of Latvia, Riga, more than 40% of all declared Latvian citizens were not ethnic Latvians. By contrast, in the counties of Kuldīga, Varakļāni, Smiltene and Talsi, 95% of all citizens of the Republic of Latvia declared they were Latvians.

As the results of the statistical analysis show, in counties with a larger proportion of Latvian citizens a of Russian ethnicity, there was less support for all parties represented in the previous government coalition as a whole. On the other hand, the coefficient of determination between the share of Latvians (as a percentage) in the municipalities and among Latvian citizens who voted for the government coalition in 2022 was one of the lowest in the last decade. The coefficient of determination (as a percentage) between ethnic Latvian citizens of the Republic of Latvia in the municipalities and support for the previous government was 66%. Ethnically Non-Latvian voters were generally very negative towards all parties represented in the previous government coalition (determination coefficient was 63.5%).

According to the statistical analysis, the greatest support of citizens of the Republic of Latvia who are Russians was shown to the Social Democratic Party "Harmony" (determination coefficient – 63.36%), followed by the political party Stability! (53.59%). There was also statistically significant support of Russians who were Latvian citizens for the party Latvia First (determination coefficient – 34.03%).

When conducting a statistical analysis of the proportion of ethnically non-Latvians (as a percentage) in municipalities and national cities with the proportion of Latvian citizens (as a percentage) who in 2022 as a whole voted for the parties Sovereign Power, the Social Democratic Party Harmony, Stability! and the Latvian Russian Union, it can be concluded that when the proportion of ethnically non-Latvian citizens in municipalities (or republican cities) increases by one percent, support for these four parties as a whole increases by 0.92 percentage points. In addition, this relationship explains 94% (determination coefficient, Figure 1) of all the results of the 14th Saeima elections. Regarding the votes of ethnically non-Latvian citizens of the Republic of Latvia, it has to be concluded that the parties Sovereign Power, the Social Democratic Party Harmony, Stability! and the Latvian Russian Union are generally supported by national minorities with Latvian citizenship whose families speak Russian, regardless of the ethnicity recorded in the passport.

On the other hand, the time when all government parties had a very close relationship with the ethnic Latvian share of citizens of the Republic of Latvia in the municipalities did not repeat itself in 2022. By conducting a statistical analysis between the share of ethnic Latvians (as a percentage) in municipalities and the capital

city with the share of Latvian citizens (as a percentage) who voted for the parties of the previous government coalition in 2022 as a whole, it can be concluded that if the share of Latvian citizens in municipalities (or capital city) increases by one percent, support for the parties of the previous government as a whole increases by .58 percentage points. Moreover, such a relationship explained only 63% of all election results in the vote for the four parties of the former government.

From the results of statistical analysis, it can be concluded that the higher the average gross monthly salary in the municipality, the higher the support for the parties Progressives and New Unity. This factor alone can explain approximately 42% of all the results obtained by the Progressives party in the 14th Saeima elections.

A traditionally important factor that provides support for opposition parties and reduces support for governing parties is the unemployment rate. A similar trend could be observed in the 14th Saeima elections. Evaluating the votes in the 14th Saeima elections, it can be concluded that a high level of unemployment in the municipality had a statistically significant contribution to voter support for the political parties The Force of People's Power, Stability! and the Social Democratic Party Harmony. For these three parties, high unemployment explained about a quarter of all election results. On the other hand, municipalities with a very high level of unemployment had a statistically significant and negative attitude towards the Progressives and New Unity parties. The factor of unemployment explained more than 40% of the vote distribution of these two parties in the 14th Saeima elections.

The 14th Saeima elections were marked by new trends. The policy implemented by the government parties in 2022 made those voters whose homes were not connected to central heating, and who mainly used firewood for heating and rarely electric heating, very negative towards the government parties. After Russia’s invasion of Ukraine, in the second quarter of 2022 there was a significant increase in demand for long-term storage energy resources (firewood, wood briquettes and wood pellets) in Latvia, which manifested itself as an approximately twofold increase in prices for firewood, as well as natural gas and heat. According to data from the Central Statistics Bureau of Latvia, in January 2022, on average, 1 MWh of thermal energy cost consumers 66.66 euros, but in January 2023, 113.04 euros. Initially, households with wood heating were excluded altogether from the state-supported heating price increase compensation mechanism. According to the data of the Central Statistics Bureau of Latvia, in the big cities of Latvia there are the fewest houses without connection to central heating systems. On the other hand, in the municipalities of Alūksne, Smiltene, Rēzekne, Krāslava and Varakļāni, the majority of all households were not connected to central heating in 2021 and mainly used firewood to heat their homes.

The analysis of mathematical statistics shows that this part of the voters had a very high motivation to vote for the opposition parties. In the vote for the parties Servant of Latvian People and the Union of Greens and Farmers, there was a

statistically significant relationship between the voting results in the vote for these parties and such factors as housing without connection to central heating.

Factors such as the number of employees in manufacturing and mining, energy, construction and water supply (as a percentage) compared to the number of employees in 2021 had no statistically significant impact on the election results.

On the other hand, the proportion of people employed in agriculture, forestry and fisheries (as a percentage) compared to the number of people employed in 2021 had a statistically significant effect on the results of the 14th Saeima elections in the vote for the parties Servant of Latvian People and the Union of Greens and Farmers, which explained about 30% of all election results

Discussion

It should be concluded that Latvia has pronounced Russian-speaking minority parties, which try to unite the interests of all Russian-speaking people without particularly caring whether a Russian-speaking citizen of the Republic of Latvia has the entry “Russian”, “Belarusian”, “Ukrainian” or any other in the nationality field of their passport. Therefore, when looking at the proportion of Latvian citizens who are Russians among all Latvian citizens older than 15 years who vote for the so-called “Russian parties” the trends are not as pronounced as when evaluating the votes of all non-Latvian citizens of the Republic of Latvia. At least half of all Latvian citizens of Russian origin come from the descendants of Latvian Old Believers. The Old Believers have lived on the territory of Latvia since the 17th century and they were all citizens of Latvia during the first republic. All these Latvian Russians (and their descendants) had the right to Latvian citizenship after the restoration of independence. This Russian element of Latvia has fully integrated into Latvian society and in many cases, in their own opinion, is significantly different from those migrants of Russian ethnicity who entered the territory of Latvia after its occupation by the USSR in 1944 and 1945 and who obtained Latvian citizenship through naturalisation. That is why the votes of Russians in the big cities of Latvia and the Russians of Latgale are very different.

Unfortunately, when conducting a statistical analysis with the available statistics, it was not possible to elaborate on several very important several very important factors that very reliably influenced the outcome of the 14th Saeima elections.

It is likely that the politics of the ruling parties during the Covid pandemic and Russia’s aggression against Ukraine and the consequences of this war in rising prices of energy, resources, fuel, food and other goods had a huge influence on the results of the 14th Saeima elections. Unfortunately, it is not easy to identify the full impact of Russia's war against Ukraine on the results of Latvian elections, because the relevant statistics are not available and most likely will never be available.

Conclusion

The results of the 14th Saeima elections showed that ethnically non-Latvian citizens of the Republic of Latvia still vote based on ethnic consideration.

On the other hand, citizens of Latvia who are ethnic Latvians are starting to be guided by parties' positions on economic and social issues when voting for political parties.

Among ethnically non-Latvian citizens of Latvia, we can observe a statistically significant negative vote against the political parties included in the previous government of Latvia, which does not promote social or ethnic stability and creates conditions for potential security risks for Latvia in the future.

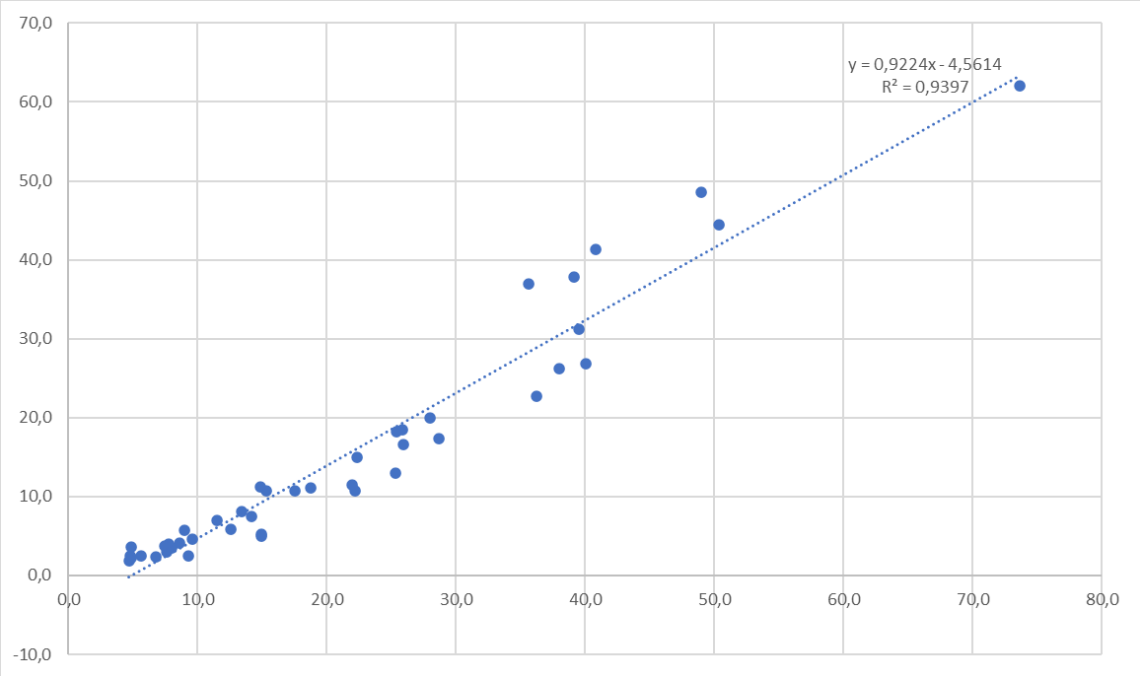

Figure 1. **Proportion of Latvian citizens (as a percentage) who in 2022 as a whole voted for the parties Sovereign Power, the Social Democratic Party Harmony, Stability! and the Latvian Russian Union** (author's figure based on data from Central Election Commission of Latvia)

It can be concluded that when the proportion of ethnically non-Latvian citizens in municipalities (or republican cities) increases by one percent, support for these four parties as a whole increase by 0.92 percentage points (horizontal scale). In addition, this relationship explains 94% of all the results of the 14th Saeima elections.

Kopsavilkums

Pētījuma mērķis bija noskaidrot būtiskākos faktorus, kas ietekmēja 2022. gada 14. Saeimas vēlēšanu rezultātus Latvijā. Rezultāti atklāja, ka etniski nelatviešu izcelsmes pilsoņi izrādīja ievērojamu negatīvu balsošanas tendenci pret politiskajām partijām, kas bija saistītas

ar iepriekšējo valdību. Tas raisa bažas par sociāliem un etniskiem konfliktiem, kas Latvijai nākotnē varētu radīt drošības riskus.

Pētījumā tika izmantota statistiskā analīze, lai izpētītu etnisko un sociālo parametru saistību ar politisko partiju balsojuma tendencēm. Rezultāti atklāja statistiski nozīmīgu negatīvu balsošanu no etniski nelatviešu izcelsmes pilsoņiem pret visām partijām, kas bija iekļautas iepriekšējā valdības koalīcijā (korelācijas koeficients 63.5%).

Pētījums uzsvēra ārējo faktoru ietekmi, piemēram, valdības rīcību Covid pandēmijas laikā un Krievijas agresiju pret Ukrainu, kas ietekmēja vēlēšanu rezultātus. Tomēr datu ierobežojumi liedza pilnīgu šo faktoru analīzi.

Secinājumā šis pētījums konstatē etnisko un sociālo faktoru nozīmīgumu Latvijas vēlēšanās un akcentē nepieciešamību turpināt izpētīt un attīstīt politiku, lai risinātu potenciālās problēmas un nodrošinātu valsts sociālo un politisko stabilitāti.

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ORIGIN AND UNDERSTANDING OF THE GEOGRAPHICAL TERM "BALTICS": HISTORICAL EVIDENCE FROM THE 19TH AND 20TH CENTURY

ĢEOGRĀFISKĀ NOSAUKUMA 'BALTIJA' RAŠANĀS UN ATTĪSTĪBA: IESKATS 19. - 20. GADSIMTA AVOTU LIECĪBĀS

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Abstract
The aim of this study is to explain the historical origin, development and understanding of the geographical term "Baltic" or "Baltics". A wide range of local and foreign historical sources have been used for the study. Applied historical sources show the use of term by different ethnic groups in local society as well as abroad. Events of two centuries are marking a different trend in the semantical content of the term. The results of the study show that period of the rule of Russian Empire over the Baltics is closely connected with a rather narrow understanding of the concept, which was formed by the elite of local German-speakers, and related to areas inhabited by Baltic Germans, Estonians and Latvians. Later periods were marked by changes related to the period of independent Estonia, Latvia and Lithuania, the period of their occupation, and the period after the restoration of their independence. These periods of history strengthened a broader understanding of the term associated with the three Baltic States.
Keywords: *Baltic, Baltics, identity, toponym, ethnonym, history*

Introduction and first evidence

The study is based on selected sources reflecting public knowledge and opinions in the 19th and 20th centuries that allow us to understand traits related to the identity of society and the popularity of the mentioned terms. The sources used in this article are newspapers, magazines, prose works and encyclopaedias.

The meaning of the term "Baltic", or frequently "Baltics" (in the plural sense), is self-evident today and is widely used worldwide, identifying the three countries Estonia, Latvia and Lithuania located on the shores of the Baltic Sea. However, this is the result of long, often exciting historical events.

The origin of the Latinised term *Baltia* (meaning the sea) is found in the texts by the ancient Roman author Gaius Plinius Secundus, known as Pliny the Elder (23/24–79), from the 1st century AD (Zeids, 1992). Regular use of it began many centuries later with the maps made by the Dutch cartographer Gerardus Mercator (real name Gheert Cremer, 1512–1594). The best-known of these were published after his

death in the early 17th century. These maps show the seacoast of the medieval state of Livonia, and on them the sea is called, in Latin, *Mare Balticum* (Mercator, 1607). From that moment on, the concept of the Baltic Sea was familiar to the very narrow circle of European geographers as a hydronym. However, it was not yet used as the name of the land area bordering the sea (a toponym).

Starting from the 13th century, the area of modern-day Latvia and Estonia (former Livonia) was ruled by the ethnically mixed social strata speaking German; centuries later they were called Baltic Germans (*Deutsch-Balten, Deutschbalten*). In German texts, the use of the term "Baltic" became more common after 1761 with the establishment of a new city in the northeast of Estonia named Baltischport, meaning "Port of the Baltics" (Russian analogue: Балтийский, Estonian: Baltiski, later Paldiski). Starting from about 1763, local newspapers such as *Rigasche Anzeigen* ("Advertisements of Riga") began to report about regular cargo ship traffic from Baltischport (Verzeichnis, 1763). The new toponym was understood very locally: it was only applied to the aforementioned city, and therefore it had little importance. After the Russian annexation of Courland in 1795, a term derived from the German *Ostsee* ("Eastern Sea", the German analogue for the Baltic Sea), *Ostseeprovinzen* (Eastern Sea Provinces), was used for the provinces of Estonia, Livonia and Courland. Since the family of the Russian tsar was of a German descent and a dominant part of the educated upper class of society was brought up in the German culture, Russians also used the same German designation, *Остзейскй край* and *остзейские провинции*.

The geographical term *Mer Baltique* (Baltic Sea) was found as early as the middle of the 18th century in the famous *Encyclopedie*, edited by the great French scientists of the Enlightenment era, Denis Diderot (1713–1784) and Jean le Rond d'Alambert (1717–1783) (Encyclopedie, 1751). The headword "Baltic Sea" can also be found in the *Encyclopaedia Britannica* at the beginning of the 19th century (Britannica, 1810). Despite this, it was not used regularly in further reference books as a headword. For a series of leading French reference books in the first half of the 19th century, the Baltic and its eastern coastal region did not exist at all (Encyklopedie, 1823–32; Encyklopedie 1841–43). *Mer Baltique, Provinces Baltiques* and even *Baltia* are permanently present in French universal encyclopaedias only from the 1860s (Grand Dictionaire, 1867). In American reference books the headword "Baltic" emerges by the middle of the century (Encyclopaedia Americana, 1851). In the case of Russia, public knowledge was built mostly on a German base; it did not even have its own Russian edition of such scientific reference material, and one was created only at the end of the 19th century in cooperation with the German publisher of encyclopaedias Brockhaus.

Until the middle of the 19th century, local people identified with a particular province or governorate. This situation is well-illustrated in German encyclopaedias

by the turn of the 18th and 19th century, in which some information about separate toponyms (Estonia, Livonia, Riga) may be included, but where the united name of the whole territory is not found (Hübner, 1795; Conversations-Lexikon, 1809–11). Around the end of the 19th century in the most important German encyclopaedias, Brockhaus and Meyers, there were already unifying designations for the region: the headwords "Eastern Sea Provinces", and the rather random single headword *Baltia* in its narrow Latinised sense with a connection to the text of Pliny the Elder (Brockhaus, 1894–96, Meyers, 1885–92).

The beginnings of Baltic identity

The spread of knowledge about the region was facilitated by the work of Elisabeth Eastlake-Rigby (1809–1893) – a well-known British author and journalist. She wrote the book *Letters from the Shores of the Baltic*. The appearance of such a publication was an unprecedented contribution to the knowledge of the Baltics abroad. In 1846, work by Eastlake was published in German under the simpler, iconic title *Baltic Letters*. Excerpts from the book were also published by the local press (Eastlake, 1841; Eastlake, 1844; Eastlake, 1846). Almost simultaneously, the initial push in the introduction of the term was given by the German writer from Austria-Hungary, traveller and physician Aurelio Buddeus, known as Budde (1817–1880). In 1847 he published a fascinating description of a journey through Courland to Riga. Although his study does not contain a common conceptually unifying view of the region and its people, Buddeus highlighted the similarities of Baltic landscapes, manors, and common features in the way of life (Buddeus, 1854).

The first broadest survey in German where the Baltic concept was systematically used was a series of "Sketches of the Baltics", published between 1852 and 1855 by the Baltic German physician and writer Georg Julius von Schultz, known as "Dr Bertram", (1808–1875) in the popular weekly journal *Das Inland* (Schultz, 1852). The aim of the journal was to describe common features in the geography, society, history and culture of Courland, Estonia and Livonia. Compared to previously mentioned publications, Schultz's "Sketches of the Baltics" became much more recognisable to the public, as *Das Inland* was popular throughout the educated German-speaking strata. Schultz was fascinated by the culture and lifestyles of the cities and countryside and always saw a lot of unifying elements.

Sources indicating that the idea of a united Baltics broke through after the first issue of the literary magazine *Baltische Monatsschrift* ("Monthly Magazine of Balts") in October 1859. The magazine managed to gain wide influence throughout the German-language space all across Europe. The new type of toponym promoted by that journal was *Baltenland*, or in shorter form *Baltland* ("Land of the Balts"). The title of *Baltische Monatsschrift* made it clear that it was meant for a specific nation, consisting of different strata of society and united by the German language. For the people

inhabiting the region the name "Balts" or "Baltians" was given, German: *die Balten*; Estonian: *baltlased*; Latvian: *baltieši* (Cerūzis, 2022). The magazine started to promote all aspects connected to the Baltics or "Balticness" – above all, the idea of the cultural, religious (Lutheran), legal, economic and political unity of the provinces. It quickly became popular in the educated part of society. In 1882, ***Baltische Monatsschrift*** published the world's very first academic article to reflect on the origin of the word "Baltics", which portrayed the Baltic people (Balts) as a unified nation (Berkholz, 1882).

Practical and political importance

The use of the toponym "Baltics" and the ethnonym "Balts" in the second half of the 19th century was of great utilitarian significance. Their popularity was facilitated by practical as well as political needs. Previous designations for the region and people were too many and they did not indicate badly needed unifying features in the western provinces of Russia (German: *Ostseeprovinzen; Livland, Kurland, Estland; Livländer, Kurländer, Esltländer*, etc.).

Russians began to abandon the use of the earlier derivations from German *Ostseeprovinzen* (Russian: *Остзейскй край, остзейцы*). Due to overall russification, the German nature of the term was no longer acceptable, so it became one of the range of attributes to be combated. The turning point here was 1893, when Dorpat/Tartu was renamed with the Russian toponym Yuryev and around the same time the Russian Empire began to use *Прибалтика* and *Прибалтйские губернии* ("Baltics", "Baltic governorates") in official correspondence. The transformation soon affected the academic and scientific field, so, for example, by the end of 19th century, the first Russian edition of Brockhaus Encyclopaedia was already using the new term "Baltics" (Энциклопедический словарь, 1898). On the other hand, it could be seen that the Russian term had different semantic content. Russian publicists used the term in a narrow geographical sense. Similarly, like Russians, in the middle of 19th century Latvians also used a name derived from the German language tradition for the Baltic – *Austrumu jūra* ("Eastern Sea"), but in the 1860s they began to introduce the term "Baltics" (Dinsbergs, 1864). In the autumn of 1868, the first issue of the Latvian newspaper *Baltijas Vēstnesis* ("Herald of the Baltics") produced by the Riga Latvian Society was published. As the term "Baltics" was new to Latvians, the editorial board decided that it should be explained as being the land that stretches along the Baltic Sea (Anonymous, 1868).

In contrast with the views of Russians and Latvians, the local German concept of "Baltics" was much more complex than a geographical term alone. In their view the concept had a political, and even an ethnic meaning. In newspapers from the 1860s, polemics appeared about the cultural, historical and legal differences between Courland, Estonia and Livonia and inner Russia. Russian newspapers saw Baltic

identity as resulting from misunderstanding of their former privileges by Baltic aristocrats (nobility) and denied the existence of a unique Baltic identity, as they believed it consisted only of eminent German elements borrowed from the culture of Germany (Bärens, 1865), while Baltic German newspapers, which tended to be rather conservative, wrote that all people loyal to the homeland should agree with the idea of Baltic unity, that in that way it would be possible to overcome the political and national tension in the Baltics within a short time (Buchholz, 1881). The Baltic Germans disagreed with arguments that in fact Baltics would thereafter develop as a nation consisting of, or at least led by German-speaking people. Despite this, local Germans themselves concluded that the uniqueness of the Baltics was largely based on the German language and culture. For example, in 1880 German-language newspapers published a series of articles on the ethnic situation and tried to find out what exactly was the "Baltic essence" of the homeland. These articles clearly stated that the identity of the homeland was inextricably linked with many aspects connected to German culture, and that the cultural identity of Estonians and Latvians had also been preserved thanks to the efforts of local Germans (Meyer, 1880; Ruetz, 1880).

These views of a common Baltic identity were not limited to the press. Prose writers were also expressing similar views in 1880: a prominent Baltic writer, Theodor Hermann Pantenius (1843–1916), in his very romantic novel titled *In a God's Land* wrote about the Baltics as the home of a united family consisting of speakers of different languages (Pantenius, 1880–81). Maybe some more critical moods emerge in lyrics by the Baltic writer Victor von Andrejanoff (1857–1895). He admits that the Baltics have their own identity, but says that it is not a modern or good one; rather, it is a kind of protection system, where everything is determined by acquaintances and beneficial contacts, but not by competence or freedom (Andrejanoff, 1880).

Growing popularity of Baltic identity

By the end of the 19th century and the beginning of the 20th century, the concept of the Baltics was already widely entrenched in society.

The Baltic German legal historian Friedrich Georg von Bunge (1802–1897) summarised the private and civil law of the provinces (Bunge, 1847–48). His work was thereafter referred to as the "Baltic Private Law Code" and the civil law of Latvia is largely built on its base. His son Theodor von Bunge (1826–1911) described the procedure for handling civil cases in court, for which the symbolic name Civil Procedure of the Baltics was given (Bunge, 1890-91). Under the leadership of the nature researcher Karl Reinhold Kupffer (1872–1935), for the first time in world history, a book, *Geography of the Baltics*, was published, in which all geographical aspects of the territory are described in a unifying way (Kupffer, 1911). The terms "Baltics"/"Balts", both toponym and ethnonym, started to be used in the names, brands and logos of industrial enterprises. The most vivid example here is the Imperial

Automobile Plant of the Russian Empire – Russo-Balt (*"Русско-Балтийский вагонный завод"/"Russisch-Baltische Waggon-Fabrik"*), founded in Riga, which was the first to produce cars in the Baltic region. The oil refinery Oehlrich & Co. in Riga even called the petrol it produced the Special Baltic. These companies, as well as other enterprises, placed advertisements in the yearbook, which also featured the popular term in its title, *Yearbook of the Balts/Baltic* (Baltisches Jahrbuch, 1905).

The revolution of 1905 in the Baltic region was a huge upheaval in the paradigm. It is usually mentioned as a turning point by many scholars (Hollander, 1924; Garleff, 2005). The possibility of creating a united Baltic nation was under threat, since left-wing and anarchist revolutionaries usually turned against the influence of the Baltic German leading strata. Under the influence of the German Empire's press, the Baltics began to be often called by a different term, *Baltikum*, which was borrowed from the Latin *Balticum*. This term had previously begun to be used by German naturalists and archaeologists who wanted to refrain from engaging in polemics about Baltic identity. The term *Baltikum* had an ending which local German-speakers did not associate with statehood but rather to laboratories or technical solutions (for example, *herbarium, aquarium* etc.). At the same time as the term *Baltikum*, a second new term, *Baltentum* – close in meaning to usual "Balts" – started to circulate in the local German press, from 1905 to 1906. This was borrowed from the romantised *Deutschtum* ("Germanness" – the spirit of the nation) used in the German Empire. The term was treated as a designation for a Baltic special consciousness, for now often understood as consisting of German cultural elements (Vietinghoff-Scheel, 1906).

During the revolution of 1905, there were also outbursts that contested other Baltic traditions. For instance, the importance of the church and religion was belittled, and the so-called church demonstrations – rallies, speeches, and displaying of red flags in the churches – occurred. The Lutheran church was considered one of the strongest elements of Baltic identity before the revolution; it was held to be an important essence of the Baltic way of life. The concept of a "Latvian Revolution" introduced at that time became one of the components of the image of the Baltics – Latvians were often seen as strongest opponents of Baltic identity there (Transehe-Roseneck, 1906, 1908). Felikss Cielēns (1888–1964) – participant in the revolution, one of the leaders of the Latvian social democrats and later Latvian minister of foreign affairs – stated that instead of a united Baltic territory the revolution created the idea of a separate Latvian state (Cielēns, 1961).

Abroad, however, under the influence of this revolution more information about the region emerged. So, for example, separate headwords for "Courland", "Estonia" and "Livonia" can be found in the volumes of *Britannica*, and each is described as a "Baltic province" (Britannica, 1910). Even the special headword "*baltische Provinzen*" ("Baltic provinces") appeared for the first time in a German

encyclopaedia (Brockhaus, 1906). In this way, the encyclopaedias, representing the most popular source of knowledge, created the conditions for the world to learn the term "Baltics" and to link it to Russian-ruled Baltic soil.

The impact of wars: "Baltics" against "Latvia" and "Estonia"

During the years of the First World War, the Baltic Germans suffered greatly due to the anti-German measures introduced by Russia. Baltic Germans were forced to move away from their vision of a united Baltics. The establishment of German power in Courland, and especially the capture of Riga on 3 September 1917, gave the opportunity to return to the issue of a united Baltic nation. In 1918, by which time the former Baltic governorates of the Russian Empire had been completely conquered by German forces, an opportunity arose for the local elite to work on the idea of a united Baltic state (*Baltenland*). Here, medieval Livonia was a historical precedent to build on. As had been typical in the century before, during the events of 1917–1918 Baltic Germans reflected an idealised vision of a united Baltics in the press. The Baltic people at this time were portrayed as a politically united society, residing in a united geographical area (*Baltenland*) and expressing a clear desire to separate from Russia and build their own statehood (Brutzer, 1918). However, the defeat of the German Empire in the war very soon put an end to this project.

Longing for the unfulfilled dream of Baltic unity meant that Baltic Germans often distanced themselves from the attributes that were connected to the new separate national state. Avoidance of the use of the terms "Latvia" and "Latvian" became typical. Often the use of the term *Lettland* for Latvia in German was replaced by the more general terms *Vaterland* ("fatherland"), *Muterland* ("motherland"), and *Heimat* ("homeland") (Boström, 1983). These non-specific terms were more acceptable to Baltic Germans than the term *Lettland* (which in German means "Land of Latvians"). The most famous politician of Baltic German descent, and editor-in-chief of *Rigasche Rundschau* ("Observer of Riga"), Paul Schiemann (1876–1944) tried to justify the use of traditional non-specific German terms instead of "Latvia". In his opinion, due to the Baltic twist of these terms it would be possible in this way for local Germans to promote a sense of belonging to the new country and strengthen the unity of all citizens (Schiemann, 1932). Schiemann's views were not accepted by the Latvian public. The goal of Latvians was to cultivate a Latvian identity and to absorb Baltic Germans into the national state, not to promote aspects of a common Baltic identity. The discussion ended with the government's decision to use the word "Latvian" as appropriate in the names of all state institutions (Liepiņš, 1932).

The Baltic States: the emergence of a new or modern meaning of "the Baltics"

After the First World War, the image and understanding of the Baltics changed, with the meaning of the term tending to expand. The basis for the change was the collapse of the Russian Empire, as a result of which five independent countries – Finland, Estonia, Latvia, Lithuania and Poland – emerged on the shores of the Baltic. The Baltic Germans lost their monopoly over the meaning of the term "Baltics" and the new countries did not pay any attention to the earlier understanding and tradition of the term "Baltics". In the Latvian and Estonian literature, neither the sources related to the terms "Baltics" and "Balts" nor the authors related to this topic were studied and discussed until the 21st century (Jansen, 2007; Cerūzis, 2020). Starting from the 1920s, there was a tendency to call all five new countries "the Baltic States". In 1919–1925, all five countries regularly met at cooperation conferences, trying to create a Baltic Union. The idea did not materialise because of territorial disagreements between Poland and Lithuania. The Estonian, Latvian and Lithuanian attitudes towards the elements of unity shared by all three countries were also different – and not always in a positive way. Historically, the Lithuanians, who were even geographically separated from the Baltic Sea, had little to do with the Baltics. The leading Estonian politicians often associated themselves with the Nordic countries (Taurēns, 1999). Positioned between Estonia and Lithuania, Latvia – and its capital Riga especially – was considered the centre of the Baltics at that time. The largest German minority lived in Latvia (almost 70,000 people, or 3.7% of the population) and were still an enthusiastic supporter of the Baltic identity (Cerūzis, 2004). Consequently, the most advantages to strengthen the concept were to be found in Latvia. The idea of political Baltic unity was especially promoted by Latvian minister of foreign affairs Zigfrīds Meierovics (1887–1925). He was most actively involved in organising the important cooperation conferences and was seen as a unifier of the Baltics. Latvian diplomats were especially active promoters of unity: for example, in Paris between 1918 and 1920 they ran the newsletter *Revue Baltique* ("Baltic Review") dedicated to the demands for independence of the three Baltic States (Revue Baltique, 1918-20).

A new term, "Baltic States", began to appear in the foreign press and encyclopaedias. This trend, however, was not yet permanent. So, for example, in the 1920s the German *Brockhaus* was already calling three new states the Baltic States (Brockhaus, 1923), while other universal encyclopaedias, including the prominent *Britannica*, continued to use the headword "Baltic" only as a hydronym for the sea and didn't rush to supplement it with new headwords as a result of the political transformations recently seen in the Baltics. A rather up-to-date approach was seen in the leading universal reference work of the United States of America. This took an extended look at the Baltic provinces and Riga, but in a much broader sense, writing

about five territories – adding Finland and Petrograd (Encyclopaedia Americana, 1918; Encyclopaedia Americana, 1919). Despite that, in smaller and cheaper reference books from the USA up to the start of Second World War it was almost impossible to find any headwords or information connected to the Eastern Baltic region (The New National Webster, 1935; The Modern Dictionary, 1937).

Overall knowledge of the Baltics abroad was still rather too weak to produce confidence in some circles of Latvians. Voldemārs Reiznieks (1877–1944), a representative of the Latvian Ministry of Defence, wrote about the need for a "new Baltics". He claimed that at that time there was neither a Baltic ideology nor a type of Baltic people (Reiznieks, 1933). Despite the critical statements from Reiznieks a new geographical understanding of the three Baltic States had already begun to be initiated. Around the middle of the 1930s, the Baltic States had achieved a place not only in the world's best-known universal encyclopaedias, but also in other reference books published by European states, for instance in Italy (Enciclopedia Italiana, 1933).

Conclusion

This paper has focused on the emergence and development of the geographical term "Baltics". For that purpose, the most important historical sources were collected and analysed. The source base for the study was built on texts from newspapers, magazines, literary works, encyclopaedias and studies of various natures. Applied historical sources show different periods in the development of Baltic identity. Each period relates to different elements of cultural and political meaning, and discussions about the understanding of the term in different ethnic contexts.

The beginning of the systematic use of the geographic term "Baltics" (as a toponym, or macrotoponym) can be dated to the middle of 19th century. The introduction of the term was initially a result of the romantic feelings of the local German-speakers and manifested itself in literary works highlighting outstanding features of the homeland. This Baltic identity applied only to the provinces of Courland, Estonia and Livonia, and did not cover the whole of the modern-day Baltics. The start of the 20th century showed growing awareness of the eastern Baltic region abroad. The impact of the First World War on the term "Baltics" and the proclamation of the three Baltic States (Estonia, Latvia and Lithuania) marks the start of a new period. This period is characterised by heated debates about the unifying traits of the Baltics and the individual national traits of each Baltic State. Since the First World War and the movement for the independence of the Baltic States, a period of reorientation of the meaning and a new, geographically broader understanding of term "Baltics" began. Despite the occupation of Estonia, Latvia and Lithuania (1940–1991) this new understanding of the Baltics as closely related to the three Baltic States survived and strengthened internationally.

Kopsavilkums

Šajā rakstā izklāstīta ģeogrāfiskā nosaukuma ‘Baltija’ izpratnes attīstība. Pētījuma pamatā ir laikrakstu, žurnālu, literāro darbu, enciklopēdiju un dažāda rakstura pētījumu informācija. Vēstures avoti ļauj nošķirt vairākus attīstības periodus toponīma jeb makrotoponīma ‘Baltija’ un etnonīma ‘baltieši’ attīstībā. Sistemātisks toponīma ‘Baltija’ lietošanas sākums attiecināms uz 19. gs. vidu. Sākotnēji tā izpratnes pamatā bija vācbaltiešu romantiskā dzimtenes izjūta, kas spilgti izpaudās literārajos darbos. Līdz Pirmajam pasaules karam Baltijas identitāti attiecināja tikai uz Igaunijas, Kurzemes un Vidzemes guberņu un šāda, ģeogrāfiski šaura Baltijas starptautiskā atpazīstamība strauji palielinājās. Pēc Krievijas Impērijas sabrukuma sākās toponīma ‘Baltija’ plašākas izpratnes periods. Liela nozīme te ir trīs valstu – Igaunijas, Latvijas un Lietuvas starptautiskajai aktivitātei, kas ļāva tām identificēties citu Baltijas jūrai pieguļošo valstu starpā. Jaunais toponīma izpratnes veids, kas saistījās ar trīs Baltijas valstīm, nostiprinājās 20. gs. 30. gadu otrajā pusē.

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DIASPORA ENGAGEMENT FOR DEVELOPMENT: MULTINATIONAL NETWORKING BY DIASPORA PROFESSIONALS

DIASPORAS IESAISTES LOMA ATTĪSTĪBAS VEICINĀŠANĀ: DIASPORAS PROFESIONĀĻU DAUDZVIETU TĪKLOŠANĀS

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Abstract

The paper investigates diaspora engagement in Latvia's development, by analysing diaspora professionals' multinational and multilevel networking and cooperation practices with Latvian public administration. The main questions addressed in this paper are: 1) what type of support is provided by diaspora professionals? 2) are there any links between geographical location, institutional affiliation, and networking and cooperation practices at the individual and organisational level? The study was carried out using parallel mixed methods research design. The main results show that Latvian diaspora professionals working at international organisations are willing to cooperate with representatives of Latvia. Even though respondents evaluate existing cooperation opportunities as being rather good, just 56% of respondents have had some cooperation with representatives of Latvia over the last five years. An important key finding on factors contributing to or hindering cooperation and networking at an institutional level was that it is not geographical location itself, but an institutional culture of cooperation and strategic vision on the part of the state or institution responsible for this cooperation that matters the most. Today, cooperation and networking take place primary at the individual level – as a result of pro-active searching for cooperation possibilities on the part of diaspora professionals, and as a result of specific interests, openness, motivation and strategic vision on the part of employees of Latvian public administration.

Keywords: *migration, diaspora engagement, high-skilled professionals*

Introduction

The growth of global migration in recent decades has led to a new geography where there is a distinction between the state and the nation – the former referring to a particular territory and the latter being scattered over many territories. The number of international migrants has been increasing in the last few decades (UN DESA, 2020), and large-scale migration has turned many European countries, including Latvia, into diasporic nations.

Recently, an understanding that the diaspora (emigrants and their descendants) can be a partner in promoting development has emerged (Kuznetsov, 2013; Newland & Plaza, 2013**).** Countries are paying increasing attention to the maintenance of links with emigrants in order to engage them in the development of their country of origin

(Craven, 2021; Kingsley, 2018). The contribution of the diaspora relates not only to the transfer of knowledge but also to the transfer of new values, ideas, practices, as well as identity and social capital (Kuznetsov, 2013; Oliinyk et al., 2021; Šūpule 2020). In this light, emigrants are seen not as lost taxpayers but as a "national asset", contributing in different ways (Kingsley, 2018). In the past, ties with emigrants were maintained mainly by family and friends, but today the role of government is growing. Now states are looking for different opportunities to maintain various links with their diaspora in order to convert "brain drain" into "brain gain" (return migration) or at least "brain circulation" (diaspora engagement) to attract diaspora resources and promote cooperation (Pande, 2018). However, research less frequently focuses on the networking and cooperation practices of high-income countries in relation to their diasporas, or on the contribution of high-skilled professionals to the development of their country of origin.

There is a growing awareness in migration research that the traditional interpretations and approaches to migration do not adequately fit with the increasingly fluid and unpredictable patterns of migration observed today. People often migrate back and forth between their country of origin and destination, as well as maintaining diverse cross-border links of varied intensity with those who are left behind (Kivisto, 2001). A growing body of migration scholarship uses a multilevel framework – focusing on extended temporality, the multispatiality and complexity of multinational migrations, and on processes at multiple levels (individual, organisational and societal) (Hajro et al., 2019; Paul & Yeoh, 2020). Nevertheless, empirical research and validation of new theoretical frameworks is scarce.

This paper explores the engagement of high-skilled Latvian migrants (professionals who work at international organisations) in the development of their country of origin, focusing on their networks and their cooperation practices with Latvian public administration. Focus on diaspora professionals is important in the context of the race for global talent to promote innovation and growth (Bailey & Mulder, 2017; Toma & Villares-Varela, 2019). The main questions addressed in this paper are: 1) what type of contribution is provided by diaspora professionals? 2) what is the role of geographical location in networking at the individual and organisational level?

The paper aims to add to the understanding of contributions made by high-skilled migrants to the development of their homeland and to the understanding of multilevel networking practices due to the location of actors in a range of different countries.

The paper investigates diaspora engagement in the development of Latvia, by focusing on diaspora professionals' multi-sited and multilevel networking and cooperation practices with Latvia's public administration. Previous migration studies in most cases focused on networking practices between the diaspora living in a single

country and their country of origin. This study provides new insights into the networking practices of diaspora professionals living in a range of countries (many of whom also have experiences of multinational migration) but who must cooperate with each other as well as with their home country partners across multiple territories and at multiple levels (individual, organisational and societal).

The paper is based on data collected for purposes of two research projects – "Involvement of Latvian Professionals in Diaspora Diplomacy", funded by the Ministry of Foreign Affairs of the Republic of Latvia (further – MFA) – and the National Research Programme's "Cutting-Edge Knowledge and Solutions to Study Demographic and Migration Processes for the Development of Latvian and European Society" (further – DemoMigPro). MFA is starting to develop targeted and systemic cooperation with diaspora professionals working at international organisations in order to acquire the necessary knowledge and contacts to advance Latvia's interests, as well as to provide support for the career advancement of Latvian nationals, thereby extending the network of Latvian representatives and improving their opportunities at international organisations. The primary aim of the MFA research project is to provide an in-depth understanding of the attitudes and views of the diaspora professionals on potential opportunities for cooperation and engagement to advance Latvia's strategic objectives and interests, as well as barriers that have so far hindered closer cooperation (Bela, Mieriņa & Pinto, 2022). The data revealed that diaspora professionals' expectations are broader – they see their engagement in Latvia's development as equally important to diaspora diplomacy. This is why the data can be analysed for the specific objectives of DemoMigPro, where the aim of the talent migration study group is to advance knowledge about high-skilled migrants from Latvia and about diaspora engagement. This focus on networking and cooperation practices between diaspora professionals who work at international organisations and Latvia's public administration provides a unique case to study diaspora engagement and talent migration.

Data and methods

The study used parallel mixed methods research design with equal emphasis on qualitative and quantitative methods. The main target group of the study was diaspora professionals working at intergovernmental organisations (the UN, NATO, the OSCE, the OECD, the European Union, the Council of Europe) and at various international non-governmental organisations (human rights, nature protection and other fields). Data collection was carried out in the summer of 2022. Initially a pilot study was conducted to identify Latvia's current cooperation practices. Six of the most experienced Latvian professionals working at international organisations or in public administration were interviewed. This information was of paramount importance in the development of the survey questionnaire, as well as guidelines for in-depth

interviews and focus group discussions (further – FGD). As the target group is numerically very small and specific, it was necessary to use all kinds of opportunities and sources to recruit respondents. First, information about the study was sent to Latvians listed in the ESI.lv database (a grassroots network of Latvian professionals living abroad) as working at international organisations. Secondly, a database of email addresses of Latvians living outside Latvia who had been interviewed for previous surveys conducted by the University of Latvia and had agreed to participate in future research was used. Finally, support with distributing information about the survey was also provided through their channels by the MFA, the Investment and Development Agency of Latvia, diaspora organisations and diaspora media. In total, 150 respondents participated in the survey of Latvia's diaspora professionals working at international organisations (permission to re-use data N=100). Of all the survey respondents, 116 (77%) currently work for an international organisation, and the rest have worked for an international organisation in the last 10 years. Fifteen respondents (or 10% of all) have worked for more than one international organisation.

In addition, six FDGs (18 participants) and four in-depth, semi-structured interviews were conducted (Table 1). The participants represent a broad spectrum of institutions and organisations covering a wide geographical area. Members of the FGD were recruited using information collected by the MFA from Latvian embassies, and information from the ESI.lv network. Each source contained information about 40 professionals; several persons were mentioned by both. Recruitment of participants focused on ensuring that geographical coverage (including Latin America, Africa and Oceania) and institutional affiliation was as broad and useful as possible (from the point of view of the objectives of the study). As members of the target group live in different countries of the world, discussions were organised on-line using Zoom.

Table 1. **Affiliation of research participants in focus group discussions and semi-structured interviews**

Code	Affiliation
FGD1	International justice professionals (judges at the European Court of Justice)
FGD2	Professionals working at international intergovernmental organisations (UN, OSCE, WHO, PB)
FGD3a	Professionals working at EU institutions outside the EU
FGD3b	Professionals working at EU institutions inside the EU
FGD4a	Professionals working at international non-governmental organisations
FGD4b	Professionals working at international non-governmental organisations
I1	Professional working at the European Commission
I2	Professional working at the Foreign Affairs Council
I3	Professional working at the European Bank for Reconstruction and Development
I4	Professional working at United Nations Development Programme agency

The level of experience of the participants ranges from 5–10 years of experience at one or a number of international organisations to more than 25 years of experience at various international organisations.

For quantitative data analysis, descriptive statistics and analysis of variance are used. The qualitative data analysis uses a thematic analysis, using open coding to identify topics and focused coding for an in-depth analysis of the topics.

Results

The research data shows that Latvian diaspora professionals working at international organisations are willing to share their knowledge and experience. The key findings on the **type of contributions provided by diaspora professionals** sheds light on tendencies in cooperation over the last five years, as well as highlights the evaluation of networking and cooperation opportunities by the target group, and the perceived interest on the part of Latvian public administration.

The survey respondents evaluate cooperation opportunities between them and representatives of Latvia (including the state administration, parliament, local governments, courts, military and specialised services, and academic and non-governmental sector) as rather good. According to the answers provided, 23% consider that there is ample scope for cooperation, while 46% consider that there are some opportunities for cooperation. Just 14% evaluate that there are very limited opportunities for cooperation and 5% do not see any opportunities for cooperation. Professionals working at non-governmental organisations, even more often than those working at intergovernmental organisations, are highly enthusiastic about cooperation opportunities with Latvia: 36% see broad opportunities for cooperation.

At the same time, most respondents – 71% – indicate that the Latvian state administration and diplomatic service so far have not shown any interest in them and their knowledge. Only 14% have clearly felt such an interest, while others mentioned sporadic, inconsistent interest in cooperation. A perceived low level of interest on the part of Latvia's public administration was mentioned in interviews and FGDs too.

About half (56%) of respondents have had some cooperation with representatives of Latvia over the last five years (state administration, parliament, municipalities, courts, military and specialised services, academic and non-governmental sector, etc.). However, just 10% have worked closely, while 18% have collaborated sometimes, and 28% on rare occasions. Answers do not show statistically significant differences between those working at intergovernmental organisations and at non-governmental organisations. The FGD participants also see the current cooperation as irregular, ad hoc, depending on the people in office (Latvian ambassadors, specific public administration employees, etc.). Several participants see a positive trend in networking and cooperation patterns – increasing interest from

Latvia and diversifying forms of collaboration, regularity in some sectors, but still based mainly on individual initiative, rather than on a systemic and strategic approach.

An analysis of the types of contribution to Latvia suggests that there is both formal and informal cooperation; however, informal cooperation at the individual level dominates (Table 2). In total, 64% of those who have had any cooperation with Latvia indicate that they informally, privately consulted Latvian representatives and shared experience in their field of competence. Important kinds of knowledge transfer to Latvia are provision of information on the situation, position, customs, plans, etc. of their current country of residence or other states they are familiar with (34%). Knowledge transfer about Latvia to foreign partners is far more limited. Despite diaspora professionals having a good knowledge of both Latvia and the international environment, less than a quarter (23%) have explained or defended the position of Latvia in discussions with representatives of other countries or organisations.

Table 2. **Answers to the question on support that was provided to Latvia (%)**

Provided consultation to representatives of Latvia informally and shared expertise in their field of competence	63.9
Promoted Latvia, its recognition and attractiveness in the international environment	49.2
Helped to establish the necessary contacts in their current home country or in another country	42.6
Provided information about the situation, position, customs, plans, etc. of their host country or other countries they know well	34.4
Invited or recommended Latvian professionals for positions in their organisation	27.9
Led or presented at seminars, lectures, classes for civil servants, specially organised courses, summer schools or other forums	24.6
Explained and argued the position of the Latvian state to representatives of other countries or organisations	23.0
Prepared explanatory opinion articles or gave interviews to Latvian media	19.7
Participated in Latvian government-organised expert/working groups in their area of competence	9.8
Helped a state institution to evaluate a project application or a candidate for a position, or provided an expert opinion	8.2
Prepared explanatory opinion articles or gave interviews to foreign media about Latvia	6.6
Other	14.8

Another significant contribution type is related to networking: social capital and contacts. In total, 43% have helped Latvian representatives to establish the necessary contacts in their current country of residence or in another country, and 28% have invited or recommended Latvian professionals for positions in their organisation. This study reveals that other types of cooperation are far less common.

The key findings **on the role of geographical location for networking at the individual and organisational level** illustrate the scope of organisations and

geographies covered and reveals the most important factors contributing to or hindering cooperation and networking.

Most survey respondents – 90 of them – currently work or have worked in the past 10 years for various institutions of the European Union (most frequently employed by the different Directorates-General of the European Commission). A number of people are working (or have worked) at various EU missions outside Europe, for example, the EU External Action Service delegations, or the EU Common Security and Defence Policy structures and agencies. A total of 24 respondents are currently working for the United Nations in various geographical locations. Overall, 79.9% of respondents are or were employed by an intergovernmental institution, and 22.8% are or were employed by an international non-governmental organisation. Although relatively few respondents noted that they work at an international non-governmental organisation, the range of these organisations is diverse (for example, GlobalGiving; Médecins Sans Frontières; Amnesty International; the Baltic Human Rights Society; Democracy and Human Rights Education in Europe; the Global Fund to Fight AIDS, Tuberculosis and Malaria etc). Since these organisations and their agencies are spread throughout variety of countries, the research participants are familiar with a wide range of geographical regions, and their locations imply the presence of international migrations (Table 3).

Geographical proximity and physical meetings are important for cooperation. First, professionals working in more distant locations (from Latvia) were harder to reach; they were considerably less represented in sources from MFA and ESI.lv. Second, in FGDs and interviews it was recognised that direct face-to-face contacts continue to play an invaluable role in building social networks and professional contacts even in the age of the Internet. Some participants stressed that on-line networking works better if one knows the person and have met him or her before. In addition, geographical proximity allows for denser networking among professionals themselves as well.

An important key finding on factors contributing or hindering cooperation and networking at an institutional level was that it is not geographical location or institutional affiliation itself, but the institutional culture of cooperation and strategic vision of the state or institution regarding such cooperation that matters the most. Research participants repeatedly stressed the absence of a collaborative institutional culture and the absence of a strategic approach to cooperation in Latvia. As a result, cooperation and networking depends primary on individuals involved. What is decisive is a proactive search for cooperation on the part of the diaspora professional, and the specific interests, openness, motivation and strategic vision of the particular employee of the particular public administration body in Latvia, or Latvian embassy. The institutional level cooperation exists primarily where it is formally requested: between Latvia's public administration and delegated representatives of Latvia to EU

institutions (FGD3a, FGD3b). Even those who were supported for particular positions by Latvia later were rarely if ever contacted for their knowledge, expertise or contacts (FGD4b).

Table 3. **Countries where respondents have worked and are working (%)**

Country	Have worked during last 10 years	Are working now
Belgium	37.7	26.2
Latvia	28.7	11.5
Luxembourg	24.6	18.0
France	14.8	9.8
USA	12.3	5.7
Great Britain	12.3	3.3
Germany	11.5	6.6
Denmark	9.0	4.9
Sweden	8.2	4.1
Italy	8.2	3.3
Switzerland	8.2	1.6
Spain	7.4	0.8
The Netherlands	7.4	2.5
Austria	6.6	2.5
Norway	5.7	1.6
Ireland	4.9	0.8
Russia	4.1	2.5
Other countries	42.6	26.2

An additional contributing or hindering factor for cooperation at the individual level is the professional's career development path, i.e., whether his or her career started inside or outside of Latvia. Qualitative data suggest that those who started their professional careers in the public administration sector in Latvia had more frequent and successful networking practices thanks to long-lasting personal contacts with former colleagues in Latvia. Those who were born abroad or received higher education and started their career abroad lacked such contacts and struggled to start cooperation and networking with public administration in Latvia. This contributes to the findings on the role of institutional culture and strategic approach for such cooperation – in the absence of cooperation-oriented institutional culture, individual-level factors play a crucial role in successful networking.

Conclusion

Latvian diaspora professionals are a rich asset for developement – their expertise and contacts cover a broad spectrum of international stakeholders in multiple

countries. The main results of this study show that Latvian diaspora professionals working in international organisations can be valuable partners in promoting the development of Latvia. They are willing to cooperate with Latvian representatives, but the majority of respondents have not so far felt any interest from the Latvian state administration and diplomatic service. In total, 56% of respondents have had some cooperation with Latvia's representatives over the last five years, but for only 10% was this cooperation close and frequent. The main type of support provided was informal.

Important key findings on links between the geographical location, institutional affiliation and networking and cooperation practices at the individual and organisational level suggest that geographical proximity and face-to-face contact still matter in developing networks and cooperation. However, it is not the geographical location itself, but the institutional culture of cooperation and strategic vision of the state or institution for such cooperation that matters the most. Today, cooperation and networking take place primarily at the individual level.

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Kopsavilkums

Rakstā pievērsta uzmanība diasporas iesaistei Latvijas attīstībā, analizējot starptautiskajās organizācijās strādājošo diasporas profesionāļu sadarbības praksi ar Latvijas valsts pārvaldi. Galvenie aplūkotie jautājumi ir: 1) kāda veida atbalstu sniedz diasporas profesionāļi; 2) vai pastāv kāda saikne starp ģeogrāfisko atrašanās vietu, institucionālo piederību un tīklu veidošanu un sadarbības praksi individuālā un organizatoriskā līmenī? Pētījuma konceptuālo ietvaru veido atziņas par augsti kvalificētu speciālistu lomu izaugsmē un valstu dažādo stratēģiju, lai iesaistītu savu diasporu. Līdz šim veiktajos pētījumos norādīts, ka mūsdienu migrācija kļūst arvien kompleksāka, migranti ilgstoši uzturas vairākās valstīs un sadarbojas ar izcelsmes valsti dažādos līmeņos, un iepriekš veidotie migrācijas izpētes instrumenti un skaidrojumi ir pārāk ierobežoti. Pētījuma mērķis ir veicināt mūsdienu migrācijas un diasporas iesaistes kompleksā rakstura izpratni.

Pētījumā tika izmantots paralēlais jauktu metožu pētījuma dizains. Galvenie rezultāti liecina, ka Latvijas diasporas profesionāļi, kas strādā starptautiskajās organizācijās, labprāt sadarbojas ar Latvijas pārstāvjiem. Respondenti pašreizējās sadarbības iespējas vērtē kā diezgan labas, tomēr tikai 56% respondentu pēdējo piecu gadu laikā ir bijusi kāda sadarbība ar Latvijas pārstāvjiem, no tiem tikai 10% – cieša. Nozīmīgākie sadarbību veicinošie un kavējošie faktori ir saistīti nevis ar ģeogrāfisko atrašanās vietu, bet gan ar institucionālās sadarbības kultūru un valsts vai iestādes stratēģisko redzējumu attiecībā uz šādu sadarbību. Mūsdienās sadarbība un tīklojums veidojas galvenokārt individuālajā līmenī – pateicoties

proaktīvai sadarbības iespēju meklēšanai no diasporas profesionāļa puses un ieinteresētībai, atvērtībai, motivācijai un stratēģiskajam redzējumam no Latvijas valsts pārvaldes darbinieka puses.

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SCIENTIFIC BOOKS AND THEIR PLACE IN EARTH SCIENCES – THE PERSPECTIVE OF SCIENTISTS AND ACADEMIA IN LATVIA

GRĀMATAS VIETA ZEMES ZINĀTNĒS – ZINĀTNIEKU UN AKADĒMIĶU REDZĒJUMS

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Abstract

This study explores the dynamics of publishing Earth sciences-related books and other original publications in Latvian over the last 30 years from experts' point of view. Eight experts related to the Faculty of Geography and Earth Sciences of the University of Latvia were interviewed about their motivation for writing monographs, competition from scientific articles, and how book publishing is influenced by cultural values in an age of information technology. Results suggest that it is becoming increasingly difficult to find practical reasons for creating scientific books in Earth sciences due to their pragmatic and cultural connotations. It is implied that publication in Latvian does not contribute to productive science on a global scale. However, many works are still produced with support from international funds and national institutions, often available in bilingually and in both digital and physical formats.

Keywords: *Earth sciences, original publication, scientific books*

Introduction

Over the past 30 years in Latvia slightly more than 100 different original publications have been published in Latvian, related to Earth sciences in general or to a specific sub-field of it. Typically, they have been monographs, textbooks, teaching aids and other scholarly books, especially for the needs of higher education. The publishing activity is most often dominated by the Faculty of Geography and Earth Sciences of the University of Latvia (UL FGES), which, as of its establishment, has been taken over by the University of Latvia Press, as well as the Ministry of Environmental Protection and Regional Development of the Republic of Latvia and its directly subordinate institutions. Other publishers are maintaining only an occasional activity, why it is possible to assert that institutions directly related to experts in the field of Earth sciences typically dominate in the publishing as well (Mūrnieks, 2021).

Although in the last 10 years there have been periods with both a record high and an extremely low number of annual original publications, the general perspective has been skewed, both regarding the general meaning of such publications and their

essence in modern day Earth sciences, as well as in relation to the current criteria and principles of scientific evaluation in Latvia and the world altogether. Both the teaching methods of today's academia and learning style of students today together with other areas that once created the greatest motivation and need for the creation and printing of such scientific books has significantly changed in past few decades.

Focusing directly on the place and importance of scientific books, monographs in modern Earth sciences, eight experts in the creation and review of works with such content were interviewed in 2022. Most of the respondents at that time or at some time in the past held the status of an Earth science specialist also in an official capacity, as experts of the Latvian Science Council (LSC). All respondents are related to the UL and FGES - 6 active, 2 former representatives of the academic staff. Respondents' answers to a series of open-ended questions provided an extended insight into the author's motivation and book-writing process, the connection between the creation of monographs and scientific work and career advancement, the competition of books with the publication of scientific articles today, as well as other current events, angles, and perspectives regarding writing and publishing books in the field of Earth science.

Data and results

The perspective of different generations

Many questions focused on motivation, with arguments both in favour and against the creation of monographs and similar kind of scientific works. Generational differences played a significant role in shaping respondents view on the matter.

"Rather, there are some nostalgic memories of something not done in youth, etc., which is characteristic of the '+55' generation." (Anonymous interviewee, 2022)

"In the past, if you wrote a book, it counted for something! In any case, the monograph was certainly valued more highly than it is today." (Stinkule, 2022)

"We all have, somehow from childhood, the vision that if someone writes a book, then he is the central man in that topic. You can't really say that." (Karušs, 2022)

Monographs vs. journal publications

The defining aspect of this distinction can be found in a comparison of monographs and similar scientific books writing as opposed to the publication of scholarly articles in internationally recognized journals and their different effects on academic careers nowadays. Some respondents share even very critical points of view, but the majority agree, especially on aspects regarding requirements for science evaluation and the need to publish in internationally recognized journals and databases.

"Monographs are the most ineffective way to promote academic achievement. Evaluating a monograph in LSC is the same as a 3-page SCOPUS article." (Anonymous interviewee, 2022)

"It's nice, but the scientific monograph objectively has nothing to do with your researcher's contribution to the development of science." (Karušs, 2022)

"It's imperative to publish there [SCOPUS, ScienceDirect, etc.]. Respectively, a scientist has absolutely no need to publish anything in Latvian. Where else to write a book! There is no point in writing articles in Latvian, because it is not required anywhere, in all academic positions it is only required to write the necessary amount of publication per year." (Stinkulis, 2022)

Respondents recognize the changing value of scholarly books and express varying views on their current necessity. While some still consider book writing as a significant achievement, the modern scientific system has diminished the recognition and impact of books. The diminishment of said academic influence of the monograph for its author is a recognised trend across the academia outside of Latvia as well. This shift in values has even had consequences for highly productive specialists in certain cases (Cordón-García et al., 2019).

"In natural sciences, monographs are not taken into account when awarding the rights of an LSC expert. It is based on publications in the SCOPUS journal. Because of this natural scientist are partially even in disadvantage this way." (Nikodemus, 2022)

"I fell out of this circle of LSC experts, only because there really weren't, let's say, publications in international journals of mine at that time for various reasons. There was one, three were needed, but I had three monographs to refer to. But no!" (Stinkulis, 2022)

Therefore, it can be concluded that the existing requirements in the scientific work environment almost do not fully motivate authors to create new books, but changes can also be observed in other factors that are attributable to the general perception of books in modern science.

"During the last 5-7 years, the value of monographs has dropped tremendously all over the world and it has long ceased to be a matter of prestige. (Anonymous interviewee, 2022)

The dynamics of the digital age pose challenges to produce monographs. Their slow and time-consuming nature is outweighed by the rapid pace of information updates, making hard copies quickly outdated. The high cost of publishing, particularly compared to electronic and open-access resources, further hinders monograph production. Commercial success is rare, especially in niche fields like Earth sciences, highlighting not only the financial, but time and priority management considerations as well. Monographs are increasingly resembling open access scientific journal databases, with authors shouldering the expenses of publication, distribution, and availability.

"The system here is getting closer and closer to Open Access, where the author has to pay all expenses and then the reader has to pay for free, but, for example, in medicine, one such 5-7 pages. the article costs 2800-3500€. It is not difficult to put forward how much a monograph published like this would cost an author." (Anonymous interviewee, 2022)

On the other hand, there is some positive incentives that turns toward ideas of creating a new Earth Science book. Scientific projects in this sense are a good way to solve the problem with funding of book publications.

"There are various scientific projects. In Latvia, about 85% of monographs are like this. This is the specificity of Latvia in Eastern Europe - in other countries, such issuance for project funds is not allowed. Meanwhile, in Latvia even national funds are allocated for the creation of very large monographs, which is proven by the fact that the book "Latvija. Zeme. Daba. Tauta. Valsts" funding was granted by the Latvian Environment Fund, also in connection with Latvia's centenary." (Anonymous interviewee, 2022)

"There were postdoctoral projects in which it was planned to develop a monograph, so it had to be done, and there is no other underlying philosophy here. But realistically if I wrote that monograph as a result in the first place, of course, I actually wanted to write one." (Lamsters, 2022)

Individual personal aspects

This also indicates the preservation of personal desires in the motivation to create such publications. The origin of it tends to even border on sentimentality, inner confidence of what is right regarding personal relationships with other people - former colleagues.

"The professor couldn't gather that group of authors at that time, he didn't succeed. And all the time it dragged along like a debt. […] it can be considered that motivation was as a debt, responsibility towards your colleagues, whom you have helped and promised. A kind of responsibility and solidarity, towards one's performance, towards other scientists." (Nikodemus, 2022)

But it is not just an emotional attraction, driven by nostalgia or past-based preconceptions. In other cases, it manifests itself in the form of cooperation, appreciative encouragement through collegial friendship and respect for colleagues' abilities and achievements.

"We [...] wrote about Latvia's mineral resources with Professor Visvaldis Kuršs. [...] And we felt that it should be collected in some way and presented in the form of a book". (Stinkule, 2022)

"I reviewed the nice book about volcanoes by my colleague Ivars Strautnieks. There could no longer be any question of a refusal. He writes very interestingly, and the book is well thought out. I hope my review also gave him something good." (Stinkulis, 2022)

Language aspects

Some perspectives tend to combine several elements, for example, applied aspects of science, as well as issues of national identity and culture. Often these are concerns about the development and preservation of the Latvian language, which can conflict with a very pragmatic views of what should be the main job of a scientist today.

"In my case, it works because the Latvian language is very close to me, I really want to develop it, but there are enough scientists who do not particularly care about the development of the scientific language of the Latvian language." (Lamsters, 2022)

"We pay too little attention to the cultivation of our language, our scientific terminology and to a certain extent also the culture of writing in Latvian." (Zelčs, 2022)

"I look at my work assignments […] how you can become a world-renowned scientist. Neither of these two concepts will include 'I will now write in Latvian!'. Okay, you can endlessly philosophize about the development of the scientific language in Latvian, [...] I agree, it's all nice from the point of view of national identity. But you will never write a single article in Latvian in your life. Pointless." (Karušs, 2022)

Monographs vs. textbooks

If there is no doubt about the need for publications in scientific journal articles, then the purpose for creating monographs and similar works is not so clear. Respondents most often pointed to the form of textbooks as still existing and stable, sometimes even referring to them as full-fledged, scientific monographs and vice versa.

"Another type of monographs that is essential, for which there is an interest in preparing them, they are textbooks for students, maybe textbooks in the Latvian language, because they are cheaper, more accessible to students, also electronically, etc." (Kļaviņš, 2022)

"[...] let's write so that there is something to learn from, because books are basically teaching tools. And this big green book [collective monograph "Latvija. Zeme, daba, tauta, valsts "] her, basically a teaching tool as well." (Karušs, 2022)

Such insights are also complemented by the comparisons expressed by many respondents about language, which 30 years ago was an essential aspect both in the creation and consumption of original publications. The absolute dominance of Latvian textbooks among all original publications in Earth sciences published in the 1990s is a clear reflection of the situation in the study environment of UL FGES for the same time period. However, others believe that even nowadays the situation has not improved much, because the availability of information, not only from the aspect of language, is just as important as its novelty.

"There was a lack of learning materials in Latvian. In Russian, let's say, about Latvia's geology, minerals, so what is there in Russian (?). That's why we felt the need to write and publish in Latvian." (Karušs, 2022)

"In the field of Earth sciences, especially those related to geology, there are very few books in Latvian. Most of the books were written in Russian during the Soviet era. […]this new generation of students does not read in Russian. But there are no new books. […] If for example the lecturers themselves learned from these ancient books and continue to present the information contained in them, it can be said that they are lying to the students and they should definitely familiarize themselves with the most current scientific literature, including books." (Lamsters, 2022)

"Here I have to be careful and separate two things. The factual material contained in these older publications is of high quality and usable and will continue to be so in the

future. Another thing is that this point of view in many areas 25-30 years ago was based on the theories and knowledge of its time." (Zelčs, 2022)

Geography textbooks are essential teaching resources that influence disciplinary traditions and pedagogy, providing a structured framework for organizing knowledge and concepts. They promote learning, serve as useful resources for educators, researchers, and practitioners, and contribute to the dissemination and preservation of knowledge. Textbooks being seen as scientific monographs emphasizes their enduring nature, supporting academia's interest in producing monographs. They serve as both instructional materials and scholarly works, advancing the field of geography, promoting critical thinking, and underscoring the ongoing relevance of monographs in academia (Sidaway, 2017).

Aspects of digital accessibility

The current demand for new book publications is naturally lower as academic priorities shift and older works are still considered valid by authors. Respondents acknowledge the impact of the digital environment on the significance of physical printing, highlighting the availability of textbooks and student usage trends as relevant factors.

"Another interesting question that is being discussed is whether monographs are needed only in digital format or in a paper version as well? […] it can be said, but that this paper version is necessary for such a monograph, because it allows the monograph to be picked up anywhere and flipped through, and to find what is needed. [...] many people are very sceptical about it, reading such approach, reading a large volume of works on the computer. [...] A very good example is that there are a lot of these e-books, electronic textbooks. Librarians complain that students do not use e-books, but they do use this paper version." (Nikodemus, 2022)

It is not clear whether this already signals a complete decline in scientific book publishing, but other experts recommend adapting to reality as soon as possible, not only with the availability of the monographs digital copy but perhaps making it available only electronically or online.

"You have to switch to the digital environment. The same monograph " Latvija. Zeme, daba, tauta, valsts" could be digitally published and restored over time, just like the National Encyclopedia of Latvia. Students now work in the digital environment. Will they read that book then? In the computer you can enlarging the text, images, searching for keywords. It is much more effective." (Zelčs, 2022)

"I am also happy about the Latvian National Encyclopedia, where I myself write articles. "Enciklopedija.lv", it is of course an electronic resource. It seems to me that this is a good option where scientists can express themselves and preserve the correct terminology of the Latvian language." (Lamsters, 2022)

Academia worldwide has already accepted and acknowledged this trend, therefore endorsing ways to promote the existing publication capacity with more digitally based solutions such as open access digital publication and similar ways to promote creation and accessibility of monographs in the digital era (Elliott, 2015).

Conclusion

The motivation for writing and publishing books in Earth sciences today includes personal interest, collegial cooperation, appreciation for colleagues' abilities, achievements, and concerns about national identity and culture. Monographs have lost prestige in modern science evaluation systems due to increased competition with scientific journal publications. The need for new books has decreased with the rapid pace of science in the digital era, but textbooks remain a reliable source of original publications in Earth sciences. While the transition to digital environments is inevitable, physical printing of scientific works remains important for accessibility and convenience. Scientists generally recognize both their own and other authors' original scientific books as valid sources of factual material.

Kopsavilkums

Rakstā pētīta zinātnisko izdevumu mainīgā loma Zemes zinātnēs pēdējo 30 gadu laikā, raugoties no nozares ekspertu viedokļa. Raksta pamatā ir intervijas ar astoņiem ekspertiem no Latvijas Universitātes Ģeogrāfijas un Zemes zinātņu fakultātes. Rezultāti parāda, ka motivācija rakstīt monogrāfijas ir samazinājusies, jo ir palielinājusies grāmatu konkurence ar zinātniskiem rakstiem, kā arī mainījušies zinātniskā novērtējuma kritēriji. Turklāt monogrāfiju izdošanai ir augstas izmaksas un straujš informācijas atjaunošanas temps, kas rada izaicinājumus to gatavošanai. Neskatoties uz šiem izaicinājumiem, daži eksperti joprojām uzskata monogrāfijas par vērtīgu zināšanu krātuvi un, ka tās sniedz ieguldījuma Zemes zinātņu jomā. Atrast pragmatiskus iemeslus zinātnisku grāmatu tapšanai Zemes zinātnēs mūsdienās kļūst arvien grūtāk, sevišķi pašu zinātnieku un pētnieku skatījumā, kas vienlaikus konfliktē ar grāmatu kā kultūras elementu. Kopumā pētījums liecina, ka zinātnisko grāmatu loma Zemes zinātnēs ir mainīga, un to nākotne var būt atkarīga no izdevumu un to autoru spējas pielāgoties mainīgajām digitālā laikmeta prasībām.

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A CENTURY OF HOSPITALITY IN LATVIA: SPATIAL SUCCESSION

VIESMĪLĪBAS GADSIMTS: TŪRISTU MĪTŅU TELPISKĀS PĀRMAIŅAS LATVIJĀ

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Abstract

Hospitality is both a natural talent that people have and a deliberate and professional act to make the guest feel welcome. In the territory of modern-day Latvia, the accommodation of travellers began in the Middle Ages, with inns later replaced in cities by simpler drive-in homesteads or expensive hotels. Along with the establishment of the Latvian state, national tourism developed, especially in the 1930s, encouraging people to travel around the homeland and creating a network of tourist accommodations in rural areas. World War II and the Soviet occupation completely stopped that development. In this article, the tourist accommodations in Latvia included in publications in the 1930s are spatially mapped and related data are structured in a spatial data basis for further analysis. The development of the tourist accommodation network and spatial continuity up to the present day are studied. The overall network of tourist accommodation reached the scale that had been established in the regions of Latvia until 1940 only in the early 2000s – more than ten years after the restoration of Latvia's independence. Only 3% of tourist accommodations operating today have ensured continuity, operating in the same places where they were a century ago.

Keywords: *hospitality, tourism, history, hotels, GIS*

Introduction

Facts about the oldest inns in Latvia can be found in documents from the 13th and 14th centuries (Teivens, 1995). The importance of the inn, where travellers could eat and spend the night (there was a separate "German part" for the wealthiest guests, and lodgings for farmers), and rest their horses, began to disappear in the 1860s, when the railway network was built (in 1860, the Ostrov-Dinaburg section of the St. Petersburg-Warsaw railway; and four other railway routes in the following decades) (Eiduks, 2022). The importance of inns as a component of the manor landscape and gathering places for local people disappeared at the beginning of the 20th century when the state alcohol monopoly was introduced in Russia (Teivens, 1995). The inns' impressive stone buildings – or the ruins of them, difficult to find other uses for – can still be seen in many places on the sides of Latvian roads. Only at some of the more than 4,000 inns throughout Latvia was tourist accommodation set up, with developers generally seeking more cosier and less investment-intensive alternatives.

From the 17th century, alongside inns, which were mainly intended for farmers who were bringing farm products to towns, private hotels appeared in the larger cities, over time replacing other types of accommodation. Among the oldest were the Madame Hoyer's Guest House in Liepāja (a restored 17th–19th century interior museum has been set up inside), the Petersburg Hotel in Riga (which operated from 1763 until its nationalisation in 1941; the rebuilt and restored building has survived) (Caune, 1994), Cēra hotel in Jelgava (built in 1825, but destroyed along with the historical Old Town of Jelgava in 1944 when the Soviet and German armies were fighting for the city (Jelgavas albums, 2017). In the 18th century, following lifestyle trends among the European aristocracy, the first resorts developed in Bārbele, Baldone, and Ķemeri, and along with medical treatment, hospitality services were also offered there. At the end of the 19th century, the development of Riga as an important industrial and commercial centre of Russia contributed to the increase in the number of arrivals and travellers. They could stay in hotels or furnished rooms for rent (Caune, 2015). A Riga guidebook from the beginning of the 20th century mentions seven hotels in the city centre and the same number in its suburbs (Ilustrēts vadons pa Rīgu, 1910), mostly near the Dvinska railway station. The finest from the city hotels, high-class Hotel de Rome belonged to Latvian landlord, construction contractor and patron Kristaps Morberg (the house built in 1878 was destroyed in the autumn of 1944, but soon after World War II, between 1948 and 1954, a larger hotel, Rīga, was built in its place (Caune, 1994), which is now Grand Hotel Kempinski Riga). The building of the Bellevue hotel, which now operates as the Opera Hotel (Caune, 2018), has also survived to this day. Metropole is the only hotel that kept its original name throughout the whole century (Caune, 1994).

Researcher Maija Rozīte has summarised (1999) the rapid growth of the hospitality industry in the cities, especially in Riga, in the 1920s, stating that around 60% of hotels (and 70% of taverns) in Riga were founded in the period from 1926 to 1935, and that at that time ~32% of hospitality enterprises and ~43% of employees in this sector were concentrated in Riga: a total of 576 hotels, furnished rooms and B&Bs or similar establishments for guests in the city (Pirmā tirdzniecības skaitīšana 1935). The authors of the above-mentioned publication evaluated the activity of hospitality companies in 1935, commenting that:

"There are not a lot of hotels as independent companies here, and in the provinces, they are often combined with catering companies and clubs in terms of staff, and in terms of facilities, they sometimes do not differ from simple drive-in places." (Pirmā tirdzniecības skaitīšana, 1935)

To highlight specific hotel amenities in the published list of accommodations in 1930s, the presence of the following elements was counted: running water and/or a

telephone in rooms, hotel bath or room with bath, restaurant and garage (Sabiedrisko lietu ministrijas Turisma nodaļa, 1939). In 1930, the number of guests in Riga hotels exceeded 100,000 for the first time, including 1.2% of foreign guests. This was followed by an economic recession, with the number of overnight stays falling by two thirds, but when the number of guests in Riga's tourist accommodation again exceeded 100,000 (in 1937), the share of foreigners (from Lithuania, Germany, Sweden and Estonia) reached 17% (recalculated after a summary of statistics by Rozite (1999)). Promoting incoming tourism became one of the state's strategic tasks; in parallel, great emphasis was placed on the development of a network of tourist accommodations in rural regions to promote tourism as a broad movement of the entire nation. Taking into account that the hospitality industry across the whole of Latvia developed very rapidly in the following years, and this was interrupted by World War II and the subsequent Soviet occupation, the research question is relevant: what is the continuity of the accommodation network established in the pre-war years compared to what it is today?

Data and methods

Starting from 1932, the Emigration and Tourism Department of the Ministry of the Interior of Latvia began to issue a systematised list of tourist accommodations, which was subsequently published regularly every year before the summer season. These lists (of which there were nine in total) were published until 1940. The authors of the study have digitised the content published in them, clarifying the locations for tourist accommodations. Many did not have exact addresses or no longer exist today. These places of tourist accommodation were searched for and compared after century-old settlement maps of Latvia, lists of telephone subscribers, or various printed materials issued during the analysed period (tourism brochures, maps, guides etc.). Data on the founding years of tourist accommodations, and their owners, were obtained from there and their condition today was analysed by actual maps and a list of accommodations today. To analyse the interrelationships of their operation, the newly created database also includes other related data in a structured manner (on the capacity of tourist accommodation, seasonality, supply, prices, demand, etc.). Periodicals from the relevant period and a collection of original postcards and photographs are used for a deeper understanding of the context. The historical data were merged into the ArcGIS database of contemporary tourist accommodation (created by the authors) to analyse spatial and temporal relationships using clustering, hotspots, density and other analytical methods. The large amount of data on tourist accommodations collected in a structured way provides an opportunity for use for other research in the field in the future.

Results: Creation of a network of rural tourist accommodations covering Latvia in the 1930s

The first edition of Latvian tourist accommodation from 1932 lists 58 places where travellers were provided with accommodation services in rural areas and altogether 2,100 overnight stays were registered there (Iekšlietu ministrijas Emigrācijas un tūrisma nodaļa, 1933). After a year, the number of overnight stays had quadrupled (to more than 8,000), and the network of tourist accommodations in rural areas had also increased to 168 (Iekšlietu ministrijas Emigrācijas un tūrisma nodaļa, 1934).

"In the matter of lodgings, the tourist accommodation organised by the state tourism office provides a great relief, where in certain rural farms, a traveller from the homeland can get hospitable shelter and food suitable for rural conditions for a conditional fee. (...) In areas where there is not yet any tourist accommodation, you should try to spend the night on farms, showing them your passport or membership card of the tourist society. (...) By all means pay for lodging and food, even if the host waives the fee. Don't ask the owner to give you his bed: there are often nicer beds in a hay barn, as long as there is a blanket on the pillow." (Vanags, 1934a)

To promote local tourism, travellers were invited to submit the addresses of hospitable farms that were not included in the lists of settlements, as well as to encourage the hosts to apply themselves. The Department of Emigration and Tourism at the Latvia's Ministry of the Interior expressed great determination to achieve the set goal:

"Thousands of visitors to the homeland, and a well-established network of tourist settlements and tourism should become a matter for the whole nation." (Tūristu apmešanās vietas, 1933)

Domestic tourism was promoted both with the help of so-called "propaganda materials", and was stimulated by a reduction of the railway tariff for groups of tourists (for >10 persons by 25–50%, determined by the tourism office of the Ministry of the Interior (Iekšlietu ministrijas Emigrācijas un tūrisma nodaļa, 1933)). The network of tourist accommodations continued to grow rapidly, and by the summer of 1940, 1035 accommodations outside of Riga had already joined (see Figure 1), with rural tourist accommodations at double the number of hotels and B&Bs in the regions. Some ~20% had stopped entrepreneurial activities after a few years of operation; however, the active expansion of tourist accommodation continued in 1939, and calls for farms to get involved were published as late as 1940, shortly before occupation by the Soviet army and the loss of national independence.

The involvement of tourist accommodations in the service market was effective and the network of accommodations created in less than one decade covered the whole of Latvia relatively evenly. Their location and demand were largely determined by two most important factors: accessibility, which was based mainly on the relatively well-established railway network (but also by steamships on the seacoast or by the big rivers, and less often by buses, mail cars). The longest distance indicated to a railway station was 38 kilometres (from Tulemuiža, Kaunata parish to Rēzekne station), and often varied around ten kilometres; there was an assumption that travellers were used to walking a lot. It was regularly offered to accompany travellers to the station with a horse-drawn carriage, which was more expensive than the overnight service itself. A higher concentration of tourist accommodations formed at popular tourist destinations that developed at the end of the 19th century (the Daugava River canyon near Koknese and Pļaviņas; the Gauja River Valley; in the vicinity of Gaiziņkalns, the highest hill of Latvia, etc.). The majority of tourist accommodation (55%) was open all year round, a third (33%) operated only in summer (including basically all participating schools), and the rest for a longer season but not all year round.

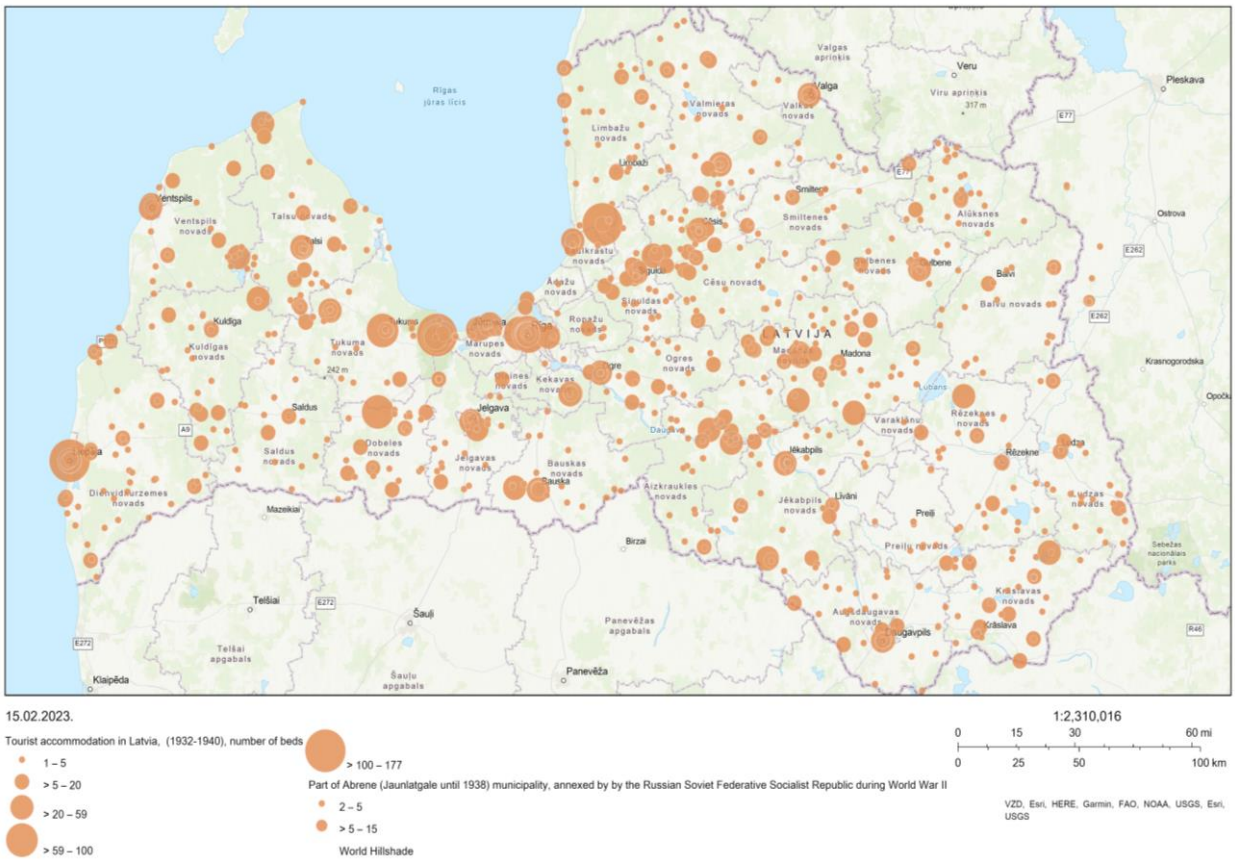

Figure 1. **Tourist accommodations across Latvia and their capacity in the period from 1932 to 1940** (authors' figure based on aggregated data from historical publications, 2023; spatial data based on Arcgis.com, VZD and Esri, 2023)

Most of the tourist accommodations were privately managed (72.6%), and owned by either legal enterprises or farms. Almost a fifth (17.6%) of all tourist accommodation was organised by local municipalities, offering tourists mainly schools (142 out of 182 tourist accommodations). A small proportion (5.1%) was under the control of non-governmental organisations (cultural associations, farmers' associations, etc.) and state institutions (4.7%). Prices remained similar, regardless of the sector, although they were generally low. For example, there was an opportunity to spend the night at the architecturally excellent Rundāle Palace, which had been taken over by the municipality, and where a six-grade elementary school was located, in beds for 0.60 lats, which was only three times more expensive than the entrance ticket for a visit to the palace. In the first year of operation (1939) it was used by 365 guests, and after a year the overnight fee was raised to 0.75 lats, while an overnight stay without bed linen remained the same price as a visitors' ticket (Sabiedrisko lietu ministrijas Tūrisma nodaļa, 1940).

The representatives of the responsible state institution included the price of the accommodation service in the application to register as tourist accommodation, which had to be set within the range of 0.50 to 0.70 lats including bed linen, or 0.20 lats for a simpler overnight stay in a hay barn (or on a straw mattress). The price for meals was not set. On average, lunch cost the same as the rate for nightly accommodation or often more. This price was 3–4 times lower than those charged for the same services at hotels in higher comfort conditions (in the most expensive Riga hotels the difference was as much as 10 and 20 times higher). Rural tourist accommodation was not subject to the bathing tax (1–5 lats) unlike resort hotels, and a registration fee (0.20 lats) or gratuity (about 10% of the service) was not required either. In addition to meals, price offers of tourist accommodations also include as standard indication of the cost of a litre of milk. During the registration of tourist accommodations, it was required to indicate the competitive advantages of the farm used, for positioning purposes. Among those farms that had indicated some special advantages, apart from traffic facilities and significant tourist sites, the most frequently mentioned locations and characteristics were: being near a lake or river (half of the total), forest (a third), aesthetic landscape or terrain (27%), boating and fishing (26%), swimming (17%), and skiing (7%). The sea was mentioned as often (rarely) as catching crayfish or hunting (~5%). Among historical sites, ancestral hillforts were often highlighted. Trained guides could be requested in larger cities or at popular tourist spots. Certain amenities were also emphasised (running water, exclusively vegetarian food, car for trips, radio, availability of Riga (or foreign) newspapers, extensive library, etc.). In some cases, the peculiarities of local identity (e.g. Livs – a Balto-Finnic people indigenous to northern Latvia), places of residence of "significant" politicians, etc. were highlighted. Especially in the second half of the 1930s, outstanding benchmarking farms were highlighted, creating ideal examples, including rural political ideology:

"Tourist accommodations in rural areas are not only placed to stay, but they are also the homes of Latvian farmers, where travellers around the homeland learn to know the life and work of their people." (Vanags, 1936)

Tourist accommodations were mostly small, usually with only two beds. However, the lack of space or furnished rooms was replaced by sleeping in haysheds, often on pre-prepared straw/hay bags. This was practiced by more than half of all tourist accommodations, including most of the participating schools. This description of a 1933 excursion to the primeval valley of Gauja near Cēsis town illustrates how travellers (see Figure 2) were received at the tourist accommodation.

Figure 2. **A group of travellers consisting of 40 people at the Vērpji tourist accommodation after an overnight stay in a hayshed. 9 July 1933** (photo from Tālis Pumpuriņš's personal archive)

"On July 8, on a hot afternoon, the tourists of our association went on an excursion to the pearl of Vidzeme — Cēsis. [...] We arrived at Vērpji farm very tired and were surprised by the hospitality with which we were welcomed there. The barn furnished for our lodgings was decorated with maple branches, the floor was strewn with cut sweet-flags, and two bouquets of rye flowers were placed on a white-covered table. While supper was being eaten, night came on, but the moon, rising like a great red disc over the horizon, soon silvered the downs and fields with its mysterious light. In such conditions, few sought a night's rest. Most of them were wandering around the countryside, swimming, or sitting in groups chatting and enjoying the warm summer

night. On the second morning already from 4 a.m. life began again in our camp. After having breakfast and taking pictures with the hospitable hosts, we went to Raiskums Lake." (Ozols, 1933)

To maintain quality, travellers were always reminded in the published accommodation listings that reports of unfriendly and unsuitable tourist accommodation should be submitted in writing to the Tourism Department (Iekšlietu ministrijas Emigrācijas un tūrisma nodaļa, 1933).

In Latvia, the development of national tourism was especially promoted after the coup d'état by Kārlis Ulmanis, when the tasks of the closed nongovernmental tourist associations were taken over by the Tourism Office under the Ministry of Public Affairs (Olšteina, 2008). The ideology of the authoritarian regime of Ulmanis, to which every sphere of the economy and life was subject (Stranga, 2020), was based on the views of the "leader" and was embodied in three propaganda-enunciated concepts: leadership, unity, and nationalism (Feldmanis, 2005). An especially emphasised nationalism or *Latvianism* became the core of tourism ideology (Olšteina, 2008), the main goals of which were formulated by the Latvian tourism ideologue Kārlis Vanags:

"1) the search for the historical, victorious, working Latvia, 2) the understanding of the Latvian home, Latvian nature, the Latvian heart, and the Latvian people, 3) care for the mental and physical health of the people." (Olšteina, 2008, based on Vanags, 1934b)

During Ulmanis's rule, the development of local tourism continued, encouraging people to get to know their land and people, contrasting tourism with the usual idle recreation of the "majority of society":

"In the monotonous roar of a car engine driving along smooth highways and then in a neatly decorated hotel room. But such a traveller does not hear the voice of the people; they do not feel the rustle of the forest in a printed and delightfully described travel guide; the noise of the seaside promenade, where gossip and fashion criticism are already blaring with the sounds of the Viennese waltz, the unforgettable sound of the sea disappears. ***So, travel like a tourist!*** *During the tourist journey, everyone also improves, strengthens and tempers their health, gets a pleasant rest for their nerves and changes in living conditions, gets to know the beauty of their homeland, the life of their people, educating themselves, because what you see and experience on a trip teaches you more than a few good thick books!"* (Vanags, 1934b)

With the development of travel as a popular movement, simple-style accommodation became essential. In the popularised instructions for tourists (Vanags, 1936), both the advantage of summer lodgings in the open air and the rules for visiting tourist accommodations on farms are highlighted, with calls for understanding and modesty. In this context, one cannot fail to notice the presentation of the hotel as an unfriendly institution for domestic travellers, visited only by older people and those who like comfort. Hotels consider their services only as a commodity to get more profit and tips from the traveller according to Vanags (1936), but the "real tourist" travelling around the homeland can't afford it. Hotel owners were often wealthy. The leading political elite, represented nationally and social-democratically, did not support the rich (often foreign) entrepreneurs, which had been a trend since the 1920s. In order to secure the rural electorate in the competitive conditions of parliamentary democracy, nationalists idealised the "green" Latvian countryside, at the same time denigrating Riga, where social democrats were in the majority (Lipša, 2011). The hoteliers complained that their guests were looked upon as people "who can be robbed of their civil liberties, who can be shaken and inspected at any moment, who can be dictated to about what and when they can eat and drink and when they have to sit at an empty table, or do you need to go to sleep too…" and that it was precisely the laws created by the social democrats that significantly limited their activities (Viesnīcas dzīve, 1925). This was supplemented by the actions of the Riga City Anti-Alcoholic Commission, which had plans to close inns, taverns, teahouses and second-class restaurants (Viesnīcas dzīve, 1925). Consequently, the activity of neither political rival was beneficial to the wealthy hoteliers. It was additionally influenced by the state's involvement in this sector at the end of the 1930s, with the efforts of the authoritarian regime of Ulmanis to create a "network" of hotels (Krastiņš, 1992) with state funds. The management model was not clear, as plans were already in implementation to construct hotels financed by the Latvian Credit Bank in the towns of Jelgava, Cēsis, Rēzekne, Rūjiena and Valmiera (Rīts, 1939). Their necessity was justified by the creation of Latvia as a "tourism country", emphasising the convenience, cheapness and quality of the new hotels (Tūrisma Apskats, 1939), as well as by the need to create an opportunity for Latvians to enjoy "all the necessary amenities" while travelling, thinking less about international guests in the meantime and assuming that their operation would be profitable (LTA, 1939). Stranga (2020) described how in the Latvian national economy during the authoritarian regime of Ulmanis, the activity of state-owned enterprises was strongly characterised by weak financial results. The coup of Ulmanis coincided with the development of the national economy after the global economic crisis, and Latvia's economy at that time was far from the principles of the liberal market. By rationalising, protecting the local market, and subsidising agriculture, the Latvianisation of the economy – or the reduction of the share of minorities in various areas of the economy – was intensified by government, including

through administrative means and, with the help of Latvian Credit Bank, even expropriating or nationalising companies (Stranga, 2020). The long-established agrarian reform brought political and social success, but in terms of efficiency (many small farms with limited opportunities to modernise them), agriculture lagged far behind other sectors (Stranga, 2020). Perhaps this was one of the reasons for farm owners to seek the additional income offered by rural tourism development.

The network of tourist accommodations in the regions of Latvia after the restoration of the country's independence.

Comparing the network of tourist accommodation as it was created in the 1930s with today (see Figure 3), several significant differences emerge. Nowadays, Riga has a much greater advantage in terms of the number and capacity of tourist accommodations. A cluster analysis of the spatial arrangement confirms that the network of tourist accommodation up to 1940 was much more evenly distributed over the entire territory of the country.

There is a significant difference in the locations of the network of tourist accommodation and centres of accommodation density almost a century later. Today, the previously particularly large concentration of tourist accommodations around Koknese-Pļaviņas, Gaiziņkalns Hill, Jelgava and Talsi have become much less pronounced. Completely different areas of tourist accommodation density are coming into force (see Figure 4): Liepāja, Ventspils, Kuldīga, Jūrmala, Pāvilosta and Saulkrasti. The area of concentration of tourist accommodation in Gauja National Park and the vicinity of Rīga has increased significantly. There is a shift in the location of tourist accommodation from positioning themselves close to the railway network (until 1940) to the network of major roads (in 2023). The coast of the Baltic Sea, which was very insignificant (and much more difficult to access) a century ago, has become very competitive and highly in-demand. There is a much more pronounced concentration of tourist accommodation around the largest cities.

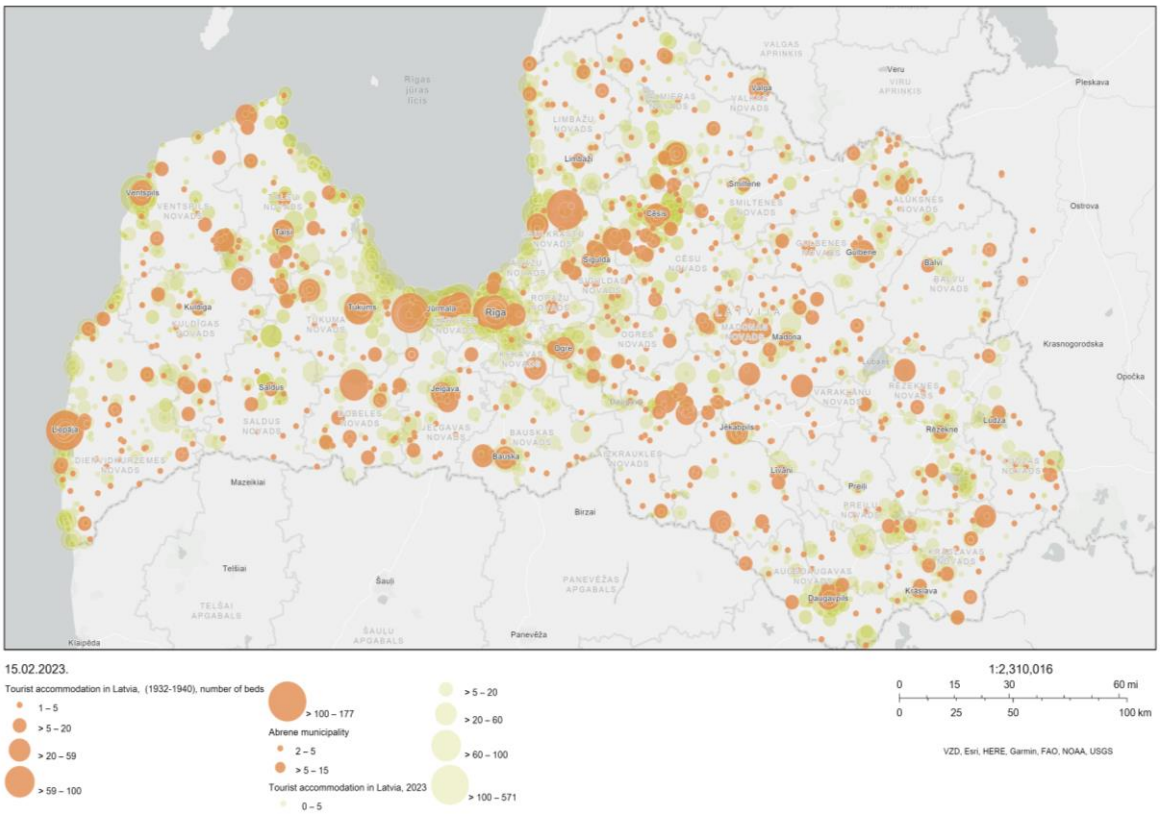

Figure 3. **Tourist accommodations in Latvia and their capacity: comparison between 1940 and 2023.** (authors' figure based on aggregated data from historical publications and contemporary booking platforms, 2023; spatial data based on Arcgis.com, VZD and Esri, 2023)

After World War II, the network of rural tourist accommodations ceased to exist. Private business was no longer possible in occupied Latvia. To adapt the nationalised hotels to the planned economy system, the Communist Administration Hotel Trust was established, sharply separating the services intended for foreign guests and political leaders from those available to "ordinary" tourists (Strautmanis and Ulme, 2019). Although planned tourist resorts or recreational complexes of various sizes or so-called "Finnish saunas" were established in the most scenic rural areas, their activities no longer obeyed freely available commercial demand. The network of rural tourism accommodations was created anew after the restoration of Latvia's independence in 1991. Publication of the collected lists of tourist accommodation was taken over by the non-governmental organisation Latvian Rural Tourism Association Country Holidays, founded in 1993. Their first publication symbolically resumed with a similar number of tourist accommodations (60) (Smalinskis, 2021) as there had been in the first edition of the 1932 compilation (58). However, another ten years had to pass before, at the beginning of the 2000s, the number of tourist accommodations exceeded what had been achieved before 1940.

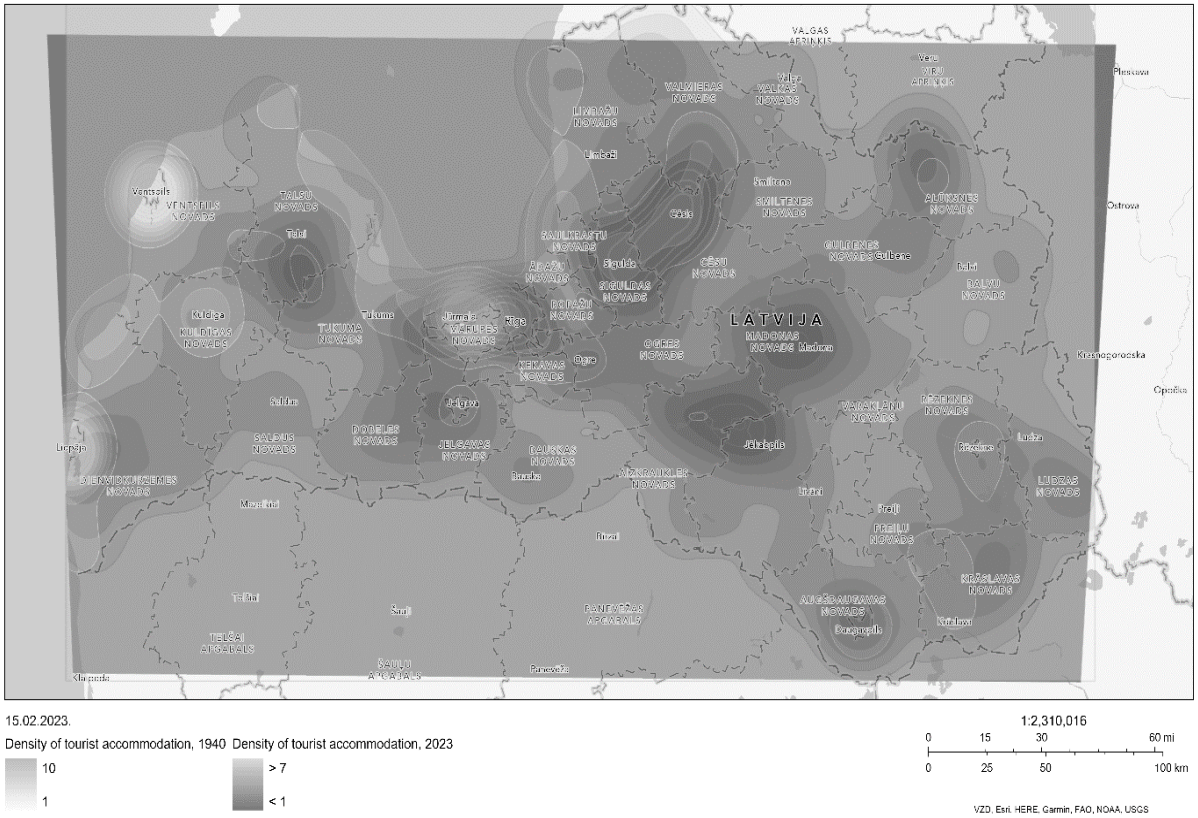

Figure 4. **Network of tourist accommodation in Latvia: comparison by density in 1940 and 2023 (excluding Riga)** (authors' figure based on aggregated data from historical publications and contemporary booking platforms, 2023; spatial data based on Arcgis.com, VZD and Esri, 2023)

Discussion and Conclusions

In order to be able to cover the network of tourist accommodation in Latvia in its entirety, not all furnished rooms, which were certainly available in larger numbers in large cities like Riga, are not included. On the other hand, the 2023 data used for comparison includes guest apartments that are offered to tourists through the Airbnb platform. This partly highlights the dominance of large cities in the tourism accommodation density data. It should be noted that real demand data has not been analysed here either. Although the total number of registered overnight guests was published every year until 1940, their distribution by specific accommodations was too fragmented. Therefore, the supply side is more represented in the 2023 data, but not all tourist accommodations in the 1930s can be considered heavily visited. Today's tourist accommodation market should be perceived as being much more geared toward real market demand.

In concluding, this study demonstrated the beginnings of the development of the Latvian hospitality market in rural areas, indicating the scale of spatial and temporal differences between different places. Significant changes in travel habits, perception of values, and hospitality service prices during the last century are also

pointed out. Accommodation sector have become up to ten times more expensive than catering services nowadays. The development of the hospitality industry in the 1930s was highly politicised; local governments and state institutions were also actively involved in the creation of a network of rural tourist accommodations. The development of the hospitality industry was also not uniformly harmonious, with disagreements between wealthier hotel owners and the responsible state institutions regarding their visions of how to develop "mass tourism" or a network of state-run hotels.

However, it must be concluded that the rates of involvement of the number of rural farms as tourist accommodations were high and achieved effectively until World War II and the Soviet occupation, when in the rural farm segment, it collapsed entirely. After the restoration of Latvia's independence in 1991, more than ten years had to pass for the establishment of a network of rural tourist accommodations to a similar scale as it was at the beginning of 1940. In the location of residences in rural regions, the proximity of water bodies and scenery are still important location factors, even though there has been a shift from positioning themselves close to the denser railway network in the 1930s to a greater connection with national and regional highways today. Assuming that a denser network of tourist accommodations has formed in the most in-demand places, then at the level of tourist destinations continuity has been preserved to a much greater degree, and several places are just as popular even after a century. However, at the level of the specific farms that were involved in hospitality until 1940, only ~3% continue to operate today, indicating the extent to which the economic development of the hospitality sector had been interrupted for at least 60 years.

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Kopsavilkums

Līdz ar Latvijas valsts izveidi attīstījās iekšzemes tūrisms, mērķtiecīgi veidojot tūristu mītņu tīklu lauku apvidos, ko pārtrauca Otrais pasaules karš un padomju okupācija. Šajā rakstā, izmantojot GIS datu analīzi, analizēta viesmīlības uzņēmumu tīkla telpiskā pēctecība pagājušā gadsimta laikā. Šādā mērogā kopējais tūristu mītņu tīkls, kāds Latvijas lauku apvidos bija izveidojies līdz 1940. gadam, atkal tika sasniegts tikai 2000. gadu sākumā. Tikai 3 % mūsdienās darbojošos tūristu mītņu ir nodrošinājušas nepārtrauktību, darbojoties tajās pašās mājās, kur tās bija pirms gadsimta. Savukārt izteiktāks pēctecīgums identificējams vietējo tūrisma galamērķu līmenī, vērtējot pēc tūristu mītņu blīvuma (piedāvājuma), lai arī tur gadsimta laikā notikušas ievērojamas pārmaiņas.

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INBOUND TOURISM IN LATVIA DURING THREE DECADES OF INDEPENDENCE: DEVELOPMENT PHASES, KEY DRIVERS AND CHALLENGES

IENĀKOŠAIS TŪRISMS LATVIJĀ: ATTĪSTĪBA UN TO NOTEICOŠIE FAKTORI PIRMAJĀS TRĪS DESMITGADĒS PĒC NEATKARĪBAS ATGŪŠANAS

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Abstract

This article reviews the development of inbound tourism in Latvia over the three decades following the restoration of its independence following occupation by the USSR. The analysis uses the tourist area life cycle framework, which describes tourism development and factors during different development stages. The first stage can be described as the post 1991–2000 "economic pivot and transition phase", where the orientation of the tourism economy shifted from east to west. Secondly, a "tourism boom phase" occurred between 2001–2009, bookended by the commencement of the EU transition process and concluding with the global financial crisis in Europe. Thirdly, a "managed growth phase" was characterised by a period of steady growth of the tourism economy. This phase included the demand surge associated with Riga becoming the European Union's "capital of culture" and greater integration with external industry trends, concluding with the COVID-19 crisis of 2020. The article describes the crucial developmental factors and challenges in each development phase of post-independence inbound tourism.

Keywords: *tourist area life cycle, tourism development, inbound tourism, Latvia*

Introduction

Tourism is an economic sector that reflects the socio-economic processes, achievements and dynamics of the country and the wider Baltic region. In 2019, Latvia's tourism exports reached 1.002 billion euros (5.1% of the country's total exports), and the total contribution of travel and tourism to the national GDP reached 7.6% (WTTC, 2021). Furthermore, Latvia can be regarded as one of the great success stories within the EU, with the number of foreign tourists tripling since 1997, reaching 1.9 million in 2019, while the number of overnight stays more than doubled, reaching 8.26 million (CSB, 2020).

Examining past tourism development and identifying the factors influencing it can help with planning further tourism development, assessing risks and choosing appropriate future strategies.

Prior to 1991, Central and Eastern Europe, including the Baltic region, had been less explored by researchers due to limited access to these countries and data (Hughes & Allan, 2009). The most common issues concerning the development of Baltic tourism are reflected in the context of the collapse of the USSR and the related transition in Central and Eastern Europe as a whole (Hall, 2000; Hall, 2008; Hall, 2017; Niewiadomski, 2018; Light et al., 2020), and accession to the EU (Hughes & Allen, 2009). Even though similarities exist between these countries, each had its own transition and development path (Jaakson, 1998).

The periodisation of tourism development in Latvia since restoration of its independence has been conducted according to historical characteristics, with the first stage being the period after the restoration of independence in 1991 (Rozīte, 1999; Atstāja et al., 2011). Highlighting the significant differences in tourism development, Upchurch and Teivane (2000) consider it the formative (i.e., introductory) stage of development.

The paper aims to identify the phase of the life cycle that inbound tourism in Latvia is in and the key factors that have determined both the development and the transition to a new stage of development.

Data and methods

This study is based on the tourist area life cycle (TALC) concept introduced and developed by Richard Butler in 1980 (Butler, 2006), which identifies six phases of development: the *exploration, involvement, development, consolidation, stagnation* and *decline* or *rejuvenation* stage. The model includes an S-shaped life cycle curve, with time on the x-axis and the number of tourists on the y-axis. The model uses different criteria, such as tourist arrivals, description of the historical development of the place, accommodation dynamics, role of government/policy, tourism demand and products. The identification of phases is based on the standard deviation of growth in the specific data available for a particular place. It is suggested to use quantitative data (number of tourists, tourism share in GDP, accommodation capacity) to identify the sequence of TALC stages and qualitative indicators (Control – DMO/Government; changes in the macro environment; changes in tourism products, transport, accommodation, restaurants, market segments, infrastructure, etc.), which in turn allow a time axis to be delineated, and turning points to be identified (Gore et al., 2022). The TALC has also been applied to characterise tourism development in different countries (Butler, 2006; Kristjánsdóttir, 2016).

In order to describe the development of tourism in the context of inbound tourism (Figure 1), official statistical data have been used in a life cycle model: the

number of overnight travellers by year from 1997 to 2019. Although the time frame of this study starts in 1991, the life cycle is only mapped from 1997, since this is when comparative data are available. In addition, secondary data (official tourism statistics: number of nights in accommodation, total revenue, mode of transport used, etc.) have been used to identify and describe the development phases as well as content analysis (newspapers) and expert interviews conducted by the researchers.

Results

The destination life cycle has been analysed from 1991, which we consider the beginning of a new life cycle, as political and economic processes led to a complete change in the tourism sector. Overall, three broad developmental phases of Latvian inbound tourism development were identified (Figure 1): (1) the post 1991–2000 "economic pivot and transition phase"; (2) a "tourism boom or intensive development phase" from 2001–2009; (3) the "managed growth phase" (2010–2019). The first phase corresponds to the involvement phase in Butler's (1980) life cycle model, while the second and third phases of inbound tourism development correspond to the development phase.

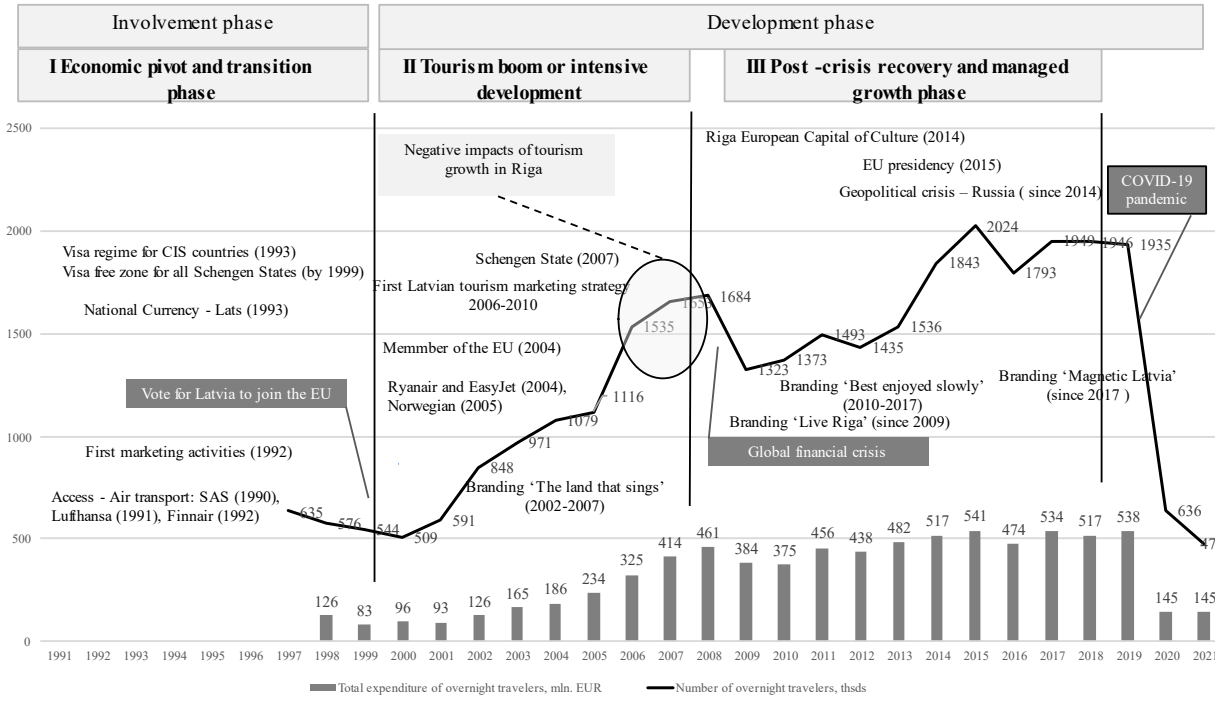

Figure 1. **The destination life cycle: inbound tourism to Latvia (**authors' figure based on CSB 2022)

Economic pivot and transition phase (1991–2000)

This phase of post-restoration-of-independence tourism development commenced in 1991 and culminated in the December 1999 vote in Helsinki for Latvia

to join the European Union. After regaining independence, tourism was considered an opportunity for economic development and transformation, as in other Central and Eastern European countries (Niewiadomski, 2018).

However, the industry faced development barriers, including disputes surrounding the recovery of nationalised property, a lack of local capital and foreign investment, derelict and inadequate infrastructure for development, insufficient local entrepreneurial spirit and business culture, and the overall non-conformity of the labour force with free-market requirements (Jaakson, 1998). Although tourism was defined as a priority, the Latvian government did not invest significantly in the industry, and tourism development was driven predominantly by a rapidly growing private sector (Light et al., 2020).

One of the most critical features of this transition period was the diversion of tourist flows from eastern to western markets. In Latvia, the number of nights spent by foreign travellers in accommodation establishments dropped and reached a negative growth rate of -1.4% over the period (CSB, 2022). In addition, tourist flows from former Soviet republics, mainly Russia, began to decline due to the introduction of a visa regime with these countries (1993), and the high post-independence national currency exchange rate made Latvia an expensive and even more unattractive destination (Van der Steina, 2021). The introduction of visa regimes with former Soviet countries had a negative impact on tourist flows from the East, but the introduction of visa-free regimes with Western countries boosted flows from the West. In 1993, visa-free travel existed with five countries, while by 1999 visa-free travel existed with 31, including all Schengen member states.

In 1991, inbound travel agencies served 47,400 tourists from CIS countries, but in 1995 only 456. In contrast, the number of EU tourists increased from 18,400 to 27,100 (CSB, 2022); however, the Western market could not compensate for the loss of Eastern tourist flows.

Table 1. **Investments in hotel and restaurant business 1994–2000. Lats[1], million**
(data from CSB, 2001)

USA	30.97	Russia	1.03
Austria	10.50	United Kingdom	0.92
Sweden	1.88	Denmark	0.72
Germany	1.33		

After the initial interest generated by increased accessibility into what was perceived as a “new travel option” in Northern Europe, Western tourists arriving at Riga Airport faced sub-standard tourism offers and infrastructure, and unreasonably high prices caused by an insufficient supply of accommodation and unfair business

[1] Exchange rate 1 EUR – 0.702804 LVL (Lats)

practices that prioritised short-term economic gain. It was only from 1996 onwards that a supply of mid-range accommodation for Western leisure tourists was developed, driven by foreign investment in the accommodation sector (Table 1). Investment increased by 84 times from 1992 to 1999 (CSB, 2022).

Although the supply of tourism products gradually became more attractive to leisure travellers, business tourism still dominated the tourism economy, accounting for 45% of arrivals in 2000, with only 18% of foreign visitors motivated by leisure (CSB, 2022).

Destination access was one of the critical factors driving Western tourist arrivals. In 1992, almost half of foreign visitors to Riga arrived by cruise ship (Rudušs, 1993), although the airlines SAS (1990), Lufthansa (1991) and Finnair (1992) had started regular flights to Riga. By 2000, inbound tourism was dominated by road transport, accounting for 81% of foreign tourists, mainly from neighbouring Estonia and Lithuania (CSB, 2022).

In terms of the inbound tourism management sector in 1993, approximately 40 travel agencies initially (until 1996) handled Latvian diaspora tourists (Zeltiņa, 2020) from the USA, Germany, Sweden and the UK. The combined share of tourists from these four countries (the USA, Germany, the UK, Sweden) in the total number served by tourism companies reached 19% in 1991, 43% in 1993 (when the Latvian Folk Song Festival was held) and 56% in 1994 (CSB, 2022).

In this development phase, the Western–based diaspora played an essential role by investing directly in the hospitality sector. From 1992–2005, out of 147 companies with Western-based diaspora capital, 41 (28%) were engaged in trade, hotel and restaurant business (Dimante, 2007). In addition, donations (estimated at around 14.821 million lats from 1991 to 2005) from Latvians abroad led to the establishment of the Occupation Museum (1993) and the restoration of the Latvian National Opera House and Freedom Monument (65% diaspora donations) (Dimante, 2007).

It was also during this period that the government became aware of the country's lack of visibility on the world stage, particularly within Europe. The first tourism marketing activities were implemented via participation in international tourism fairs (from 1992), provision of tourism information materials/brochures, and organisation of journalist visits.

The "tourism boom or intensive development phase" (2001–2009)

The approval of Latvia to join the EU in 2004 was a key watershed moment in tourism development, and the period between 2001 and 2008 stimulated rapid industry development. During this phase, the average annual growth rate of visitors was 17%; over the whole period, the number tripled, reaching 1.7 million (CSB, 2021). Rapid growth was observed from 2003 until 2006, during which international arrivals grew by 58%, and tourism receipts doubled. The number of nights spent by foreign

travellers in accommodations increased 2.5 times (2.1 million nights in 2008) over the whole period, and the average annual growth rate was 15.3%. As a result, international tourism receipts grew annually on average by 22.4% (UNWTO, 2021).

The progress towards joining the EU in 2004 clearly influenced tourism during this development phase. Jarvis and Kallas (2006) in their study on neighbouring Estonia proposed a model demonstrating that EU accession process impacted tourism development in three ways, and it is also applicable to Latvia.

Firstly, it facilitated greater access to the destination as the open sky policy opened up Riga to low-cost carriers (Ryanair and EasyJet in 2004, Norwegian in 2005) (Pijet-Migon, 2017) and allowed the rapid expansion of the national airline AirBaltic. As a result, the number of regular AirBaltic routes increased from 12 (in 2003) to 45 (in 2007) (AirBaltic data). Consequently, passenger numbers at Riga International Airport rose by 49% in 2004, by 77% in 2005 and by 33% in 2006 (CSB, 2022). In 2003, air transport was used by 8% of inbound tourists to Latvia, and it reached 47% by 2008 (CSB, 2022).

Secondly, EU accession stimulated increased awareness of the destination as many journalists visited and published stories on new EU member countries. In 2005 alone, the Latvian Institute organised 30 publications for Latvia, reports in foreign media, and organised visits of 51 foreign journalists to Latvia (LI, 2005). Publications describing Riga as an attractive destination appeared, not only in Europe (Van der Steina, 2021).

Thirdly, accession to the EU stimulated increased foreign direct investment in the restaurant and hotel industry. From 1999–2009, foreign investment stock in equity capital in the hotel and restaurant sector increased by 5.6 times and reached 86 million euros (CSB, 2022). Latvia, particularly Riga, experienced rapid growth in hotel capacity. Over the period, bed numbers in Riga increased by 2.6 times, reaching 20,383 beds in 2009 (CSB, 2022).

Following accession to the EU, increased funding for tourism development came from EU structural funds. Between 2004–2006, 22 million euros were directly allocated to tourism (ESfondi.lv, 2022).

The post-2000 period saw the national government take a much more proactive role in tourism development. There was strong political support for developing the tourism economy, and the national budget for tourism more than doubled, reaching 1.44 million euros in 2004 (Druva-Druvaskalne et al., 2006) and 1.6 million in 2009. The Latvian Tourism Development Agency (LTDA), responsible for implementing tourism policy and marketing, was established under the Ministry of Economics. The first Latvian tourism marketing strategy was drafted, for the period 2006–2010.

This development phase was marked by well-targeted marketing activities in foreign markets, increasing the awareness of Latvia as a travel destination. Marketing activities included participation in tourism fairs, setting up tourist information centres

in high-priority markets, advertising campaigns abroad, producing image and thematic brochures and creating a national tourism website. During this period, the first destination branding attempts were made, with the logo and slogan “The land that sings”.

The combination of increased awareness and access saw Riga being subject to unsustainable levels of growth. The rapid increase in the number of tourists led to sharp price rises, especially in tourist areas; due to direct flight connections and affordable prices, short inbound city breaks became popular; and the nightlife attracted stag-party tourists to Riga (Van der Steina & Rozite, 2018; Light et al., 2020). Local and foreign media increasingly reported on the development of Riga as an entertainment and nightlife destination, which attracted stag party tourists, especially from Great Britain, and the local community grew to dislike the inappropriate behaviour of these visitors.

This boom in inbound tourism was brought to an end by the decline in tourist arrivals caused by the global financial/economic crisis in 2009. The number of international arrivals declined by 21% (CSB, 2022), and spending by foreign travellers decreased by 5% (UNWTO, 2021).

Managed Growth Phase (2010–2019)

Tourism development in Latvia during this phase was bookended by two major global events that impacted development, starting with the global financial crisis and ending with the arrival of the Covid-19 global health crisis in March 2020. This phase can be defined as a period that saw the development of the industry follow a trajectory more in common with the other countries of Northern Europe as Latvia became more proactive in managing industry growth.

In this phase, the number of international arrivals increased on average by 4.2% annually, and by 41% over the period from 2010 to 2019 (CSB, 2022). The average annual growth rate of the number of nights spent by foreign travellers in accommodations reached 8.6%, and the growth over the whole period was 101% (Eurostat, 2021). Notably, the number of foreign tourists only returned to pre-financial crisis (2008) levels in 2014. As a result, the total international tourism receipts grew by 58% over the period, reaching 1.02 billion USD (UNWTO, 2021).

Riga's increased recognition as an attractive travel destination played an important role in this managed growth phase. The implementation of the “Live Riga” brand (2010) took place, positioning Riga as “the new capital of Northern Europe under Nordic Skies” where “people want to live, study and work, and stay for a while” (Embassy, 2009), and European-level events such as Riga being the European Capital of Culture and the Latvian Presidency of the EU Council further promoted the capital. Riga municipality spent around two million euros each year marketing the city in the

main target markets (Germany, Russia, Scandinavia, Estonia, Lithuania, the Netherlands and Italy).

However, this phase also saw an increasing issue with a lack of dispersion outside the capital. Although Latvia's regions were actively promoted in foreign markets by national and regional DMOs, 74% of overnight stays by foreign guests were still concentrated in Riga (CSB, 2020). Being aware of Riga's limited capacity and the negative impact of the excessively rapid tourism growth (Van der Steina & Rozite, 2018), this phase was marked by attempts to disperse foreign tourism flows outside Riga as well by developing appropriate products, as well as by using Latvia's tourism branding strategy "Best enjoyed slowly" (2010–2017) and targeted promotion of regions abroad.

The objectives of creating the new national tourism brand aligned with the national tourism marketing strategy (2010–2015) were threefold: firstly, to increase the length of tourist stay and the economic share of the tourism sector in the national economy; secondly, to promote the development of domestic tourism; and thirdly, to increase the number of tourists and spending in regions.

Due to changes in the political governance of tourism, the brand "Best enjoyed slowly" was replaced in 2017 by the slogan and logo used for other export industries, "Magnetic Latvia", which had no clear values or vision for tourism development. The data presented in Figure 1 shows a drop of 14.4 % (compared with the previous year) in the number of foreign tourists in 2016, which may be related to Russia's military activities in Ukraine, EU sanctions and the associated depreciation of the Russian rouble. The Russian market to Latvia decreased by more than 40% in early 2015 (CSB, 2022), leading to a sharp drop in revenue for accommodation establishments, tour operators, agencies, souvenir traders and restaurants. However, the impact of the Russian market does not appear in the overall inbound figures in 2015, as it was compensated for by growth in Nordic and Western European tourists.

Two other external challenges that affected the development of Latvian inbound tourism during this period are related to the growth of the importance of the sharing economy and the increase of Asian, in particular Chinese, inbound tourism to Europe, with nearby Helsinki promoted as the fastest gateway to Europe from Asia.

The number of nights spent (in commercial accommodation) by Chinese tourists in Latvia grew on average at 33% a year during the period 2010–2019 (CSB, 2022). In addition, Airbnb activity in Riga showed strong growth in overnight stays in 2018, with an increase of 52% (248,000 overnight stays) compared to 2017; Airbnb's market share was 9% (Colliers International, 2019).

Given the higher economic contribution of business tourism to the national economy, developing business tourism was one of the country's priorities. The Riga Convention Bureau "Meet Riga" (since 2011) and the Latvian Convention Bureau (since 2016) were active in developing business tourism and attracting international

events. According to ICCA (2019), in 2018, the country hosted 41 international events, 35 of them in Riga, which is considered to be the main or even the only player at the international level. Health tourism, including the medical sector, is also recognised as a priority.

The "managed growth" phase ended with the global Covid-19 pandemic crisis when, starting in March 2020, international tourism flows stopped worldwide, and for the following two years the tourism industry operated under challenging conditions.

Conclusion

This article uses the TALC method to analyse tourism development in Latvia since 1991. There are three phases of development identified in Latvian inbound tourism; economic pivot (1991–2000), tourism boom (2001–2009) and managed growth (2010–2019). During the "economic pivot" phase, the main challenges were destination access, tourism services and infrastructure quality, and the limited awareness of Latvia, including Riga, as a travel destination. The main development drivers were the development of air transport, the implementation of a visa-free regime, foreign investment and the strategic impact that the diaspora played.

The "tourism boom" phase was driven by factors related to EU accession (low-cost carrier access, foreign investment and international media coverage), which contributed to awareness of Latvia, accessibility, visibility and the development of tourism services and infrastructure. However, the main challenge during this period was managing the consequences of the associated surge in demand, most notably highlighted by "unwanted guests" such as British stags.

In the third, "managed growth" phase, the most significant challenge in the context of inbound tourism was the wider post-financial crisis recovery within the EU, the geopolitical issues surrounding the illegal Russian invasion of Crimea and eastern Ukraine, and the associated decline in Russian inbound tourism. The main drivers of inbound tourism were the popularity of the capital, Riga; mega-events such as the EU Capital of Culture; regional and global tourism trends (Asian market development, Airbnb); the crisis related to the Russian inbound market; and targeted national tourism management and marketing approaches.

The Latvian tourism economy can still be considered to be in a developmental phase, as Latvia's physical and social capacity as a tourism destination has not yet been reached. However, it should be noted that the pace of development in the post-Covid pandemic phase will depend on external factors and the chosen tourism development strategy because, as Gore et al. (2022) have pointed out, the development phase is a critical planning phase that requires a sustainable approach. Moreover, in a generally uncertain world, the ability to respond to crises will determine a destination's competitiveness (Ritchie & Crouch, 2003).

Due to the limited scope of this article, a comparison of the development of Latvian inbound tourism in the Baltic and European context is missing, which should be considered a limitation of the article.

Kopsavilkums

Šajā rakstā tiek raksturota ienākošā tūrisma attīstība Latvijā kopš neatkarības atgūšanas līdz Covid-19 pandēmijai. Izmantojot Ričarda Batlera (Richard Butler) tūrisma vietas dzīves cikla modeli, ienākošā tūrisma attīstība tiek iedalīta trīs periodos, raksturojot izaugsmes tempus un galvenos attīstību ietekmējošos faktorus. No 1991.- 2000.gadam "ekonomikas pagrieziena un tūrisma agrīnās attīstības periods" iezīmējas ar pāreju uz tirgus ekonomiku, iekļaušanos starptautiskajā tūrisma sistēmā un ienākošajā tūrismā fokusa maiņu no austrumu uz rietumu tirgiem. Galvenie izaicinājumi šajā periodā ir pieejamības nodrošināšana, tūrisma piedāvājuma un infrastruktūras attīstība. Periods no 2001. līdz 2009. gadam raksturojams kā "straujās attīstības fāze", ko virza iestāšanās procesi Eiropas Savienībā, veicinot gan atpazīstamību, aviotransporta attīstību un ārvalstu investīcijas nozarē. Šis periods atklāj arī pārāk straujās tūrisma nozares attīstības izraisīto negatīvo ietekmi. Globālā ekonomiskā krīze ir robežšķirtne starp straujo attīstības fāzi un "pēc krīzes atgūšanās un vadītas izaugsmes periodu", kad ienākošā tūrismā līdz pat Covid-19 krīzei nozīmīga loma ir stratēģiskai attīstības plānošanai, mērķtiecīgām mārketinga aktivitātēm, ārējiem makrovides faktoriem un globālajām tūrisma tendencēm.

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PALUDIKULTŪRAS LATVIJĀ

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Kopsavilkums

Klimata pārmaiņas ir veicinājušas to mazinošu aktivitāšu ieviešanu. Latvijā plaši izplatītas gan kūdraugsnes, gan purvi, kuru veidošanos ietekmējuši ģeogrāfiskie un ģeoloģiskie apstākļi. Šīs teritorijas nu jau tiks ietvertas arī oficiālajos nacionālās siltumnīcefektu izraisošo gāzu inventarizāciju ziņojumos Eiropas Savienībai. Viena no klimata pārmaiņu mazinošām aktivitātēm ir piedāvājums atjaunot purvu un kūdrāju hidroloģisko režīmu. Mitros kūdrāju apstākļos samazinās CO_2 emisijas, augošā veģetācija no atmosfēras uztver CO_2 un nodrošina ilgtermiņa oglekļa noglabāšanu kūdras slāņos. Virszemes augošā biomasa var tikt novākta un izmantota dažādu produktu ražošanā, ko plašāk pazīst kā paludikultūru, kas ir lauksaimniecība un mežsaimniecība – uz mitriem un pārmitriem kūdrājiem un kūdraugsnēm, kas nodrošina kūdras uzkrāšanos un ilgtermiņa saglabāšanos. Šajā pētījumā apskatīta pašreizējā situācija paludikultūru audzēšanas un izmantošanas jomā Latvijā un izvērtēti plašāki paludikultūras ieviešanas aspekti. Kaut arī atsevišķi uzņēmumi un projektu īstenotāji jau audzē paludikultūras un veic izmēģinājumus, pašreizējā likumdošana un valsts politika neatbalsta pilnvērtīgu paludikultūru ieviešanu.

Atslēgas vārdi: *organiskā augsne, kūdraugsne, mitrāji, lauksaimniecība, mežsaimniecība*

Summary

Climate change has led to the introduction of mitigation actions. Latvia has a wide distribution of both peat soils and bogs, the formation of which has been influenced by Latvia's geography and geology. Rewetting of degraded peatland and organic soil has been proposed as an action to mitigate climate change. Under wet and waterlogged peatland conditions, CO2 emissions are reduced, CO2 is removed from the atmosphere by the growing vegetation, and long-term carbon sequestration in the peat layers is ensured. The biomass growing above ground can be harvested and used to produce a variety of products; this is more commonly known as paludiculture, which is farming and forestry on wet and waterlogged peatland and peatland vegetation that ensures peat accumulation and long-term retention. This study reviews the current state of the cultivation and use of paludiculture in Latvia and assesses the pros and cons of its wider adoption. Although some companies and

project promoters are already cultivating and trialling paludiculture, current Latvian and European Union legislation and public policies do not support the full implementation of paludiculture. In the context of the current European Union policy towards reduced GHG emissions from organic soils and biodiversity conservation, cover crops are one of the potential solutions providing both long-term GHG reductions and increased carbon storage and sequestration in soils and further economic use of above-ground biomass. A single solution for all organic soils is not feasible and therefore several potential scenarios (afforestation and paludiculture) should be integrated, preceded by a site-specific assessment for each activity. It is necessary to assess the extracted bogs and organic/peat soil territories: which are GHG emitters, and which are already carbon sinks.
Keywords: *organic soils, peatsoil, peatland, agriculture, forestry*

Ievads

Eiropas Savienība ir paziņojusi par vairākiem priekšlikumiem klimata pārmaiņu jomā, kuru mērķis ir panākt, lai līdz 2050. gadam tā kļūtu oglekļa ziņā neitrāla. Eiropas Savienības kopējai lauksaimniecības politikai ir jānodrošina videi draudzīgāka un taisnīgāka lauksaimniecības politika Eiropā, kā arī jāveicina Eiropas Zaļais kurss un ar to saistītā stratēģija "No saimniecības līdz galdam" un bioloģiskā daudzveidība. Teorētiski katrai dalībvalstij ar saviem stratēģiskajiem plāniem ir pienākums apliecināt augstākus klimata un zaļos mērķus. Tomēr, kā liecina Eiropas Vides biroja novērtējums (European Environmental Bureau, 2022), valstu plānu projektos pārsvarā trūkst skaidru mērķu, pasākumu un finansējuma, lai apturētu bioloģiskās daudzveidības samazināšanos un ierobežotu siltumnīcefekta gāzu emisijas (SEG). Viens no kopējās lauksaimniecības politikas piedāvātajiem risinājumiem ir atjaunot hidroloģisko režīmu degradētajos purvos un organisko augšņu (kūdraugšņu) izplatības areālos, ko angliski apzīmē ar terminu '*rewetting'* (Pe'er and Lakner 2020). Mitros kūdraugšņu apstākļos samazinās CO_2 emisijas, augošā veģetācija izņem CO_2 no atmosfēras un nodrošina ilgtermiņa oglekļa noglabāšanu kūdras slāņos. Lauksaimniecībā izmantotu nosusināto kūdrāju organisko augšņu un hidroloģiskā režīma atjaunošana palīdz būtiski vairot biodaudzveidību, vērā ņemami samazināt siltumnīcefekta gāzu emisijas un sagādāt citus vides ieguvumus, un tajā pašā laikā veicina lauksaimnieciskās ainavas daudzveidību (Eiropas Komisija, 2022). Eiropas Savienības dalībvalstis var izvēlēties no plaša lauksaimniecībā izmantotu nosusināto kūdrāju atjaunošanas pasākuma klāsta, kas sniedzas no aramzemes pārveidošanas ilggadīgos zālājos un ekstensifikācijas pasākumiem, ko papildina mazāk intensīva nosusināšana, līdz pilnīgai hidroloģiskā režīma atjaunošanai, kas paver iespēju nodarboties ar paludikultūru vai ierīkot kūdru veidojošu veģetāciju. Paludikultūra ir lauksaimniecība un mežsaimniecība mitros kūdrājos un kūdraugsnēs, kas nodrošina kūdras uzkrāšanos un tās ilgtermiņa saglabāšanu. Atjaunojot ūdens līmeni (hidroloģiskos apstākļus) kūdrājos un ieviešot

paludikultūras, var ievērojami samazināt ilgtermiņa SEG emisiju apjomus (Wichtmann et al., 2016).

Pateicoties ģeogrāfiskajiem, ģeoloģiskajiem un klimatiskajiem apstākļiem, Latvijā veidojas un pastāv purvi. Aptuveni 11% Latvijas teritorijas aizņem tieši purvi, to veidošanās sākusies jau pirms 11,700 gadiem (Kalnina et al., 2015). Pēdējo 1000 gadu laikā, kūdra ir iegūta saimnieciskos nolūkos, tostarp nodrošinot veselīgu pārtikas aprites tīklu ar kvalitatīvu substrātu augiem, kas vēlāk ir pieejami veikalos. Kūdras izmantošana ir būtiska arī mežsaimniecībā, jo jaunie koku stādi sāk savu dzīvi kūdras substrātā, kas vēlāk jau tiek stādīti, lai sasniegtu kā koksnes (tautsaimniecības), tā arī klimata neitralitātes mērķus.

Ņemot vērā plašo organisko augšņu izplatību Latvijas teritorijā un nozīmi klimata, mežsaimniecības un lauksaimniecības aspektā, ir nepieciešams izvērtēt optimālākos šo organisko augšņu (kūdraugšņu) apsaimniekošanas scenārijus. Šajā pētījumā mēs apskatām esošo situāciju par paludikultūrām Latvijā un sniedzam savu vērtējumu par to plašākas ieviešanas potenciālu un ierobežojumiem

Materiāli un metodes

Aptuveni 300 sugu ir piemērotas kā paludikultūras (Abel, 2018), no kurām 20 sugas uzskatāmas par piemērotām Latvijas apstākļiem. Pazīstamākās ir sfagnu sūnas (*Sphagnum* spp.), melnalksnis (*Alnus glutinosa*), apaļlapu rasene (*Drosera rotundifolia*), parastā niedre (*Phragmites australis*), parastā kalme (*Acorus calamus*), šaurlapu vilkvālīte (*Typha angustifolia*), platlapu vilkvālīte (*Typha latifolia*) un miežabrālis (*Phalaris arundinacea*). Pie paludikultūram pieskaitāmi arī mitrie zālāji, kuri aug palienēs un mitrās ieplakās. Pētījumā izmantota publicētā un nepublicētā informācija par paludikultūrām. Ņemot vērā lietišķo raksturu, lielākā daļa datu un informācijas nebija publicēta vai bija pieejama atskaišu formā (piem., projekti utt.), vai arī iegūta, personīgi komunicējot ar lauksaimniekiem, mežsaimniekiem un kūdras purvu apsaimniekotājiem.

Paludikultūra ietver jaunu kūdras slāņu veidošanos un saglabāšanos. Lai šo jautājumu aplūkotu, pētījumā izmantoti publicēti ^{14}C dati no Latvijas un Igaunijas, kuri tika pārkalibrēti un aprēķināts organogēno nogulumu vidējais uzkrāšanās apjoms (izmantojot R vidi un Clam pakotni (Blaauw, 2010)), lai parādītu atšķirību starp ilgtermiņa organogēno slāņu uzkrāšanos un saglabāšanos dažādos mitruma apstākļos (videi: sausa meža augsne (Tomson et al., 2021), kūdraugsne (Ceriņa et al., 2017), mitrs purvs/kūdraugnse (Stivriņš, 2021)). Datējumu no sausām Latvijas mežu augsnēm principā nav (izņemot Latvijas Universitātes profesora O. Nikodemusa veicinātos pētījumus kūdraugsnēs Moricsalā), līdz ar to bija nepieciešams izmantot tuvāko līdzīgāko meža vidi, kas šajā gadījumā atradās tikai 20 km attālumā no Latvijas teritorijas (Tomson et al., 2021), un tādējādi ir korekti attiecināms uz konkrēto salīdzinājumu.

Rezultāti

Paludikultūrai piemērotās teritorijas

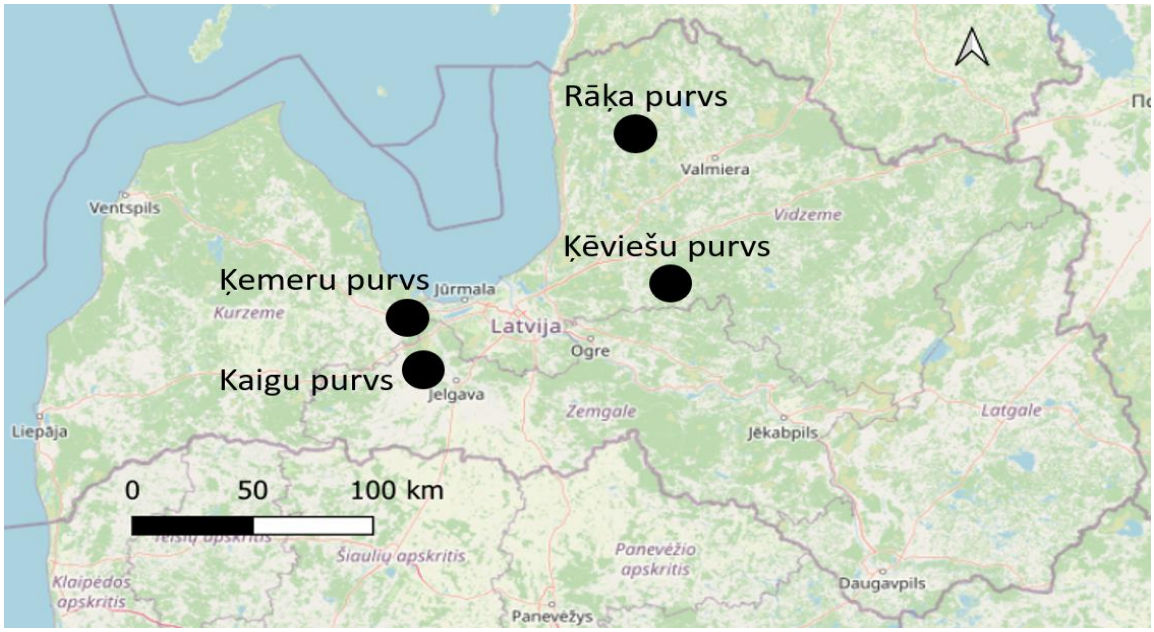
Latvijā ir četru veidu platības, kuras būtu piemērotas paludikultūru audzēšanai – lauksaimniecības un mežsaimniecības zemes ar organiskajām/kūdraugsnēm, izstrādātie kūdras lauki un polderi (Ozola and Stivriņš, 2020). Latvijas teritorijā ir 26,143 ha pamestu un aizaugušu lauksaimniecības zemju, kas ierīkotas organiskajās augsnēs (BIO4ECO 2017), tāpat arī aptuveni 11,500 ha izstrādātu kūdras lauku un 50,000 ha polderu. Pašlaik cilvēku un uzņēmumu, arī valsts kapacitāte ir ierobežota, lai varētu nodrošināt ne tikai veco drenāžas sistēmu atjaunošanu un uzturēšanu, bet arī liela mēroga drenēto purvu un kūdraino augšņu atjaunošanu.

Esošās paludikultūras

Paludikultūra kā termins varētu šķist svešs, bet daži paludikultūras augi jau Latvijas teritorijā aug un tiek izmantoti saimnieciskās darbības nodrošināšanā. Tā, piemēram, niedres, Latvijā netiek mākslīgi audzētas, bet gan tiek iegūtas no dabiskām un mākslīgām ūdenstilpēm, kur tās aug litorālē vai visā ezera platībā. Ir aprēķināts, ka niedru platības veido aptuveni 13400 ha (Čubars, 2014). Eiropa ir vislielākais niedru tirgus pasaulē. Kopējais patēriņš ir vismaz 7 miljoni kūlīšu, kas ir aptuveni 29400 tonnu niedru. Niedres biomasu galvenokārt izmanto būvniecības un siltināšanas materiālu ražošanā. Tikmēr, mitro pļavu augi (piemēram, miežabrālis un grīšļi) tiek izmantoti kā pakaiši, lopbarība un biomasa enerģijas un siltuma ražošanai. Par paludikultūrām var uzskatīt ne tikai zālaugus, bet arī kokus – melnalksni, kārklu un purva bērzu, no kā var ražot kvalitatīvu koksni vai arī ātri augošo koku/krūmu biomasu. Tomēr, ūdens līmenis tuvu zemes virskārtai ir būtisks, apsverot iespējas šāda veida kokmateriālu produkcijai. Ražīgums kūdraugšņu teritorijās ar atjaunotu hidroloģisko līmeni var būt mazāks salīdzinājumā ar plantācijām drenētos apstākļos.

Sfagnu sūnas ir apzināti stādītas izstrādātos kūdras laukos četros Latvijas purvos – Ķēviešu (2012. g., SIA "Mokkura" ar Greifsvaldes Universitāti), Kaigu (2016. g., Ezeru un Purvu Izpētes Centrs ar SIA "Laflora"), Rāķa (2018. g., SIA "Klasmann-Deilmann Latvia") un Ķemeru (2018. g., Life ReStore projekts) purvā (1. attēls). Pašlaik kūdras ieguves uzņēmumi veido sūnu laukus tikai eksperimentālos nolūkos, lai audzētu donormateriālu citu lauku rekultivācijai. SIA "Klasmann-Deilmann Latvia" ierīkojis līdz šim lielāko sfagnu sūnu lauku Latvijā, kas ir 0,3 ha un tā ierīkošanas izmaksas ir 25059,20 Euro. Ja vien tas nav liels Eiropas projekts, tad kopējās izmaksas sfagnu sūnu lauka ierīkošanai un uzturēšanai ir pārāk lielas, lai sūnu audzēšana būtu rentabla. Pašlaik profesionāliem dārzkopības substrātu ražotājiem sūnu audzēšana un sūnu substrāta izmantošana nav izdevīga. Turklāt gandrīz visās sfagnu audzēšanas vietās ir šķēršļi un problēmas, kas nenodrošina

veiksmīgu sūnu izmēģinājumu lauku izveidi un apsaimniekošanu (ūdens ķīmiskais sastāvs, pagulošie ģeoloģiskie slāņi, atlikušās kūdras tips un biezums).

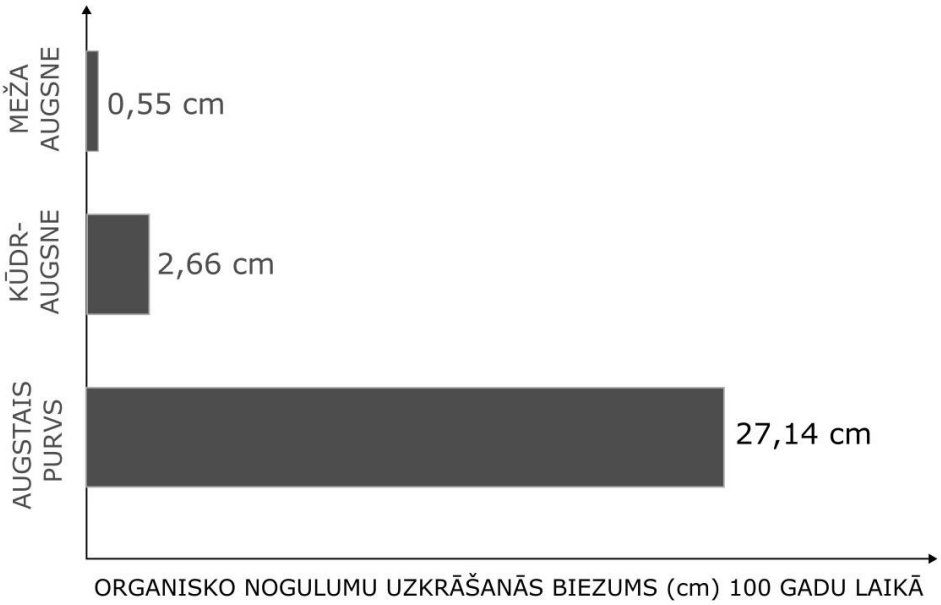


1. attēls. **Sfagnu sūnu stādīšanas vietas Latvijas teritorijā: (1) Ķēviešu purvs, (2) Kaigu purvs, (3) Rāķa purvs, (4) Ķemeru purvs** (izveidojuši autori, izmantojot OpenStreetMap pamatkarti)

Ilgtermiņa oglekļa noglabāšana

Īpaši svarīgi ir akcentēt aspektu, par kuru Latvijā runā ļoti maz – ilgtermiņa oglekļa noglabāšana. Pagaidām nacionālās SEG atskaitīšanās Eiropas Savienībai dēļ lielāks uzsvars tiek likts uz pašu SEG gāzu koncentrāciju katru gadu no dažādām zemes vienībām. Tomēr, kā lasāms jaunākajos Eiropas Savienības izdotajos dokumentos, svarīgi ir pilnveidot oglekļa piesaistīšanas risinājumus, kas uztver CO_2 no atmosfēras un uzglabā to ilgtermiņā (European Environmental Bureau, 2021). Vēl spilgtāk oglekļa piesaisti un uzglabāšanu kūdrā atspoguļo topošais oglekļa sertifikācijas process, tās metodoloģija un tirgus noteikumi, kur tieši oglekļa ilgtermiņa noglabāšana ir /Lkā galvenais priekšnosacījums oglekļa sertifikātu izsniegšanai. Pastāv fundamentāla atšķirība starp virszemes biomasas CO_2 piesaisti un oglekļa uzglabāšanu un noglabāšanu. Tā, piemēram, salīdzinājumam ar meža zemi, kur 100 gadu laikā uzkrāsies 0,55 cm biezs organogēns augsnes slānis, kūdraugsne uzkrāsies 2,66 cm, bet mitrs sfagnu sūnu purvs uzkrās 27,14 cm biezu kūdras slāni (2. attēls) Mitrā un dabīgā/atjaunotā hidroloģiskajā režīmā notiek organogēno vielu uzkrāšanās bezskābekļa apstākļos, kas nodrošina kūdras saglabāšanos. Turpretim sausos un drenētos apstākļos skābeklis brīvi piekļūst organogēnajām vielām un kūdrai, kas veicina to sadalīšanos un izraisa oglekļa (CO_2 formā) emisijas. Tādējādi mitri apstākļi un paludikultūras ne tikai veido jaunu kūdras

slāni, bet arī piesaista CO_2 no atmosfēras un veido nozīmīgu oglekļa krātuvi, kas samazina klimata sasilšanas potenciālu.



2. attēls**. Organisko (organogēno) nogulumu uzkrāšanās biezums 100 gadu laikā meža augsnē, kūdraugsnē un augstajā (sfagnu sūnu) purvā** (izveidojuši autori)

Agroekoloģiskie principi un prakse, ekosistēmās balstīta pārvaldība, kas darbojas kopā ar dabas procesiem, veicina nodrošinātību ar pārtiku, uzturu, veselību un labklājību, iztikas līdzekļus un bioloģisko daudzveidību, ilgtspējību un ekosistēmu pakalpojumus. Šie pakalpojumi ietver ne tikai temperatūras ekstrēmu amortizāciju, bet arī oglekļa sekvestrāciju un ilgtermiņa uzglabāšanu, kas palielina oglekļa krājumu un piesaistītāju noturību (IPCC, 2022).

Paludikultūru ieviešanu limitējošie aspekti

Galvenais šķērslis, kas kavē pāreju uz mitru kūdrāju izmantošanu, iekļaujot paludikultūras, ir esošā likumdošana un atbalsta shēmas, kas veicina kūdraino augšņu nosusināšanu. Dominējošā "ekoloģiskā" prakse, ko atbalsta ar lauksaimniecības un mežsaimniecības subsīdijām, ir nosusināto kūdraugšņu kā zālāju vai mežu izmantošana. Bez hidroloģiskā režīma atjaunošanas turpinās kūdraugšņu mineralizācija un tā ir būtisks emisiju avots. Pašlaik vienīgā augu kultūra, kas ir paludikultūra, un par kuras audzēšanu var saņemt vienotos platību maksājumus, ir miežabrālis. Lauksaimnieki var saņemt atbalstu par augstā purva platību vai izstrādāta purva platību, ja tajā tiek audzēti augļukoki un ogulāji, jo tā tiek uzskatīta par videi draudzīgu metodi. Diemžēl, hidroloģisko režīmu neatjaunojot, to par tādu uzskatīt nevar.

Paludikultūru apzinātu un plašāku ieviešanu limitē esošā klimata pārmaiņu un lauksaimniecības politikas nesaskaņotība, kā arī paludikultūru augu neiekļaušana

lauksaimniecības un mežsaimniecības kultūru sarakstā. Ņemot vērā to, ka no 2026. gada obligātajā SEG emisiju uzskaitē tiks ietvertas arī mitrāju apsaimniekošanas SEG (mitrāju apsaimniekošanas radīto SEG emisiju izmaiņas, attiecībā pret noteikto bāzes periodu 2005.-2009. gadu), ir sagaidāms, ka šis aspekts ietekmēs valsts saistību izpildi un radīs finansiālas konsekvences.

Secinājumi

Ņemot vērā pašreizējo Eiropas Savienības politiku un virzību uz samazinātām SEG emisijām no organiskajām augsnēm un biodaudzveidības saglabāšanu, paludikultūras ir viens no potenciālajiem risinājumiem, kas nodrošina kā ilgtermiņa SEG samazinājumu, tā arī palielina oglekļa uzkrāšanos un noglabāšanu augsnē, un padara iespējamu virszemes biomasas tālāku ekonomisku izmantošanu. Viens risinājums visām organiskajām augsnēm/kūdraugsnēm nav iespējams un tādēļ būtu jāparedz vairāku potenciālo scenāriju integrēšana (apmežošana un paludikultūra), pirms tam novērtējot katras teritorijas piemērotību konkrētajai aktivitātei. Ir nepieciešams izvērtēt ne tikai izstrādāto kūdras lauku, bet arī kūdraugšņu teritorijas – kuras no tām ir SEG emitētājas un kuras jau kļuvušas par oglekļa krātuvēm.

Pateicība

Raksts tapis ar atbalstu pēcdoktorantūras pētniecības īstenošanai: Pieteikums Nr. 1.1.1.2/VIAA/3/19/683 “Klimata politikai pielāgoti risinājumi izstrādāto kūdras lauku izmantošanai un paludikultūru biomasas audzēšanai”. European Climate Initiative EUKI “Baltic Peatland Farmenrs Capturing Carbon”. Latvijas Universitātes bāzes finansējums.

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KARŠU PĀRLŪKI – ĢEOGRĀFISKĀS VIDES PĀRMAIŅU PĒTĪJUMU AVOTS

MAP BROWSERS – A RESOURCE FOR RESEARCH ON GEO-ENVIRONMENTAL CHANGE

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Anotācija

LU Ģeogrāfijas un Zemes zinātņu fakultātē jau pāris gadu desmitus tiek izmantots pašu veidots un uzturēts Karšu pārlūks, kura izveide, uzturēšana un pilnveide notikusi sadarbībā ar Latvijas Universitātes kolēģiem, kā arī sekojot līdzi citu organizāciju līdzīgiem produktiem. Latvijā ir izveidoti vairāki karšu pārlūki, kuri atšķiras ar mērķiem, uzdevumiem un vīzijām un orientēti uz ieinteresētu lietotāju atbalstu paplašinātai dažāda laika, mēroga, koordinātu sistēmu kartogrāfisko materiālu atvieglotai meklēšanai un attālinātai pieejai. Karšu pārlūku izmantošana teritorijas dažādu elementu pārmaiņu izpētē ļauj ātrāk sameklēt izejas kartogrāfiskos materiālus un, izmantojot ģeogrāfisku informācijas sistēmu (ĢIS) vai citus rīkus, ātrāk veikt datu ieguvi, apstrādi un laika telpisko pārmainu analīzi, orientējoties uz koordinātu telpā piesaistītiem un saskaņotiem avotiem. Tiek sniegts izvērsts pārskats, cik daudzveidīga topogrāfisko karšu un aerofoto ainu vai no tām gatavotu produktu var izmantot katras vietas ģeogrāfiskās vides un tās pārmaiņu izvērtēšanai, kartēšanai un ticamu datu iegūšanai.

Atslēgas vārdi: *vēsturiskās kartes, aerofoto ainas, karšu pārlūks, vides pārmaiņas*

Summary

In Latvia, the availability of geospatial information is growing quite rapidly, thanks to European INSPIRE guidelines and projects initiated by specific organisations, as well as people motivated by a need for useable data or the desire to distribute it to broader circles of society.

Professional groups increasingly call on various ministries to improve access to free and open-access geographical data. There is a considerable amount of valid spatial data in Latvia. So when generating maps, you should rely on anything other than the services supplied by international companies such as Google, Open Street Map, etc.

As the university and labour market are aware of this and interested in the development and changes in Latvia's geographical environment, the competence, experience and skills of our specialists, which are currently needed, are also being cultivated, as evidenced by the establishment, licensing and certification of professional university study programmes aimed at the preparation of geoinformatics specialists.

Ievads

Attīstoties datortehnoloģijām un nodrošinot pietiekami brīvu apmaiņu tīmeklī ar tekstiem un attēliem, arī karšu attēliem vai karšu vektordatiem jau visai drīz ĢIS praktiķiem radās pārliecība, ka šāds ceļš nav pietiekami efektīgs un ražīgs, un varbūt iespējams citādi nodrošināt kartogrāfisko materiālu pieejamību plašākai sabiedrībai, kas arvien vairāk interesējošo informāciju meklē digitālajā vidē.

Ilgu laiku pēc Latvijas neatkarības atgūšanas galvenais kartogrāfiskās produkcijas ražotājs, t. sk. valsts karšu, sākot ar Satelītkarti un ortofotokartēm, bija Valsts Zemes dienests (turpmāk VZD), uz kura bāzes vēlāk – 2005. gadā – tika izveidota jauna struktūra – Latvijas Ģeotelpiskās informācijas aģentūra (turpmāk LĢIA). LĢIA pašlaik nodrošina ar oficiālo telpisko informāciju (kuras galvenie, bet, protams, ne vienīgie, produkti šī raksta kontekstā ir topogrāfiskās kartes, ortotofotokartes un reljefa modeļi), kā arī to digitālie dati (datnes), kas sadalītas attiecīgā mēroga karšu lapās. Digitālie dati nonāk arī citu organizāciju rīcībā un arī citos, ne tikai LĢIA Karšu pārlūkā, tādējādi nodrošinot sagatavoto datu pieejamību plašam telpisko datu izmantotāju lokam.

Karšu pārlūks – datorizēta vide, kurā tiek uzkrāti telpiskie dati un to metadati, kas kopumā ļauj pārlūka lietotājam vai nu tikai skatīt un pētīt kartogrāfisko (telpisko) informāciju, vai arī, izmantojot Ģeogrāfisko sistēmu programmu (turpmāk ĢIS) rīkus, ļauj veidot savus datus, izmantojot pieejamos resursus un digitālās vides pakalpojumus (Geoportal, S.a.). Visoptimālākā situācija lietotājam ir tad, ja pieejamos datus var izmantot, lietojot ĢIS vides aplikācijas, esošos datus integrējot savā datorizētajā sistēmā, piekļūstot attālināti, līdz ar to veidot savas datu kopas atbilstoši zināšanām un vajadzībām. Karšu pārlūku izmantošana ļauj atturēties no dublētu skenētu datu veidošanas, jo arvien palielinās ieskenēto karšu apjoms un to pieejamība gan bibliotēku karšu krājumos, gan daudzu to un citu vietņu resursos. Karšu pārlūku pieejamība ļauj ietaupīt laiku, kā arī lielā mērā ļauj izvairīties no skenētu oriģinālo datu uzkrāšanas, pārraudzības un glabāšanas problēmām, kopumā veicinot darba ražīguma kāpumu.

Ar rakstā lietoto terminu "Karšu pārlūks" interneta vidē var indentificēt un saprast dažādus terminus - *Map Viewer, Map Browser, Geoportal* un citus līdzīgus. Analogi dažāda terminoloģija pastāv arī Latvijā.

Karšu pārlūks ir vide, ko ērti izmantot darbam ar kartēm, skatot tās, arī meklēt datu kopas un vietas kartēs pēc vietu nosaukumiem, izmantot telpisko datu pakalpojumu tematiskos katalogus, kur pakalpojumi sagrupēti pēc to populārajām pielietojuma jomām. Karšu pārlūku pārlūkprogrammās parasti ir ietverti mērīšanas (t.sk. koordinātu noteikšanas), salīdzināšanas, iegultās kartes saites izveides un dažādi statistikas aprēķināšanas rīki. Pētnieks var apkopot, saglabāt un izdrukāt kartes sev

vēlamā formātā, bieži var arī lejupielādēt kartes un telpiskos datus. Tiek izstrādāti un pieejami arvien jauni rīki, kas ļauj ērti izmantot datus bez īpašas programmatūras.

Kad kompānija SIA Envirotech sāka izplatīt ASV kompānijas Esri ĢIS programmatūru, arī Ģeogrāfijas un Zemes zinātņu fakultātē (turpmāk ĢZZF) sadarbībā ar SIA Envirotech sākām procesu, lai veidotu karšu slāņu pieejamību Web Map Service (*WMS*) vidē. Pirmie pievienotei slāņi bija ortofotokartes un Satelītkarte, vēlāk – PSRS laika dažāda mēroga topogrāfiskās un tematiskās kartes.

Ja no VZD ĢZZF plānotajiem un veicamajiem ģeogrāfiskajiem pētījumiem nepieciešamais kartogrāfiskais nodrošinājums bija jāiegūst ar pieprasījuma vai lūgumraksta vēstulēm, saņemot tās pieprasītajā, bet ierobežotajā apjomā atsevišķos datu nesējos (parasti ierakstītus kompaktdiskos (CD), tad tie kaut kur bija jāglabā, atsevišķas datnes jāizsniedz pētniekiem un vēl pat jāseko, lai atbilstoši līgumiem netiktu nesankcionēti nodoti tālāk.

Raksta mērķis ir lasītāju iepazīstināt ar plašo telpisko datu kopu pieejamību Latvijā un dot ierosmi karšu un aertofotouzņēmumu vai no tiem veidoto ortofotokaršu plašāku izmantošanu dažāda izmēra teritoriju ģeogrāfiskās vides pārmaiņu pētījumos.

Dati un metodes

Pašlaik pakāpeniski situācija ir būtiski mainījusies un VZD kartogrāfisko darbību mantinieks – LĢIA nodrošina, ka, piemēram, jaunākās ortofotokartes un lāzerskenēšanas dati (*.LAS formātā, pat klasificēti, tas ir – sadalīti pa klasēm), ir brīvi lejupielādējami no organizācijas mājas lapas (https://www.lgia.gov.lv/lv/atvertie-dati) un izmantojami diezgan brīvi, lai gan pakāpeniski tiek izstrādāti arī nosacījumi par piekļuvi tiem un lietošanu.

Ilgu laiku LU Karšu pārlūks bija vienīgais, kas, katru jaunu ortofotokaršu slāni pievienojot, nenodzēsa iepriekšējo, kas tādējādi ļāva sekot (ja kāds vēlējās) pārmaiņām ģeogrāfiskās jeb, kā tagad vairums dēvē, vienkārši – vides pārmaiņām, kas notikušas, vizuāli labi redzamas, novērojamas, kartējamas, mērāmas un aprakstāmas.

LU Karšu pārlūka demonstrēšanas un izmantošanas procesā pētniekiem radās loģiski jautājumi:

- kad ir uzņemta konkrētās vietas ortofotokarte?;
- kuru laiku atspoguļo konkrētā karte?;
- cilvēkiem ārpus Latvijas universitātes – kāpēc citur mēs redzam tikai 1 ortofotokaršu (pašu jaunāko) slāni, bet ne iepriekšējos?

Kā atbilde vieniem sekoja apsolījums un darbības, lai slāņus papildinātu ar papildus informāciju jeb metadatiem (kādu laiku tie atspoguļo – kura gada situācija vai pat kura gada un dienas, oriģinālo ainu pieejamības gadījumā varētu norādīt pat pulksteņa laiku ar sekundes precizitāti!), citiem ieteikums – lūdziet, lai citi savu slāņu nodrošinājumu papildina.

Augot līdzi tehnoloģiju attīstībai, mijiedarbojoties organizāciju pārstāvjiem, varam teikt, ka Latvijā jau izveidojies liels kopums ar karšu pārlūkiem, kas katrs ir lielā mērā specifisks un ar dažādiem veidotāju mērķiem un vīzijām, uzdevumiem, kā arī ar atšķirīgām iespējām: finansiālām vai organizatoriskām:

- Latvijas Ģeotelpiskās informācijas aģentūrā (LĢIA):
- Latvijas Ģeoportālā – Geolatvija.lv;
- Latvijas valsts mežos (LVM);
- SIA Jāņa sēta (Balticmaps);
- Latvijas Nacionālajā bibliotēkā (LNB);
- Nacionālā kultūras mantojuma pārvaldē (NKMP);
- Rīgas Domē;
- Vesture.dodies.lv mājas lapā;
- LU ĢZZF;
- SIA SunGIS;
- Latvijas Vides, ģeoloģijas un meteoroloģijas centrā (LVĢMC);
- Vides datu sistēmā Ozols;
- u.c.

Katrs karšu pārlūks, pat ja to tā nesauc, bet tāds ir šī raksta kontekstā, ir savdabīgs vai atšķirīgs un dod savu pienesumu jebkuram interesentam, kas to iepazīst un sāk izmantot.

Kāds varbūt grib pētīt tikai kādas lokālas vietas tuvāko apkaimi, cita intereses aptver visu Latviju vai pat sniedzas aiz tās robežām, tad var arī izmantot INSPIRE (*Infrastructure of Spatial Information in Europe)* datus, daļa atrodama arī Latvijas vietnēs, daļa INSPIRE Ģeoportālā – https://inspire-geoportal.ec.europa.eu. INSPIRE pamatā ir telpiskās informācijas infrastruktūra, ko izveidojušas un pārvalda 27 Eiropas Savienības dalībvalstis. Direktīva apver 34 telpisko datu tēmas, kas nepieciešami vides vajadzībām (VZD, 2020). INSPIRE – ģeogrāfiskās tīklu sistēmas dati ir saskaņoti ar INSPIRE īstenošanas noteikumiem. Līdz ar to Latvijas ģeogrāfisko tīklu datu kopai ir vienota forma ar pārējiem datiem, kas veidoti atbilstoši INSPIRE tēmai, aptverot visu Eiropu. Funkcijas ir attēlotas kā vektoru (formas) elementi ar šūnu nosaukuma atribūtiem (LĢIA, S.a.).

Izmantojot pašlaik Latvijā esošos Karšu pārlūkus (neatkarīgi no terminoloģijas, svarīgāka ir funkcionalitāte un pieejamo datu nodrošinājums), iespējams sekmīgi pētīt valstī notikušās ģeogrāfiskās vides pārmaiņas,.

Rezultāti

Ja pārskatām Latvijā pieejamos karšu pārlūkus un vēl pārmeklējam resursus interneta dzīlēs, varam par katru vietu atrast daudz izmantojamu materiālu, kā varam pārliecināties, iedvesmai izpētot 1. tabulu.

1. tabula. **Telpisko materiālu (topogrāfisko karšu, tām pielīdzināmo materiālu un aeroainu) pieejamība Taurenes pagasta Lodesmuižas tuvākās apkārtnes izpētei**

Kartes izdošanas gads	Aeroainas uzņemšanas laiks	Telpisko datu īss apraksts
	2023. g. – plānots	Ortofotokarte, 8. cikls, krāsaina un CIR
	2017 .g. 5. maijs	Ortofotokarte, 7. cikls, krāsaina un CIR
	2015. g. 24. maijs	Ortofotokarte, 6 cikls, krāsaina un CIR
2014. g.		Latvijas topogrāfiskā karte, vienkāršota 1:10 000 3. izdevums
	2013. g. 6. maijs	Ortofotokarte, 5. cikls, krāsaina
	2011. g. 11. maijs	Ortofotokarte, 4. cikls, krāsaina
2010. g.		Latvijas topogrāfiskā karte, 1:50 000, Skujene 4324 lapa, 2. izdevums
2008. g.		Latvijas topogrāfiskā karte, vienkāršota 1:10 000 2. izdevums
	2007. g, 20. maijs	Ortofotokarte, 3. cikls, krāsaina un CIR
	2005. g. 19. augusts	Ortofotokarte, 2, cikls, krāsaina
2003.g. ?		Latvijas topogrāfiskā karte, vienkāršota 1:10 000 1. izdevums
2003. g.		Latvijas topogrāfiskā karte, 1:50 000, Skujene 4324 lapa, 1. izdevums
2003. g.		Latvijas Satelītkarte, 1:50 000, Skujene 4324 lapa, 2. izdevums
	1998. g. 16. maijs	Ortofotokarte, 1. cikls, melnbalta
1995. g.		Latvijas Satelītkarte, 1:50 000, Skujene 4324 lapa, 1. izdevums
1990. g.		1990. g. sit., topogrāfiskā karte, 1:10 000, 1942. g. koord. sist.
	1984. g.	Aerofotoainas (MZPI Silava fonds)
	1980. g. 16. jūnijs	Aerofotoainas (LU ĢZZF Karšu bibliotēka)
?		Nepilnās topogrāfiskās karte, 1:10 000, PSRS laiks, tautsaimniecības vajadzībām
1978. g.		1977. g. sit., topogrāfiskā karte, 1:10 000, 1963. g. koord. sist.
1969. g.		1951. g. sit., topogrāfiskā karte, 1:25 000, 1963. g. koord. sist.
1956. g.		ASV sagat. topogrāfiskā karte, N-752 sērija, 1:50 000, lapa Skujene 3932 III,;
	1953. g. 6. augusts	Aerofotoainas (LVĢMC fondi)
1952. g.		1951. g. sit., topogrāfiskā karte, 1:25 000, 1942. g. koordin. sist.
1943. g.		Deutsche Heereskarte, topogrāfiskā karte, 1:50 000; lapa Maiseli O-35-100-C

Kartes izdošanas gads	Aeroainas uzņemšanas laiks	Telpisko datu īss apraksts
1939. g.		1938. g. sit., topogrāfiskā karte, 1:50 000, lapa O-35-100-B, PSRS izdevums
1927. g.		Izdevums pēc 1911. gada uzņēmuma, topogrāfiskā karte, 1:75 000, Dzērbene, lapa 65
1917. g.		1915. g. sit., 2 verstu karte, 1:84 000, Krievijas impērija, lapa III-19
1917. g.		Ķeizariskās Prūsijas Zemes uzmērīšanas departamenta Kartogrāfijas nodaļa, topogrāfiskā karte, 1:100 00, lapa R13
1915. g.		1908. g. sit., 1 versts karte, 1:42 000, Krievijas impērija, lapa L-39

Tabulas (1. tabula) sastādīšanai tika izmantoti ĢZZF karšu bibliotēkas un LU ĢZZF Karšu pārlūka, Latvijas Nacionālās bibliotēkas, LĢIA Karšu fonda, LVĢMC fonda un Latvijas Valsts mežzinātnes institūta "Silava" krājumu dati. Sarakstā nav iekļauti materiāli mērogā, kas mazāks par 1:100 000. Tādu materiālu izmantošana ir ļoti noderīga atsevišķu datu esības un ticamības pārbaudei, bet kartēšanai vēlama augstāka precizitāte. 1. tabulā var gūt priekšstatu, ka kartē ne vienmēr ir precīzi identificējams redzamās situācijas gads, bet tas ir ļoti svarīgs, novērtējot laiku, ko tā raksturo.

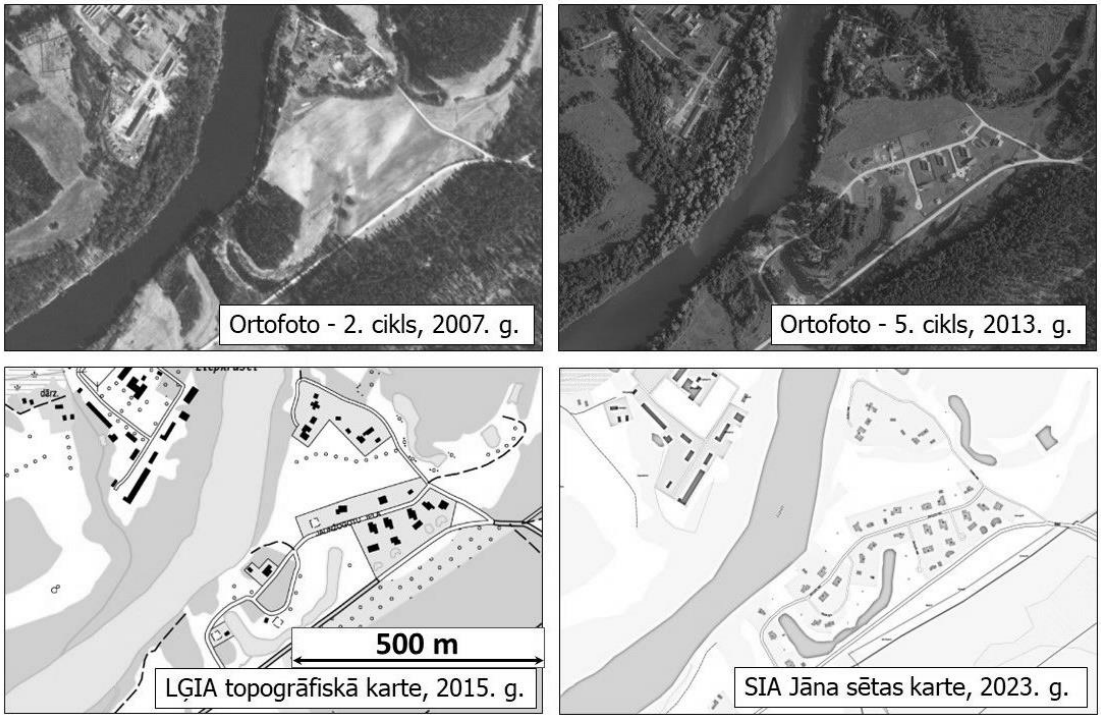
Bieži kartogrāfiskām darbībām, t. sk. pētījumu rezultātu vai vietas identificēšanai tiek izmantoti arī aktuāli ārējie resursi, kas ir viegli pieejami, piemēram Google, Open Street Map un citi. Taču, pētot vēsturiskas norises Latvijā, tie nav noderīgi.

1. tabulā nav iekļautas citas – tematiskās kartes (ģeoloģiskās, purvu, mežu un mežaudžu, augšņu, meliorācijas sistēmu. biotopu, kadastra u.c.), kas daudziem pētniekiem ir svarīgas un ir atrodamas atsevišķos vai pat vairākos karšu pārlūkos, un tūrisma kartes, kas palīdz, piemēram, identificēt apdzīvoto vietu un ģeogrāfisko objektu vietvārdus (toponīmus). Tāpat 1. tabulā nav iekļauti no LĢIA sagatavotajiem lāzerskenēšanas datiem izveidotie telpiskie modeļi, kuri pieejami karšu pārlūkos un sekmīgi izmantojami vairākās pētījumu tēmās (sk. arī 2. tabulu).

Cilvēks maina ģeogrāfisko situāciju un vidi, būvējot, mainot apbūvi, izcērtot mežus vai aizaudzējot ar krūmiem (1. un 2. attēls) un veicot citas darbības, kā arī dabīgi mainās upju un grāvju tecējums, notiek jūras krasta abrāzija vai akumulācija, var izveidoties plaši meža postījumi vētru vai kaitēkļu dēļ. Minēto procesu rezultātus ir iespējams sekmīgi kartēt.

2. tabula. **Kartogrāfiskajos materiālos pētāmo objektu un parādību iespējamais saraksts**

Dabas procesi	Sabiedrības procesi	Citi
Zemes seguma maiņa Mežu stāvoklis un izmantošana Lauksaimniecības zemes un izmantošana Ainavu telpas maiņa Jūras krasta dinamika Hidroloģiskā tīkla pārmaiņas un upju meandrēšana Upju krastu dinamika Ūdenstilpju aizaugšana	Atdzīvojuma sistēmas pārmaiņas Viensētu izzušana un/vai veidošanās, ciematu veidošanās Rūpniecības objektu dinamika Ceļu tīkla transformācijas Administratīvo teritoriju un to robežu pārmaiņas Īpašumu robežu (kadastra) maiņa	Plūdi un applūstošās teritorijas Vēsturisko ceļu izpēte, piemēram, dzelzceļu tīkla Piesārņoto un degradēto teritoriju dinamika Karsta un sufozijas reljefa formas Derīgo izrakteņu ieguves vietas Upju dzirnavu aizsprosti un mazie HES Tūrisma vietu veidošanās un pieejamība Vietvārdu (toponīnu) maiņa Militārā infrastruktūra un beliģeneratīvās (militāro konfliktu darbības radītās) reljefa formas Meliorācijas sistēmas



1. attēls. **Zemes lietojuma maiņa teritorijā pie Gaujas, Āņu ciematam izplešoties kādreizējo lauksaimniecības zemju platībās** (izmantotas VZD, LĢIA un SIA Jāņa sēta kartes no ĢZZF karšu pārlūka)

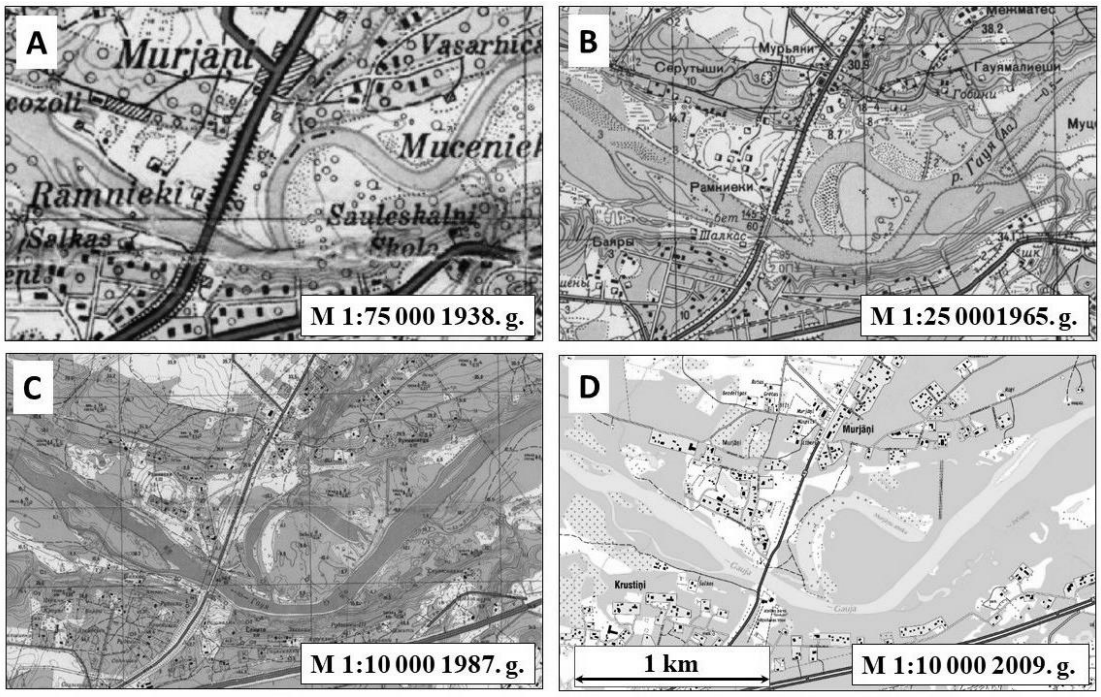
Kopumā datorizētā vide dod iespējas katram pētniekam izvēlēties pieejamos līdzekļus. Bet, jo plašākas zināšanas un spējas integrēt dažādus datus, jo lielākas iespējas

iegūt pietiekami precīzu priekšstatu par notikušajām objektu pārmaiņām (sk. 1. un 2. attēls) un daudzos gadījumos arī veikt prognozēšanu.

Gaujas tuvumā pie Aņeim (1. attēls) novērojams, kā mainās apdzīvojuma (apbūves) situācija, kad sākās privātmāju ciematu veidošanās Rīgas apkārtnē un kā šim procesam var izsekot dažāda laika kartogrāfiskajos materiālos.

Savukārt 2. attēlā var izsekot neliela Gaujas teces fragmenta izmaiņas pie Murjāņiem, kad, iespējams, cilvēka tiešas ietekmes rezultātā mainīta ieeljas palienes morfoloģija, ar dambja palīdzību novirzot upes ūdeņus pa citu "ceļu", tādejādi pasargājot šoseju no noskalošanas upes meandrā.

Jāuzsver vairāku karšu pārlūku, kā, piemēram, LVM GEO, LĢIA, Balticmaps nodrošina mobilajās iekārtās (telefonos un planšetēs) tiešsaistes vai bezsaistes režīmā pieejamās versijas, kas ļauj, arī dabā ejot, pieslēgt atšķirīgus un dažādu laiku telpisko datu slāņus, veikt navigāciju, ĢIS vidē vai citās aplikācijās iegūt datus un kartēšanu. Šobrīd īpaši uzteicama aplikācija lietotne „LVM GEO MOBILE".



2. attēls. **Zemes izmantošanas un upes gultnes (teces) maiņa pie Murjāņiem, nodrošinot Rīgas – Valmieras šosejas drošību** (izmantotas dažādu Latvijas vēstures periodu un atšķirīgu mērogu topogrāfiskās kartes no ĢZZF karšu pārlūka)

Diskusija - ieskats karšu pārlūku izmantošanā

Karšu pārlūku sniegtās iespējas arvien aktīvāk ļauj izmantot dažādu laiku kartes pagastu un novadu vai atsevišķu elementu izpētē. Kā piemērs jāmin – "Vienā gadījumā liecības par ainavu ir saglabājušās dažādu dokumentu un karšu formā, arī artefaktu nospiedumu formā ainavā, otrā – ainavu joprojām piepilda dzīvas atmiņas un stāstījumi no cilvēkiem, kas ir pieredzējuši dažādas ainavas pagātnes formas un

notikumus tajās" (Zariņa et al., 2013, 8). A. Zariņas un kolēģu monogrāfija ir bagāti ilustrēta, tajā skaitā ar vēsturiskām kartēm un bieži tās savā starpā ir salīdzinātas, kā, piemēram, Silzemnieku zālāju un atvērto grāvju meliorācijas sistēmu transformācijas un padomju laikā tur veiktās meliorācijas grāvju tīklojums (turpat, 31. lpp.).

Dažāda laika karšu salīzināšana un izmantošana urbānās vides vai pilsētu attīstības vēstures analīzē, piemēram, tiek lietota Polijā, bet neatsaucoties uz digitālu karšu krājumu kā pārlūku lietojumu (Eysymontt, 2017, Nieścioruk and Sosik, 2017).

Cits piemērs ir mūsdienās aktuālais jūras krastu ģeoloģisko procesu izpēte, kur ".. viena no plaši lietotām metodēm krasta pārmaiņu izpētē pasaules praksē ir dažāda vecuma kartogrāfiskā vai aerofotomateriāla analīze. Šo metožu pamatā ir dažāda kartogrāfiskā materiāla (karšu, plānu, shēmu) salīdzināšana, un reizēm tā ir vienīgā vai lētākā un vienkāršākā iespēja izsekot krastu attīstības gaitai līdz pat vairāku simtu gadu ilgā posmā" (Lapinskis, 2010, 14).

Arvien nozīmīgāki pētījumos ir lāzerskenēšanas (LiDAR) dati, kas ļoti detāli rāda Zemes virsas reljefa nianses un var iniciēt idejas pētījumiiem par to izcelsmi (veidu un laiku).

Tā arī, gan pētot *LiDAR* datus, gan pārbaudot pieejamās kartes un pat kājām izstaigājot daudzus bijušos dzelzceļa iecirkņus, tikai nesen sastādīta pirmā vienotā Augšzemes šaursliežu dzelzceļa vektoru karte, kas nu samērā precīzi ataino 1916.–1919. gada situāciju (Markots, 2022). Pētījums turpinās un divos karšu pārlūkos (LVM GEO un LU ĢZZF) ir ievietoti Latvijas 600 mm dzelzceļa tīkla vektoru dati, cerot, ka citi pētnieki papildinās un precizēs līdz šim apkopoto informāciju, kas sameklēta, izmantojot vēsturiskās kartes, apsekojumus dabā un precizēšanu pēc Zemes virsas reljefa modeļiem, kas sagatavoti no lāzerskenēšanas datiem.

Meža zinātniski pētnieciskajā institūtā "Silava" nesen pabeigts pētījums, kas orientēts uz potenciāli bioloģiski vērtīgo meža teritoriju vēsturiskās analīzes metodikas aprobāciju, kur izvērtēts daudzveidīgu telpisko materiālu lietojums, izmantojot gan jaunradītus materiālus no senākajām pieejamajām aerofotoainām, gan kartes vairāk nekā 170 gadu ilgā periodā, lai tiktu novērtēta "Meža kontūrainības, koku sugu dinamikas, dažādu laiku saimnieciskās darbības pēctecība dabas kartēšanas rezultātu kontekstā" (Lūkins et al., 2022). Kā liecina minētā publikācija, autori ir izveidojuši lokālu telpisko datu pārlūku, lai uzturētu savus telpisko datus un WMS piedāvātā pakalpojuma iespējas.

Kopumā novērojams karšu pārlūkos pieejamo kartogrāfisko materiālu daudzums, ietverot ne tikai augstāk minētās kartes, bet dažādas tematiskās kartes, speciālās kartes un atsevišķu teritoriju (pilsētu, pagastu vai novadu) vēsturiskās kartes. Noteikti sava loma ir tam, kādas ir zināšanas un vēlmes ĢIS speciālistiem iesaistīties šajos procesos un sava loma ir pieprasījumam pēc šāda piedāvājuma.

Katrā ziņā ģeogrāfiem un vēsturniekiem paveras jaunas iespējas piekļūt uzticamiem un vērtīgiem izziņas materiāliem, kas var veicināt gan dabas, gan vēstures

procesu padziļinātu izpratni, gan informācijas tehnoloģiju lietišķo pielietojumu aspektus.

Kopsavilkums

Latvijā ģeotelpiskās informācijas pieejamība paplašinās diezgan strauji. Tā veicina gan Eiropas INSPIRE direktīvas, gan atsevišķu organizāciju vai pat privātpersonu pašiniciatīva, kā pamatā ir izmantojamo datu nepieciešamība vai vēlme ar tiem nodrošināt plašāku sabiedrības loku. Arvien vairāk arī no profesionālajām organizācijām izriet aicinājumi dažādām ministrijām pēc paplašinātas pieejas atklātiem un brīvpieejas telpiskajiem datiem. Latvijā ir pietiekami daudz izmantojamu telpisko datu, lai, gatavojot kartes, nevajadzētu raudzīties pēc starptautisku korporāciju sniegtajiem pakalpojumiem, piemēram, Google, Open Street Map u.c. Apzinoties to un interesējoties par Latvijas ģeogrāfiskās vides attīstību un pārmaiņām tajā, tiek vairota arī mūsu speciālistu kompetence, pieredze un prasmes, kuras aktuāli nepieciešamas un ko pierāda uz ģeoinformātikas speciālistu sagatavošanu orientētu augstskolu studiju profesionālo programmu atvēršana, licencēšana un sertificēšana.

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PROFESORS REINHOLDS PUTNIŅŠ UN AKADĒMISKĀ ĢEOGRĀFIJA LATVIJĀ

PROFESSOR REINHOLDS PUTNINS AND ACADEMIC GEOGRAPHY IN LATVIA

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Anotācija
Profesors Reinholds Putniņš pirms vairāk nekā simts gadiem (1920) Latvijā sāka akadēmiski izglītotu ģeogrāfijas speciālistu sagatavošanu, izveidoja Fiziskās ģeogrāfijas institūtu (1922) un nodibināja Latvijas Ģeogrāfijas biedrību (1923). R. Putniņš ir skolojies Krievijā, devies pārrobežu ekspedīcijās, strādājis pie nozīmīgiem fiziskās ģeogrāfijas pētījumiem, Latvijā viņš ir radījis stabilus pamatus, uz kuriem tālāk attīstījusies daudzu spožu ģeogrāfu karjera un akadēmiskā darbība. Latvijas Universitātē R. Putniņš strādājis teju 15 gadus, sarakstījis desmitiem zinātnisku un populārzinātnisku publikāciju, kā arī radījis emocionālus dzejas un prozas darbus daiļliteratūrā. Rakstā aplūkota R. Putniņa akadēmiskā darbība un karjera, kā arī viņa laika biedru ieguldījums akadēmiskajā ģeogrāfijā Latvijā. Tāpat rakstā hronoloģiski apkopotas Putniņa publikācijas gan ģeogrāfijā, gan citās zinātņu nozarēs, papildinot publicēto darbu sarakstus ar līdz šim vienuviet neapkopotām publikācijām.
Atslēgas vārdi: *ģeogrāfija, akadēmiskā izglītība, Latvija, Reinholds Putniņš*

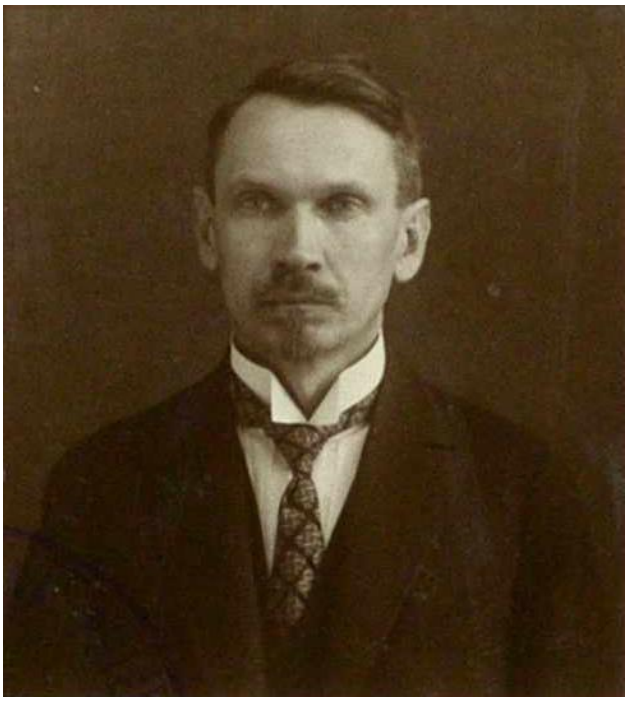
Summary
This article provides an important insight into the development of academic geography in Latvia. It lays out the key events from the formation of Latvian Geography Union and more specifically about the union's first president Reinholds Putniņš.
R. Putniņš was one of the leaders in academic field of geography in Latvia, when the foundations were just starting to form. He got his diploma in Saint Petersburg University, gained experience in other countries across Latvia's border that led him to be a strong academic figure to apply his knowledge back in his home country. He formed the union in 1923 and gave lectures in the University of Latvia for almost 15 years. During his time strong geographers and researchers developed their knowledge and skills leading to build a steady pavement for further academic development not only in geography, but also in mathematics and physics.
The article provides an overview of the academic and non-academic publications of R. Putniņš as well as other influential students and geographers of the time. Research articles, carrier descriptions and key events allow to reconstruct the timeline of the history of academic geography in Latvia. Significant is the fact that R. Putniņs was not only a well-known professor and scientist, but also published poetry and prose, once again emphasizing his ability

to see geography as a profound and interdisciplinary field, despite the fact that he was specialised in physical geography.

Ievads

Pēc atgriešanās Latvijā 1920. gada pavasarī Reinholdu Putniņu ievēlēja par docentu Latvijas Universitātes Matemātikas un dabaszinātņu fakultātē (1. attēls). Jau tā paša gada rudens semestrī R. Putniņš matemātikas un fizikas studentiem sāka lasīt lekcijas ģeogrāfijas pamatkursā – fiziskajā ģeogrāfijā, tādējādi ieviešot Latvijas Universitātē Ģeogrāfijas zinātņu akadēmisko kursu.

Docēt fiziskās ģeogrāfijas priekšmetus Matemātikas un dabaszinātņu fakultātē R. Putniņam nebija grūti. Pēterburgas universitātes Fizikas un matemātikas fakultātes sekmīga absolvēšana 1912. gadā ar I šķiras diplomu bija pamats viņa daudzpusīgajām zināšanām fizikas un ģeogrāfijas zinātnēs. Jo īpaši speciālajos kursos – fizikā un fiziskajā ģeogrāfijā – un fakultatīvajos kursos – astronomijā un ģeodēzijā, kā arī noslēguma darbā aplūkotajā tēmā – pētījumā par Zemes magnētismu. Pēc universitātes beigšanas enerģiskais un zinātkārais R. Putniņš sāka zinātniskos pētījumus Zemes magnētismā un meteoroloģijā Krievijas Zinātņu akadēmijas Galvenajā (Ģeo-) fiziskajā observatorijā akadēmiķu A. Vojeikova un B. Goļicina vadībā. Zinātniskā un lietišķā darbība Urālos, Rietumsibīrijā, Armēnijā un citos Cariskās Krievijas reģionos sekmē viņa ievēlēšanu par privātdocentu Jekaterinburgas Kalnu institūtā 1917. gadā, bet 1919. gadā – par docentu Vladivostokas Politehniskajā institūtā. Ar šādu plašu zinātnisko pētījumu un akadēmiskā darba pieredzi R. Putniņš bija ļoti vajadzīgs jaunajai Latvijas valstij (Slaucītājs, 1935, 1935a).



1. attēls. **Profesors Reinholds Putniņš** (foto no autora M. Laiviņa arhīva)

Fiziskās ģeogrāfijas institūts

R. Putniņš Latvijas Universitātes Matemātikas un dabaszinātņu fakultātē 1922. gadā sāka veidot Fiziskās ģeogrāfijas (un ģeonomijas) institūtu. 1926. gadā R. Putniņš aizstāvēja disertāciju par Zemes virsas iedalīšana apspīdēšanas joslās. Par šo darbu viņam 1926. gadā piešķīra matemātikas doktora grādu, bet 1927. gadā profesora nosaukumu. Pēc R. Putniņa nāves 1935. gadā šo darbu Latvijas Ģeogrāfijas biedrība publicēja angļu valodā – *"On the Division of Earth's Surface into Zones of Illumination"* (Rīga, Latvijas Ģeogrāfijas biedrības izdevums, 221).

Profesora R. Putniņa vadībā Fiziskās ģeogrāfijas institūts pamazām pilnveidojās. 1923. gadā Fiziskās ģeogrāfijas institūtā par subasistentu pieņēma Ģedertu Ramani, bet 1924. gadā otru subasistentu – Leonīdu Slaucītāju, kurš sekmīgi uzrakstīja studentu konkursa darbu– "Baltijas jūras ledi un miglas un to radīti traucēkļi jūrniecībai austrumu piekrastē", nopelnot pirmo godalgu. Kā Ģ. Ramans, tā arī L. Slaucītājs 1926. gadā sekmīgi pabeidza studijas un aizstāvēja kandidāta darbu: Ģ. Ramans – "Latvijas ģeogrāfiskās ainavas Ķirķenes apkārtnē", bet L. Slaucītājs – "Baltijas jūras ledi un miglas" (Putniņš, 1929a, 1934a; Malta, 1939).

Sekmīgi turpinot akadēmisko karjeru, asistenti Ģ. Ramans un L. Slaucītājs 1931./32. mācību gadā habilitējās par privātdocentiem. Ģ. Ramana habilitācijas raksts – "Ģeogrāfisko apstākļu loma baltu tautu pagātnē" un parauglekcija – "Telpas un robežu jēdziens ģeogrāfijā". Savukārt Leonīda Slaucītāja habilitācijas raksts – "Par magnētiskās deklinācijas sekulārvariāciju Baltijas jūras apgabalā", parauglekcija – "Zemes magnētisko polu pārvietošanās", bet iestāju lekcija – "Par zemes magnētisma fizikālo būtību". Abi jaunie Fiziskās ģeogrāfijas institūta privātdocenti sāka sekmīgu akadēmisko darbību (Putniņš, 1934a).

Matemātikas un dabaszinātņu fakultātē Fiziskās ģeogrāfijas institūtam radniecīgus ģeogrāfiska satura pētījumus un akadēmisko darbību veica vēl divos institūtos: 1921. gadā prof. R. Meijera nodibinātajā Meteoroloģijas institūtā un 1925. gadā prof. E. Krausa izveidotajā Ģeoloģijas un paleontoloģijas institūtā (Ābele, 1938; Gēlinš, 1938; Malta, 1939). Pēc prof. Reinholda Putniņa nāves 1935. gadā Fiziskās ģeogrāfijas institūtu sadala Ģeogrāfijas institūtā (vadītājs ir vecākais docents Ģ. Ramans) un Ģeofizikas institūtā. Tas kā atsevišķa nodaļa iekļāvās 1921. gadā izveidotajā Meteoroloģijas institūtā un kopš 1935. gada to sauca par Ģeofizikas un meteoroloģijas institūtu (Ģeofizikas nodaļas vadītājs institūtā bija vecākais docents L. Slaucītājs).

Ņemot vērā regulāri publicētos Latvijas Universitātes Lekciju un praktisko darbu sarakstus (Anon, 1921/1934), ģeogrāfu docētie priekšmeti (meteoroloģija, ģeoloģija u.c.) Matemātikas un dabaszinātņu fakultātē sakārtoti hronoloģiskā secībā 1. pielikumā. Tabulā apkopotie lekciju kursi docēti no 1920./21. mācību gada līdz 1934./35. mācību gadam, kad studiju kursu un akadēmiskā personāla izvēlē liela

nozīme bija Fiziskās ģeogrāfijas institūta vadītājam profesoram Reinholdam Putniņam.

Gandrīz 15 gadus ilgajā akadēmiskajā darbā Latvijas Universitātē R. Putniņš gadu no gada lasīja lekcijas pamata kursā savā specialitātē – fiziskajā ģeogrāfijā. Tāpat vadīja praktiskos darbus fiziskajā ģeogrāfijā, ar dažādu regularitāti organizēja seminārus ģeogrāfijas studiju priekšmetos. Atsevišķos semestros R. Putniņš docēja arī hidroloģiju, okeanogrāfiju, kartogrāfiju, Zemes magnētismu, seismoloģiju u.c. priekšmetus. Kopumā priekšmetu (un arī docētāju) skaits fakultātē gadu no gada palielinājās, tāpat kā studiju kursu izvēles iespējas. Nozīmīgi ir ar dzīvo dabu/bioģeogrāfiju saistītie kursi – augu ģeogrāfija, zooģeogrāfija (kopš 1925. gada), tāpat Reģionālās ģeogrāfijas kursu iekļaušana mācību apritē (kopš 1928. gada), kā arī humanitārās ģeogrāfijas/antropoģeogrāfijas pirmie iedīgļi Latvijas ģeogrāfijas akadēmisko zinātņu saimē (kopš 1932. gada). Ģeogrāfijas attīstību Latvijas Universitātes Matemātikas un Dabaszinātņu fakultātē tās darbības pirmajos desmit gados sekmēja plašais ģeogrāfijas priekšmetu un ģeogrāfijai radniecīgo izvēles kursu klāsts, kā arī daudzpusīgais akadēmiskais personāls (2. attēls).

2. attēls. **Latvijas Universitātes Matemātikas un Dabaszinātņu fakultātes mācību spēki 20. gs. 20. gadu beigās** (foto no autora M. Laiviņa arhīva)

Sēž pie galda no kreisās: prof. Rūdolfs Meijers, prof. Alfreds Mēders, prof. Reinholds Putniņš, prof. Alfreds Klose, prof. Naums Lebedinskis, prof. Nikolajs Malta (fakultātes dekāns), vec. doc. Fricis Gulbis, prof. Embriks Strands, doc. Leons Āboliņš, priv. doc. Kārlis Ābele, prof. Ernsts Krauss; stāv otrajā rindā no kreisās: asist. Leonīds Slaucītājs, subasist. Sergejs Slaucītājs, subasist. Verners Zāns, asist. Ģederts Ramans, vec. asist. Anna Dauvarte, asist. Olga Trauberga, priv. doc. Marija (Tauja) Tilmane, vec. asist. Viktors Ozoliņš, priv.doc. Nikolajs Tranzehe, vec.doc. Alfrēds Žaggers

Matemātikas un dabaszinātņu fakultātē par asistenti no 1922. līdz 1926. gadam strādāja arī R. Putniņa sieva Tajisa Putniņa, vadot praktiskos darbus fizikā (Malta, 1939; Jansons, 2001). Tajisa Putniņa dzimusi 1891. gadā Permas guberņā. 1908. gadā pabeigusi Permas pilsētas Marijas sieviešu ģimnāziju ar zelta medaļu, 1909.–1913. gadā studējusi Pēterburgas Bestuževa Augstākajos sieviešu kursos Fizikas un matemātikas fakultātē, strādājusi par fiziķi Galvenajā Fiziskajā observatorijā. Pēc tam strādājusi par novērotāju Jekaterinburgas magnētiski meteoroloģiskajā observatorijā un Vladivostokas Jūras observatorijā. 1919. gadā salaulājusies ar Reinholdu Putniņu (Jansons, 2001). Praktiskos darbus Tajisa Putniņa fakultātē vadīja līdz 1926. gadam.

Reinholda Putniņa publikāciju apskats

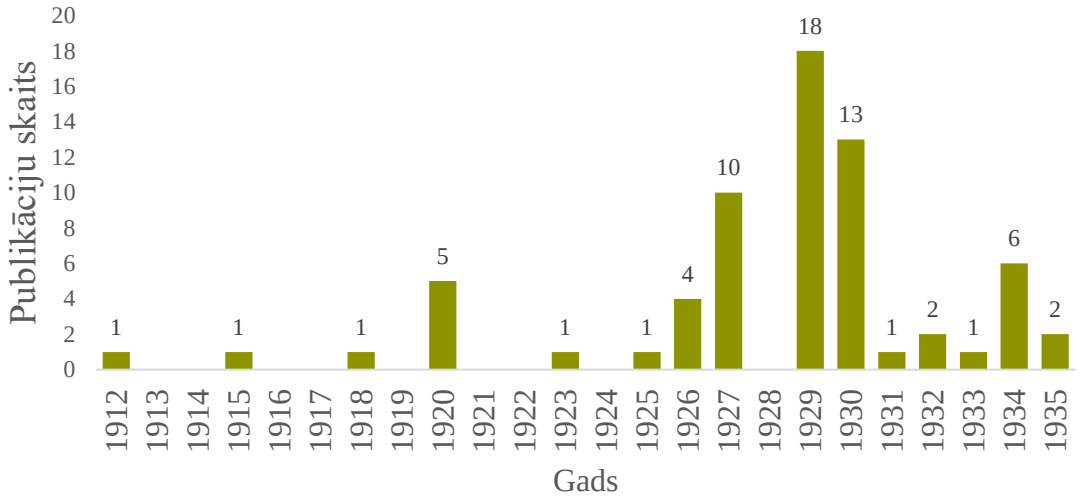
Pirmie Reinholda Putniņa zinātnisko un zinātniski populāro darbu saraksti atrodami Latvijas Universitātes desmit un divdesmit gadu darbības apskatos (Anon, 1929a; 1939a). Šajos fundamentālajos izdevumos R. Putniņa bibliogrāfijas sarakstos minētas pāri par 30 publikācijām. No tām 11 zinātniskie raksti, bet pārējie – zinātniski populāra rakstura darbi.

20.gs. beigās ne vien ģeogrāfi, bet arī literatūrzinātnieki sāka interesēties par Reinholda Putniņa atstāto mantojumu. Izrādījās, ka, mācoties Pleskavas mērniecības skolā un arī turpmākajos gados R. rakstījis Putniņš ir dzejojis un nelielus stāstus un tēlojumus par Latgali, par Lubānas ezera apkārtnes ļaudīm un viņu sadzīvi. Viņš ir tulkojis dažus darbus, kas publicēti galvenokārt mācītāja Jura Rozēna izdotajā žurnālā "Apskats", bet vēlākajos gados arī žurnālā "Daugava" un laikrakstā "Jaunākās Ziņas" ar pseidonīmu Vitolds Virsnis. Gan R. Putniņa zinātniskos darbus ģeogrāfijas zinātnēs, gan viņa literāros darbus savā bakalaura darbā: "Bērzpils. Bibliogrāfiskais rādītājs" ir apkopojusi Aiga Raciborska, Latvijas Universitātes Filoloģijas fakultātes studente, (Raciborska, 2001).

Gatavojot šo rakstu par R. Putniņu, vēlreiz izskatījām visus mums pieejamos bibliogrāfijas avotus, kuros varētu būt atrodami viņa iespiestie darbi, un sastādījām viņa publicēto darbu sarakstu. No jauna sarakstā iekļāvām nelielos ziņojumus, kas publicēti "Ģeogrāfiskos Rakstos", žurnālā "Burtnieks" un dažos laikrakstos, kas parakstīti ar vārda un uzvārda pirmajiem burtiem – R.P., bet kas pēc satura neapšaubāmi ir R. Putniņa uzrakstīti. Tieši tāpēc mūsu bibliogrāfijas saraksts, salīdzinot ar iepriekš minētajiem, ir ievērojami papildināts (sk. R. Putniņa bibliogrāfiju, kas pievienota rakstam).

R. Putniņa skolnieks un viņa tradīciju turpinātājs Leonīds Slaucītājs raksta, ka R. Putniņš ir bijis mazproduktīvs, iespējams, viņa lielās akadēmiskās slodzes dēļ (Slaucītājs, 1964). Par ģeogrāfijas un ģeofizikas zinātņu tematiku mūsu sastādītā saraksta pirmajā daļā atrodami 68 dažāda apjoma darbi – zinātniski raksti, grāmatu apskati un recenzijas, konferenču pārskati, raksti par ģeogrāfijas un zinātnes vēsturi. Publicētajos darbos skarto tematu loks ir ļoti plašs (3. attēls). Produktīvākais laiks R.

Putniņam ir bijis tieši 20. gs. 20. un 30. gadu mijā. Tas saistīts ar akadēmisko darbu Universitātē un Latvijas Ģeogrāfiskās biedrības izdevuma "Ģeogrāfiski Raksti/Folia Geographica" kārtošanu un krājumam iesūtīto rakstu rediģēšanu (1927–1934). Šajā laika posmā R. Putniņš izdevumā "Ģeogrāfiski Raksti" ir publicējis 41 ļoti atšķirīga apjoma rakstu (67 % no kopējā rakstu skaita).



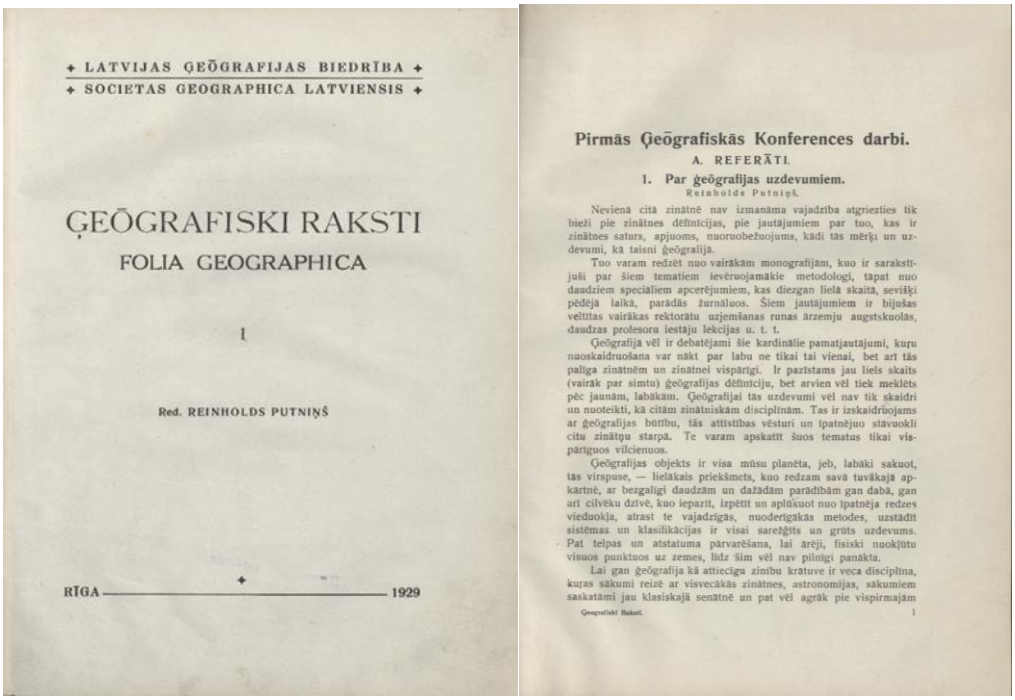
3. attēls. **R. Putniņa publicēto darbu hronoloģija** (izveidojuši autori)

Atbilstoši svarīgāko publicēto darbu virzienam un saturam L. Slaucītājs tos iedala vairākās kopās (Slaucītājs, 1935). Pirmā no tām aptver pētījumus teorētiskajā un lietišķajā ģeogrāfijā, no kuriem sevišķi akcentējami divi: "Par ģeogrāfijas uzdevumiem" un "Par Zemes virsas apspīdēšanas joslām" (4., 5. attēls) (Putniņš, 1929, 1935). Apbrīnojams ir R. Putniņa ģeogrāfijas zinātnes būtības izklāsts ar mūsdienu ģeogrāfijas izpratnes elementiem, piemēram, zemes sfēru holistiskais raksturs, zemes virsas trīsdimensionālais dalījums un Zemes sfēru planetārais un reģionālais līmenis, ģeogrāfija kā tilts starp dabas un gara (humanitārajām) zinātnēm utt. R. Putniņš darbā ir pievienojis zemes virsas iedalījumu 17 jūras un 27 zemes apgabalos, kas latviešu ģeogrāfiskajos darbos ir pirmais (pagaidām arī vienīgais) rajonēšanas piemērs planetārā līmenī. Mūsdienās "Par ģeogrāfijas uzdevumiem" būtu pirmais darbs, ar kuru obligāti jāiepazīstas studentiem, sākot ģeogrāfijas studijas Ģeogrāfijas un Zemes zinātņu fakultātē. Šis darbs tulkots arī lietuviešu valodā (5. att). Savukārt pētījumā par Zemes virsas apspīdēšanas joslām noskaidrota katra kontinenta, jūras un vietas (objekta) apspīdēšanas izteiksmes iespējamība.

Otrajā kopā ir kartogrāfijas studijas. Tas ir fundamentāli iecerēts, bet nenobeigts darbs, publicētas tikai atsevišķas pētījuma nodaļas, kas ietver pasaules karšu 12 jaunas projekcijas ar to lietošanas iespēju skaidrojumu (Putniņš, 1931, 1934, 1935a; Štrauhmanis, 1995).

Trešais virziens jeb trešā kopa ir pētījumi zemes magnētismā un atmosfēras fizikā, kas veikti galvenokārt Krievijā. Latvijā R. Putniņš ierosināja veidot Ģeofizikas institūtu, centrālo ģeofizisko observatoriju. Tāpat, apzinoties meteoroloģisko novērojumu nepieciešamību lauksaimniecībā un mežsaimniecībā, izveidot dažādas pakāpes novērošanas staciju tīklu (Putniņš, 1920, 1920a). Kā konsultants viņš ir piedalījies novērojumu staciju tīkla izveidē.

Ceturtā joma ir darbi okeanogrāfijā, kuros viņš apkopo Baltijas jūras hidroloģiskos novērojumus (Putniņš, 1929a, 1930).



✦ LATVIJAS ĢEOGRAFIJAS BIEDRĪBA ✦
✦ SOCIETAS GEOGRAPHICA LATVIENSIS ✦

ĢEOGRAFISKI RAKSTI
FOLIA GEOGRAPHICA

I

Red. REINHOLDS PUTNIŅŠ

RĪGA — 1929

Pirmās Ģeogrāfiskās Konferences darbi.

A. REFERĀTI.

1. Par ģeogrāfijas uzdevumiem.

Reinholds Putniņš.

Nevienā citā zinātnē nav izmanāma vajadziba atgriezties tik bieži pie zinātnes dēfinīcijas, pie jautājumiem par tuo, kas ir zinātnes saturs, apjuoms, nuoruobežuojums, kādi tās mērķi un uzdevumi, kā taisni ģeogrāfija.

Tuo varam redzēt nuo vairākām monografijām, kuo ir sarakstījuši par šiem tematiem ievērojamākie metodologi, tāpat nuo daudziem specialiem apcerējumiem, kas diezgan lielā skaitā, sevišķi pēdējā laikā, parādās žurnāluos. Šiem jautājumiem ir bijušas veltītas vairākas rektorātu uzjemšanas runas ārzemju augstskuolās, daudzas profesoru iestāju lekcijas u. t. t.

Ģeogrāfija vēl ir debatējami šie kardinālie pamatjautājumi, kuru nuoskaidruošana var nākt par labu ne tikai tai vienai, bet arī tās paliga zinātnēm un zinātnei vispārīgi. Ir pazīstams jau liels skaits (vairāk par simtu) ģeogrāfijas dēfinīciju, bet arvien vēl tiek meklēts pēc jaunām, labākām. Ģeogrāfijai tās uzdevumi vēl nav tik skaidri un nuoteikti, kā citām zinātniskām disciplīnām. Tas ir izskaidrūojams ar ģeogrāfijas būtību, tās attīstības vēsturi un īpatnējuo stāvuokli citu zinātņu starpā. Te varam apskatīt šuos tematus tikai vispārīguos vilcienuos.

Ģeogrāfijas objekts ir visa mūsu planēta, jeb, labāki sakuot, tās virspuse, — lielākais priekšmets, kuo redzam savā tuvākajā apkārtnē, ar bezgaligi daudzām un dažādām parādībām gan dabā, gan arī cilvēku dzīvē, kuo iepazīt, izpētīt un aplūkuot nuo īpatnēja redzes vieduokļa, atrast te vajadzīgās, nuoderīgākās metodes, uzstādīt sistēmas un klasifikācijas ir visai sarežģīts un grūts uzdevums. Pat telpas un atstatuma pārvarēšana, lai ārēji, fisiski nuokļūtu visuos punktuos uz zemes, līdz šim vēl nav pilnīgi panākta.

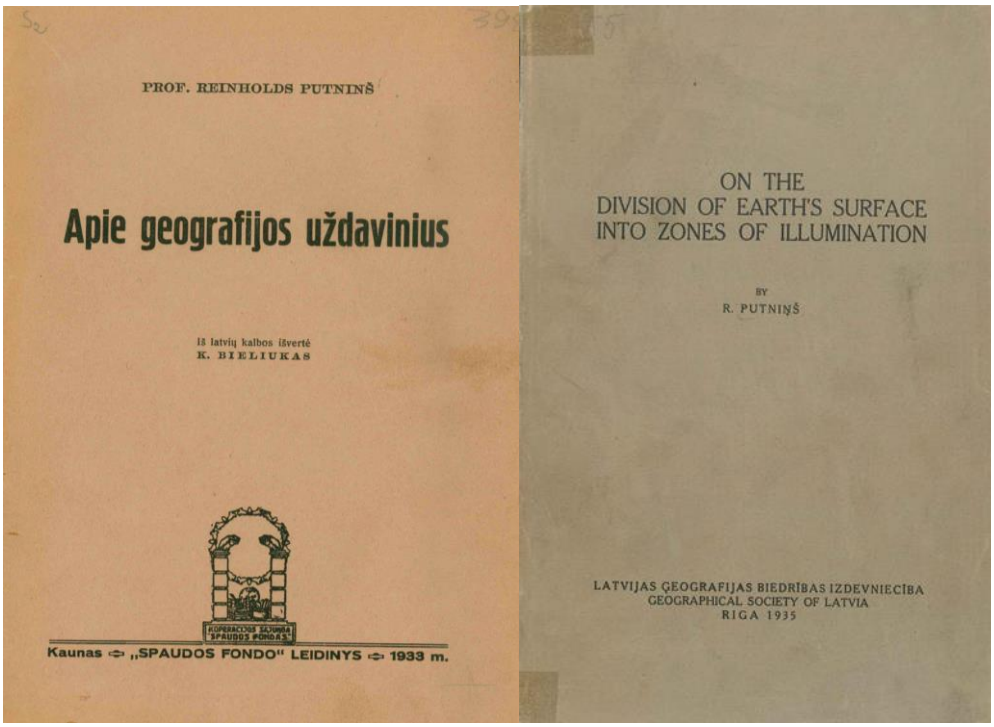
Lai gan ģeogrāfija kā attiecīgu zinību krātuve ir veca disciplīna, kuŗas sākumi reizē ar visvecākās zinātnes, astronomijas, sākumiem saskatāmi jau klasiskajā senātnē un pat vēl agrāk pie vispirmajām

Ģeogrāfiski Raksti. 1

4. attēls. **R. Putniņa izveidotā izdevuma "Ģeogrāfiski Raksti Folia Geographica" pirmā sējuma titullapa un viņa raksta "Par ģeogrāfijas uzdevumiem" pirmā lapaspuse**

Piektā joma – darbi ģeogrāfijas un citu dabaszinātņu vēsturē: par latviešu ģeogrāfijas atlantiem (Putniņš, 1926), par ceļotājiem (Dž Kuks), par ģeogrāfiem un ģeofiziķiem, (A. Vojeikovs, B. Goļicins) fiziķiem un matemātiķiem (R. Boils, K. Gauss, P. Laplass u.c.), skaidrojot viņu pētījumu nozīmi un lietojamību ģeofizikā un ģeogrāfijā (Putniņš, 1926a, 1927, 1927a, 1927b, 1929b).

Kā jau teikts, ģeogrāfs R. Putniņš ir pazīstams arī kā dzejnieks un prozaiķis. Jānis Štrauhmanis vienā no savām publikācijām R. Putniņu nosauc par ģeogrāfu ar dzejnieka dvēseli (Štrauhmanis, 1990). Viņa dzejas, tēlojumu un stāstu nozīmību, sevišķi latgaliešu literatūras kontekstā, ir vērtējuši daudzi literatūrzinātnieki, bet sevišķi rūpīgi – V. Skuja un A. Vējāns (Skuja, 1938; Vējāns, 1987). R. Putniņa publicēto darbu saraksta otrajā daļā ir ievietoti arī viņa dzejas un prozas darbi, kā arī to publicēšanas avoti.



5. attēls. **R. Putniņa monogrāfiju titullapas: "Par ģeogrāfijas uzdevumiem" (lietuviešu val.) un "Par Zemes apspīdēšanas joslām" (angļu val.)**

Latvijas Ģeogrāfijas biedrība

R. Putniņš intuitīvi nojauta ģeogrāfijas lielo nozīmi katra cilvēka un visas sabiedrības identitātes apliecināšanā. "Ģeogrāfija ir kā saikne starp dabas un gara zinātnēm," raksta R. Putniņš un citē vācu ģeogrāfu F. Racelu (Friedrich Ratcel) – ģeogrāfija māca pilsonim, kas tam ir viņa dzimtene un cilvēkam, kas tam ir uz zemes (Putniņš, 1929). Šo ideju R. Putniņš īstenoja, nodibinot Ģeogrāfijas biedrību.

Šajā sakarā citēsim R. Putniņa skolnieku L. Slaucītāju: ".. redzēdams, ka ģeogrāfisko zināšanu izplatīšana ir nepieciešama valstij vispār – arī ārpus universitātes, R. Putniņš kopā ar citiem domu biedriem nodibina Ģeogrāfijas biedrību, kura pulcē zinātniekus, skolotājus, ierēdņus un citus interesantus. Biedrība, sākot ar 1923. gadu, notur sapulces, referātu vakarus, konferences un apspriedes. Ar 1929. gadu iznāk biedrības pirmais Rakstu krājums." (Slaucītājs, 1934). Ģeogrāfijas biedrības darbībā, kā arī zinātnes un sabiedrības dzīvē jaundibinātajā Latvijā, liela nozīme bija periodiskā rakstu krājuma "Ģeogrāfiski Raksti/Folia Geographica" izdošanai, ko veica biedrība. Šajā sakarā E. Jansons (pseidonīms Carex) 1930. gadā raksta: ".. mūsu priekšā ir krājums, kas liecina par jaunas stigas ciršanu mūsu vēl nabadzīgajā zinātniskā literatūrā."

Pasaulē pirmās ģeogrāfijas biedrības izveidojās 19. gs. pirmajā pusē pasaules lielākajās, ar ģeogrāfijas tradīcijām bagātās valstīs – Francijā (1821), Vācijā (1828), Anglijā (1830), Brazīlijā (1838), Krievijā (1843), ASV (1852). Latvijas Ģeogrāfijas biedrība izveidojās 20. gs. pirmajā pusē pēc kara (1923), kad sabruka Austroungārijas

impērija, Krievijas impērija zaudēja vairākas pārvaldītās teritorijas un to vietā izveidojās jaunas valstis. Šajās jaunajās valstīs dibināja Ģeogrāfijas biedrības, piemēram, Polijā (1918), Somijā (1921), Slovēnijā (1922), Lietuvā (1934). Patīkami, ka Ģeogrāfijas biedrība pašlaik ir viena no vecākajām profesionālajām biedrībām Latvijā ar vienojošu dabas, sociālo un humanitāro ievirzi.

Biogrāfiskas ziņas par R. Putniņu, viņa amatiem

Dzimis 1881. gada 1. septembrī tagadējā Bērzpils pagasta Vārguļu mājās (koord.
311838 X(N);
692189 Y(E)), Jāņa un Dores Putniņu ģimenē

Skolas gaitas sācis Bērzpils (Domopoles) pagasta skolā, Strūžānu draudzes skolā

1898-1900 - Pleskavas skolotāju seminārs
1900-1903 - Pleskavas mērniecības skola
1904 - iegūta artilērijas rezerves virsnieka pakāpe
1907 - eksterna abitūrija Vjatkas klasiskajā ģimnāzijā
1907–1912 - Pēterburgas universitātes Fizikas un matemātikas fakultāte
1912 - Krievijas ZA Galvenā fiziskā observatorija
1917 - Jekaterinburgas Kalnu institūts, privātdocents
1919 - Vladivostokas Politehniskais institūts, docents
1920 - Vladivostokas Jūras observatorija, priekšnieks
1920 - LU Matemātikas un dabas zinātņu fakultāte, docents, Fiziskās ģeogrāfijas institūts, vadītājs
1920–1921 - LU Matemātikas un dabaszinātņu fakultāte, sekretārs
1927–1928 - LU Matemātikas un dabaszinātņu fakultāte, dekāns
1926 - Dr. math. disertācija par Zemes virsmas iedalīšanu apspīdēšanas joslās
1927 - profesors

Miris 1934. gada 25. oktobrī, apglabāts Rīgā Meža kapos
Apbalvots ar Triju Zvaigžņu ordeņa III šķiru.

Profesors Reinholds Putniņš pirms vairāk nekā simts gadiem (1920) Latvijā uzsāka akadēmiski izglītotu ģeogrāfijas speciālistu sagatavošanu, izveidoja Fiziskās ģeogrāfijas institūtu (1922) un nodibināja Latvijas Ģeogrāfijas biedrību (1923). Latvijas Universitātē pirmajos darbības gados ģeogrāfija attīstījās matemātikas un fizikas eksakto zinātņu saimē un šo zinātņu ietekmē (R. Putniņš pats ir studējis fiziku un matemātiku Pēterburgas Universitātē), un tikai pēdējos profesora R. Putniņa aktīvās darbības gados Latvijas Universitātē ievērojami paplašinājās ģeogrāfijas akadēmisko

kursu skaits ne tikai fiziskās ģeogrāfijas zinātņu kopā, bet arī sociālajā un humanitārajā ģeogrāfijā. Tas liecina par R. Putniņa izpratni par dabas un cilvēka attiecībām – par to holistisko saistību un mijiedarbību kontinuitāti biosfērā. Profesora vadībā izauga, viņa idejas pārmantoja un tālāk attīstīja daudzi spējīgi ģeogrāfi, starp tiem īpaši jāpiemin pasaulē pazīstamais ģeofiziķis Leonīds Slaucītājs un antropoģeogrāfs, modernās reģionālās, arī ainavu ģeogrāfijas pionieris Latvijā Ģederts Ramans.

Vērtējot ģeogrāfiskās domas attīstību Latvijā pēdējos simts gados, gribas uzsvērt divu redzamu latviešu ģeogrāfu – Reinholda Putniņa un Ādolfa Kraukļa lomu šajā procesā. Kā R. Putniņš, tā Ā. Krauklis savas dzīves noslēdzošajā posmā Latvijā darbojas salīdzinoši īsu laiku – ne ilgāk par 15 gadiem, R. Putniņš 1920.–1934., Ā. Krauklis 1991.–2006. Ļoti nozīmīgi, ka šajos laika posmos nebija radošās domas ierobežojumu, kā tas bija 20. gs. 40.–80. gados. Tāpēc ģeogrāfija viņu darbos tiek traktēta kā integrāla dabas, sociālo un humanitāro parādību un procesu sintēze, kas sevišķi nozīmīga ģeogrāfu domas veidošanā akadēmiskajās studijās un pēc tam profesionālajā darbībā. R. Putniņš dibināja Ģeogrāfijas biedrību, astoņus gadus bija biedrības prezidents, sāka izdot Ģeogrāfiskus Rakstus, Ā. Krauklis biedrības prezidenta amatu uzņēmās 1993. gadā. Zīmīgi, ka viņš 1999. gadā atjaunoja R. Putniņa iesākto Ģeogrāfisko Rakstu izdošanu (pašlaik atjaunotajā versijā iznākuši 12 izdevumi). Abi ievērojamie latviešu ģeogrāfi daudzus gadus strādājuši Krievijā, labi iepazīdami krievu ģeogrāfiskās domas tradīcijas, bet vienlaikus arī daudz ceļojuši, ņēmuši aktīvu dalību Vispasaules ģeogrāfu kongresos un starptautiskajās zinātniskajās konferencēs, tādējādi sava laika jaunākās ģeogrāfijas idejas ieviešot un popularizējot Latvijā.

Pateicība

Autori pateicas Bērzpils pagasta Bibliotēkas vadītājai Annai Krivišai par iespēju iepazīties ar pagasta bibliotēkas fondu materiāliem par profesoru Reinholdu Putniņu, kā arī Reģionālās Ģeotelpiskās informācijas speciālistei Andrai Zubko-Melnei par R. Putniņa dzimtās mājas Vārguļu fermas sameklēšanu senajās kartēs un mājvietas precīzu ģeogrāfisko koordinātu noteikšanu.

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1904
Nakts [Rīt diena…]. *Apskats*, 16:249.
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Dažādas es dzirdu dziesmas [Dažādas es dzirdu dziesmas…]. *Apskats*,46:729.
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1905
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1934
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Mans kalnu sils [Mans kalnu sils tur tālumā…]. *Jaunākās Ziņas*, 27. oktobrī, 244:11.
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1904
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1905
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DAŽĀDU PAAUDŽU ĢEOGRĀFI LAUKA PĒTĪJUMOS LATVIJĀ UN ĀRPUS TĀS: ATMIŅAS UN ATTĒLI

GEOGRAPHERS OF DIFFERENT GENERATIONS IN FIELD STUDIES IN LATVIA AND BEYOND: MEMORIES AND IMAGES

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Anotācija

Raksts sniedz īsu ieskatu lauka pētījumos Latvijā un ārpus tās, kas papildināts ar fotostāstu par Latvijas dažādu paaudžu ģeogrāfu lauka pētījumiem un mācību praksi. Lauka pētījumi ir savstarpēji cieši saistīti ar ģeogrāfijas mācīšanu augstskolās. Ņemot par pamatu literatūras apskatu, raksts sniedz ieskatu prasmēs, ko ģeogrāfi iegūst, piedaloties lauka pētījumos. Tie kā daļa no ģeogrāfijas mācību procesa mūsdienās ir apdraudēti finansiālu apsvērumu dēļ. Toties vēsturiskā pieredze un materiālais mantojums, kas saistīts ar lauka pētījumiem un mācību lauka praksi Latvijas ģeogrāfijas ilgajā pastāvēšanas laikā, līdz šim nav pietiekami pētīts.
Atslēgas vārdi: *Lauka pētījumi, ģeogrāfija, fotogrāfijas*

Summary

The article provides a concise overview of rural research in Latvia and beyond, complemented by a photostory about the field studies and teaching practices of various generations of Latvian geographers. Rural research is closely linked to geography education at universities. Drawing on a literature review, the article offers insights into the skills geographers acquire through field research. However, the financial constraints of the present moment threaten the existence of rural research within geography education.

The introduction emphasises the historical development of geography, involving fieldwork, expeditions, and educational excursions. With changes in travel and communication technology, the nature of field research and its visual aspects have evolved. Field research reports and images serve as evidence of the generations of geographers involved. The article highlights the importance of reflective and problem-oriented field research and its integration into geography education.

The challenges facing rural research in Latvia and globally are outlined. The decreased availability of field research for students, reduced funding, and the closure of geography programmes are significant concerns. The article concludes by advocating the exploration of Latvia's rich historical legacy of field research as a means for critical evaluation by new generations of geographers.

Ievads

Sekojot ģeogŗāfijas attīstībai gan kā zinātnes nozarei, gan kā izglītības priekšmetam, tai līdzās vienmēr ir bijuši lauka pētījumi, lauka prakse, ekspedīcijas un mācību ekskursijas. Mainoties ceļošanas un komunikācijas tehnoloģijām, lauka pētījumu raksturs un it īpaši to ārējās (vizuālās) pazīmes ir mainījušās. Lauka pētījumu ziņojumi un attēli kā materiālās liecības norāda uz to, kura no ģeogrāfu paaudzēm ir tās dalībnieki. No otras puses, var ar pārliecību teikt, ka jaunāka un senāku laiku lauka pētījumu dokumentācija, dienasgrāmatas, piezīmes, fotogrāfijas un dažādu tehnoloģiju audiovizuālā informācija, tāpat kā priekšmeti no pētījumu vietām (lauka) ir sociāli vēsturiskas liecības gan par vietām, kuras apmeklētas un pētītas, gan par ģeogrāfijas kā zinātnes attīstību, gan par tām ģeogrāfu paaudzēm, kas pētījumos iesaistītas.

1. attēls. **Lauka pētījums Latvijas Universitātes Ģeogrāfijas studentu ārvalstu mācību prakses ietvaros Ungārijā 1987. gada vasarā, prof. Renātes Āvas un docentes Anitas Kalniņas vadībā** (foto no autores personīgā arhīva)

2. attēls. **Lauka pētījums Latvijas Ģeogrāfijas biedrības reģionālās konferences ietvaros Sēlijā 2007.gadā, lektors prof. Māris Laiviņš** (foto no autores personīgā arhīva)

Lauka pētījumu nozīme ģeogrāfijā

Lai arī globāli lauka pētījumi tiek uzskatīti par būtisku ģeogrāfijas izglītības daļu un ir ne tikai efektīvi, bet arī aizraujoši gan studentiem, gan mācībspēkiem (Kent et al., 1997; Phillips and Johns, 2012), tomēr tie gandrīz vienmēr ir bijuši nepietiekami novērtēti, finansēti un pētīti kā zinātniska metode un daļa no mācību procesa (Hemsworth, 2020; Arı, 2019; Gerber and Kim, 2000). Tas, kā universitātes, kuras māca ģeogrāfiju, ietver lauka pētījumus savās programmās, atšķiras gan starp valstīm, gan starp atsevišķām universitātēm. Ārvalstu pētnieki norāda uz lielu daudzveidību un mainīgumu laika gaitā. Lauka pētījumi var būt kā atsevišķs kurss vai kā integrēta daļa konkrētā mācību priekšmetā, tomēr lauka pētījumi dominē dabas (fiziskās) ģeogrāfijas jomā pretstatā cilvēka ģeogrāfijas tēmām (Wilson et al., 2017). Nākotnē būtu jāveic

detalizētāka izpēte par to, kā lauka pētījumi ir attīstījušies Latvijā, salīdzinot ar citiem pasaules reģioniem. Līdzīgi kā Lielbritānijā, kur zinošāka ģeogrāfa vadībā lauka pētījumi kā mācību ekskursija pastāv jau vairāk nekā 150 gadu, arī Latvijas Ģeogrāfijas biedrībai jau starpkaru periodā ir pieredze ekskursiju ar lauka pētījumu raksturu organizēšanā (Kent et al., 1997). Padziļināti, problēmorientēti un ar aizvien lielāku studentu iesaisti lauka pētījumi ģeogrāfijā attīstās, sākot no 20. gs. 50. gadiem. Latvijā, esot PSRS sastāvā, lauka prakses un pētījumi vairāk fokusējās uz fizisko un ekonomisko ģeogrāfiju, atstājot kultūras un sociālās ģeogrāfijas komponentus neformālā dalībnieku pieredzē. Okupācijas apstākļos ne visas teritorijas bija pieejamas un ne visas zinātniskās darbības atļautas (Peil, 2013), piemēram, nedrīkstēja fotografēt daudzās stratēģiski nozīmīgās vietās. Pasaulē lauka pētījumu modernizācija tiek raksturota atkarībā no tā, kā mainās to dalībnieku darbība (pielietotās metodes) un izmantotās tehnoloģijas, piemēram ĢIS, ĢPS un *Google Earth* izmantošana (Day, 2017; Favier and Schee, 2009; Pope and Price, 2017), mobilās tehnoloģijas, piemēram, viedtālruņu aplikācijas, audiovideo tehnoloģijas, droni un citas. Lauka pētījumos "satiekas tradīcijas un tehnoloģijas" (Gerber and Kim, 2000).

Ja ģeogrāfijas attīstības sākumā lauka pētījumu dalībnieki bija tikai pasīvi vērotāji un vietu aprakstītāji, tad laika gaitā tie kļūst aizvien aktīvāki, veic intervijas, diskusijas, iesaistās vietējos notikumos. Laika gaitā lauka pētījumi kļūst vairāk problēmorientēti un tiek veicināta studentu iniciatīva. Tomēr, kā norāda ārvalstu pētnieki, palielinoties iesaistītajam studentu skaitam un samazinoties pieejamajam finansējumam, daļu no jauninājumiem nav iespējams uzturēt (Kent et al., 1997). Latvijas ģeogrāfu saime nekad nav bijusi liela, kas nereti ar nelieliem līdzekļiem tomēr ļāvis lauka pētījumus veikt pietiekami dziļi, nodrošinot ciešas saites starp mācībspēkiem un studentiem. Ārvalstu pētnieki norāda uz drošības apstākļiem, veicot lauka pētījumus, it īpaši uz sieviešu un cilvēku ar īpašām vajadzībām iesaistīšanos, rasu/ādas krāsas atšķirībām starp pētniekiem un vietējiem iedzīvotājiem, tāpat pievērš uzmanību kultūras izpratnei un svešvalodu zināšanu nozīmei lauka praksēs, atrodoties ārpus savas nacionālās kultūras teritorijas. Latvijas ģeogrāfiem padomju periodā labās krievu valodas zināšanas un mūsdienās angļu valodas zināšanas dod iespējas efektīvi strādāt daudzās teritorijās, tomēr citu valodu apguve, lai padziļināti pētītu, piemēram, Baltijas kaimiņvalstis, vienmēr ir bijis izaicinājums. Ārvalstu pētnieki kā īpašus izaicinājumus norāda lauka prakses attālākos reģionos, kuros iesaistās studentu grupas ar docētājiem un tiek izmantoti aviolidojumi un/ vai tālie dzelzceļu pārbraucieni. Šādi pasākumi prasa ne tikai ievērojamu finansējumu, bet arī īpašu studentu un pasniedzēju iesaisti, arī vietējās augstskolas piedalīšanos. Tikai tām ģeogrāfijas augstskolām pasaulē, kurās ir neliels studentu skaits, ir iespējas šādas tālās prakses organizēt, izmantojot tās jaunu studentu piesaistīšanā. Latvijas Universitātei šādu tālo mācību prakšu rīkošana bija ierasta ģeogrāfijas mācību programmas sastāvdaļa Padomju

Savienības periodā. Mūsdienās būtu jāņem vērā dekolonizācijas apsvērumi attiecībā uz mācību prakšu mērķiem, metodēm, izpētes reģioniem un vietām.

Prasmes lauka pētījumos

Lauka pētījumi (prakses) attīsta dažādas studentu prasmes (Higgitt, 1996), tai skaitā intelektuālās, personiskās izaugsmes, tehniskās un tādas, kuras apgūst, fiziski atrodoties pētījuma vietā. Būt fiziski, tas ir, ķermeniski ar visām maņām laukā ir ģeogrāfijas būtība, neatkarīgi no tā, vai "lauks" ir vietējā apkaime, tuvāka vai tālāka pilsēta vai lauki, vai arī ārvalstis,. Tiek uzsvērts, ka lauka pētījumu "spēks' ir darbībā (Gerber and Kim, 2000). Mūsdienās pētnieki pievēršas attiecībām starp lauka pētījuma dalībniekiem un vietējiem iedzīvotājiem, kultūru un vidi, īpaši uzsverot ētikas nozīmi pētījumos (Phillips and Johns, 2012).

"Lauka pētījumi ir veids, kā iegūt zināšanas, novērojot un pētot mūsu sauszemes vidi" (Hutchins, 1962), tie attīsta tādas prasmes kā novērošana, ainavu lasīšana, mācīšanās no pieredzes un realitātes, paša atbildību par izglītošanos, analītiskās spējas, prasmi respektēt vidi un laikapstākļus, un citus praktiskas dabas kavēkļus, spējas sastrādāties ar citiem studentiem, uzticēties grupas biedriem (Gold et al., 1991). Eiropas mācībspēku aptauja parādīja, ka nozīmīgas prasmes, kuras iegūst lauka pētījumos, ir arī radošā un kritiskā domāšana, telpiskā domāšana, attiecību izpratne starp dabas un cilvēka veidoto vidi, spēja savietot teorētiskās zināšanas par vidi un sabiedrību ar praksi, spējas novērot reālo pasauli, piemērot starpdisciplināru pieeju, spējas būt atvērtiem un elastīgiem attiecībā uz jaunu pieredzi un citas prasmes (Wall and Speake, 2012). Tie veicina vispārīgas un ar konkrētu mācību kursu saistītas prasmes, nodrošina iespējas eksperimentālai mācīšanās pieredzei, spējas darboties dažādās izaicinošās vidēs, spējas novērtēt mācību grāmatās sniegtās zināšanas, spējas fragmentētās un nozarēs sadalītās zināšanas integrēt koherentā kopumā, veicina spējas attīstīt intuitīvas zināšanas (McEwen, 1996). Nozīmīga ir refleksivitāte kā akadēmiskās introspekcijas veids, kas veicina to, ka studenti paši konstruē savas jēgpilnas nozīmes par telpām, vietām un notikumiem (sastaptajiem) lauka pētījuma gaitā (Wakefield, 2007; Glass, 2014). Lauka mācību pētījumi veicina "dziļo" mācīšanos (MacKenzie abd White, 1982; Dummer et al., 2008), kas "ļauj studentiem veidot labāku izpratni par abstraktiem jēdzieniem/konceptiem, izveidojot savienojumus starp jēdzieniem un pašu novērojumiem un pieredzi" (Higgitt, 1997) un nodrošina ilgstošāku atcerēšanos. Cilvēku ilgtermiņa atmiņa saglabā dažāda veida elementus: verbālās zināšanas (faktus un uzskatus), intelektālās prasmes (veidus, kā veikt noteiktus uzdevumus), tēlus (informācijas attēlojums, bieži vizuāls) un epizodes (notikumi, kuros indivīds ir piedalījies) (Gagne and White, 1978), pie tam atmiņā tie labāk saglabājas, ja visi šie elementi ir savstarpēji saistīti. Lauka pētījumos ir šie elementi (MacKenzie and White, 1982), tāpēc ģeogrāfijas studiju absolventi ilgi pēc

studiju noslēguma individuāli un grupās atsauc atmiņā lauka mācību praksēs piedzīvoto.

Nākotnes izaicinājumi

Lai gan visā pasaulē ģeogrāfijas studiju pievilcība tiek apliecināta ar mācību lauka praksēm un pētījumiem, to pieejamība studentiem samazinās jau vismaz četras desmitgades (France and Haigh, 2018; Wilson et al., 2017; Scott et al., 2006; Foskett, 1999; McEwen, 1996). Vienlaikus sarūkot lauka pētījumu īpatsvaram mācību programmās, samazinās arī zinātniskie raksti, kas pamatoti ar lauka pētījumiem ģeogrāfijā (Rundstrom and Kenzer, 1989). Domājams, ka pēcpandēmijas un digitālo pārmaiņu rezultātā, tāpat Krievijas militārās agresijas ietekmē augošo enerģijas izmaksu dēļ, kas iespaido gan ceļošanu, gan izmitināšanu, lauka pētījumiem gan studentiem, gan pieredzējušiem zinātniekiem, tuvākie gadi būs izaicinājumu pilni. Tiek uzsvērts, ka ģeogrāfijas kopienas 1) pašas nepietiekami novērtē, 2) nepietiekami komunicē ar ne-ģeogrāfiem, 3) nepietiekami veic pētījumus par a) pašiem lauka pētījumiem, b) tajos izmantotajām metodēm; c) vietējām un ārvalstu teritorijām, kuras kalpo par izpētes laukiem, tai skaitā valodas, kultūras un citiem izaicinājumiem un ieguvumiem; d) institucionālajām struktūrām, t.i. saiknēm starp mācību kursiem un programām un lauka pētījumiem; e) prasmēm, kuras studenti iegūst, veicot pētījumus, f) veidiem un kritērijiem, kā dalība lauka pētījumos tiek novērtēta, g) saiknēm ar ārpusē esošajiem attiecībā uz pētnieku (studentu un mācībspēku) grupu, piemēram, atsevišķi eksperti, valsts un pašvaldību institūcijas un aģentūras) un h) prakses pārvaldību (izmaksas, pārvietošanās un apmešanās organizāciju) (daļēji pēc McEwen, 1996).

Pētnieki norāda, ka dažkārt līdz ar lauka prakšu likvidāciju, pēc neilga laika tiek slēgta arī pati ģeogrāfijas programma (Wall and Speake, 2012; France and Haigh, 2018). Mūsdienās ir vērojami procesi, kad ģeogrāfijas un bioloģijas (ekoloģijas) lauka pētījumi tiek integrēti (Tilling, 2018), vai arī to pieredzi pārņem citas nozares. Mūsdienās labākā lauka pētījumu veikšanas pieredze norāda, ka ir nepieciešams garāks un detalizētāks sagatavošanās periods. Pirms dodas lauka pētījumos, pētniekiem ir jāzina metodes, kuras izmantos, un teorijas, zinātniskie jēdzieni/ koncepti, kas pamatos pētījumu. Mūsdienu sarežģītā realitāte nosaka, ka labāki rezultāti ir tiem pētniekiem, kuri zina teorijas, lai uzdotu atbilstošus pētniecības jautājumus (Schlosser, 2014).

Noslēgums

Tas, kāda būs nākotne lauka pētījumiem un praksēm, ir cieši saistīts ar ģeogrāfijas nozares vispārējo attīstību Latvijā. Tomēr bagātīgā vēsturiskā pieredze, atstātais materiālais un nemateriālais mantojums – lauka pētījumu apraksti, fotogrāfijas un cilvēku atmiņas – sniedz lielas iespējas jaunāko paaudžu ģeogrāfiem

kritiski novērtēt iepriekšējo paaudžu pieredzi un salīdzināt to ar citu valstu ģeogrāfu vēsturisko pieredzi. Fotostāsti ir pierādījums Latvijas ģeogrāfu plašajai pieredzei lauka pētījumos un aicinājums pievērsties ģeogrāfijas vēstures izpētei padziļināti.

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LATVIJAS UNIVERSITĀTES ĢEOGRĀFI SIBĪRIJĀ

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Anotācija

Rakstā sniegta informācija par Latvijas Universitātes ģeogrāfu darbību 20. gs. 60.-70. gados zinātniskajos institūtos Sibīrijā: Sibīrijas un Tālo Austrumu Ģeogrāfijas institūtā, Zemes Garozas, Arktikas Ģeoloģijas un Limnoloģijas institūtā. Īsi apkopotas ziņas par Sibīrijas pētījumu rezultātiem un ģeogrāfu sibīriešu tradīcijām mūsdienās.

Summary

Latvian geographers have always had a thirst for exploration beyond the horizons. During the Soviet era, the Western horizon was limited by the USSR's borders. By contrast, the eastern horizon extended far into the vast and enigmatic land of Siberia, reaching the shores of the Pacific Ocean. In the 1960s and 1970s, driven by curiosity and a desire for adventure, many students from the from the Geography Faculty at the University of Latvia embarked on expeditions to various regions of Siberia, which left lasting impressions on them. Voldemars Popils was among the pioneers who ventured beyond the Urals in 1962, followed by Adolf Krauklis, who established an experimental geographical research station in central Siberia. The station gathered data on various landscape aspects, with students from across the Soviet Union contributing valuable information during summer fieldwork. Krauklis expanded his research beyond the station, exploring different regions of Siberia. After 1980, the focus shifted to the institute's staff members, and students were no longer invited due to safety concerns related to a nearby prison camp.

Nevertheless, Krauklis continued his research, becoming a respected scientist both within the Soviet Union and internationally. After the restoration of Latvia's independence, he returned and became a professor at the University of Latvia. The experiences in Siberia profoundly impacted the geographers, forging a deep kinship among those who followed their hearts to that distant land.

1.attēls. **Sibīrijas trakta asfaltā iezīmētā Eiropas un Āzijas robežlīnija Urālos** (foto no autora personīgā arhīva)

Ievads

Ģeogrāfi ir *tauta*, kas allaž tiekusies palūkoties aiz horizonta. Padomju okupācijas laikā rietumu virzienā

horizonts beidzās pie PSRS robežas. Aiz tās tika vien izredzētie. Toties austrumu virzienā bija pieejami apvāršņi līdz pat Āzijas krastiem pie Klusā okeāna. Tur aiz Urālu kalnu pārejā Sibīrijas trakta asfaltā iezīmētās līnijas izpletās Sibīrija – vilinoša un reizē biedējoša zeme ar savu neaptveramo plašumu un drūmo vēsturi (1. attēls). Daudzi pagājušā gadsimta sešdesmito un septiņdesmito gadu Latvijas Valsts universitātes (LVU) Ģeogrāfijas fakultātes studenti zinātkāres, jaunības neprāta, romantikas un piedzīvojumu kāres vadīti ļāvās šim vilinājumam un darbojās dažādās ekspedīcijās Sibīrijas novados (sk. pielikumu). Bija jau studentiem interesantas arī tā saucamās tālās mācību prakses: Hibīnos, Vidusāzijā, Kaukāzā, Dagestānā, Altajā u.c. PSRS reģionos. Tomēr Sibīrijas ekspedīcijās tika gūta daudz nopietnāka zināšanu pieredze un izjusti emocionāli pārdzīvojumi, kas daudziem atmiņās atstāja paliekošus nospiedumus uz visu mūžu. Ne viens vien no viņiem pēc studiju pabeigšanas arī savas darba gaitas sāka Sibīrijā.

Pirmais Ģeogrāfijas fakultātes students, kurš nonāca aiz Urāliem, bija Voldemārs Popils. 1962. gada vasarā viņam bija izdevies iekārtoties kādā no daudzajiem Ļeņingradas ģeoloģijas zinātniski pētnieciskajiem institūtiem (ZPI) un piedalīties tā rīkotajā ekspedīcijā Rietumsibīrijā Jamalas Ņencu autonomajā apvidū Tazas upes baseinā (sk. pielikumu). Tur savāktie materiāli viņam ļāva uzrakstīt diplomdarbu un fakultātes Studentu zinātniskās biedrības konferencē uzstāties ar referātu. Tas bija tik intriģējošs, ka arī daudzos klausītājos izraisīja vēlmi piedzīvot kaut ko līdzīgu. Par laimi jau nākamajā gadā, pateicoties Ādolfam Krauklim, šāda iespēja radās un turpmāk tā saglabājās daudzu gadu garumā.

Ādolfs Krauklis un Pieangaras taigas stacionārs

1957. gadā izveidoja PSRS Zinātņu akadēmijas Sibīrijas nodaļu. Tās pakļautībā Sibīrijas lielākajās pilsētās darbu sāka daudzi ZPI, to skaitā arī Sibīrijas un Tālo Austrumu ģeogrāfijas institūts Irkutskā. Kadrus uz jaundibināto institūtu aicināja no visas Padomju Savienības, uz ko atsaucās arī talantīgais LVU Ģeogrāfijas fakultātes 1961. gada absolvents, nu jau aspirants, Ādolfs Krauklis. Darbu institūtā Krauklis sāka 1962. gadā un tūlīt saņēma visai sarežģītu un atbildīgu uzdevumu – izveidot un vadīt Vidussibīrijas dienvidtaigas izpētes stacionāru Angaras upes baseinā. Sibīrijā un Tālajos Austrumos bija paredzēts izveidot sešus šādus stacionārus – veselu tīklu, aptverot taigas un stepes zonas. To uzdevums bija veikt kompleksu dabas izpēti, izzināt dabas procesu norises un attīstību ilgākā laika posmā.

Jaunajam zinātniekam darbs bija jāsāk no nulles – jāizvēlas stacionāram piemērota vieta, jāorganizē bāzes nometne, jārūpējas par apgādi ar inventāru, aparatūru, pārtiku un daudz ko citu, jāizstrādā zinātniskās izpētes darbu metodika utt. Rūpju bez gala. Var apbrīnot viņa darba spējas un organizatora talantu. Jau nākamajā, 1963. gada, vasarā stacionārs sāka darbu Krasnojarskas novada Bogučanu rajonā dziļi taigā ap 20 km uz ziemeļiem no Maļejevas sādžas, kas atradās Čunas upes labajā

krastā tālu no satiksmes ceļiem. Stacionārs darbojās daudzus gadus. Diemžēl nav zināms, vai darbs tajā turpinās joprojām.

Lai stacionārā veiktu pilnu plānoto zinātniskās izpētes darbu kompleksu, bija jāiesaista daudz cilvēku: ģeomorfologi, augsnes pētnieki, ainavnieki, meteorologi, biologi, ģeobotāniķi, ģeoķīmiķi, entomologi, kartogrāfi, topogrāfi, mežkopji, medību speciālisti un pat medicīnas ģeogrāfi. Vasaras lauka darbu sezonā stacionārā dažreiz vienlaikus darbojās divdesmit, trīsdesmit un vairāk cilvēku. Šādu skaitu institūts ar saviem štata darbiniekiem nodrošināt nevarēja, tādēļ talkā tika aicināti studenti no visas Savienības: ne vien no Sibīrijas augstskolām – Irkutskas, Omskas, Tomskas, Novosibirskas, bet arī no Vladivostokas, Maskavas, Ļeņingradas, Saratovas, Ļvovas, Tartu un, protams, arī no Rīgas. Ik gadu stacionārā tika savākts milzum daudz informācijas: dažādu ainavas komponentu sīki apraksti, meteoroloģisko un hidroloģisko novērojumu dati utt. To visu apstrādājot, apkopojot, izvērtējot, analizējot, krājās bagāts materiāls teorētiskiem secinājumiem un vispārinājumiem. Rezultātā zinātniskajos žurnālos parādījās Ādolfa Kraukļa publikācijas, zinātniskajās konferencēs lielu interesi izraisīja viņa referāti. Tas viss 1968. gadā vainagojās ar Rīgā spoži aizstāvētu ģeogrāfijas zinātņu kandidāta disertāciju "Lejasangaras ainavas struktūra".

Darbs stacionārā neapsīka. Mainījās vien akcenti. Vairāk uzmanības tika veltīts ainavas dinamisko procesu izpētei: ģeoķīmiskajiem procesiem, jonu migrācijai, kvantitatīvajām un kvalitatīvajām pārmaiņām bioloģiskajos procesos. Ainava tika uztverta nevis kā statiska parādība, bet gan kā dinamiska ģeogrāfisko kompleksu sistēma, kas nemitīgi mainās un attīstās. Vienlaikus Kraukļa intereses sniedzās arī tālāk aiz stacionāra robežām – viņš veica lauka pētījumus Lejas un Viduspieangarā, Piebaikālā, Aizbaikālā, Rietumsajānu priekškalnēs un citur. Tas ļāva stacionārā iegūtās atziņas interpretēt reģionālā dimensijā. 1979. gadā Maskavā Krauklis aizstāvēja ģeogrāfijas zinātņu doktora disertāciju "Eksperimentālā ģeogrāfisko ainavu mācība: dinamiski faciālā analīze". Tajā pašā gadā klajā nāca grāmata "Eksperimentālās ainavu zinātnes problēmas", kas guva plašu atzinību un tika ieteikta kā mācību līdzeklis augstskolu studentiem.

Pēc 1980. gada dzīve stacionārā mainījās, vasaras sezonās studenti vairs netika aicināti. Tam par iemeslu bija ne tik daudz pārmaiņas darba raksturā, cik drošības jautājums. Pie Maļejevas arvien vairāk paplašinājās jau 1973. gadā ierīkotā cietumnieku nometne. Ieslodzītos izmantoja dzelzceļa atzarojuma būvdarbos un meža darbos, un viņi bieži vien klaiņoja ārpus zonas. Vietējie iedzīvotāji jutās apdraudēti, it sevišķi meitenes, bija jau notikuši nepatīkami incidenti. Tālā taigas nostūra rimtajā dzīvē bija ienākusi civilizācija (vilciena satiksme) ar visām tās bēdīgajām blaknēm – cietumnieku "kultūru" un taigas izciršanu dabai gaužām nedraudzīgā veidā.

Darbs stacionārā tagad pārsvarā gūlās uz institūta štata darbinieku pleciem. Šajā laikā Ā. Krauklis pētījumus izvērsa plašā Sibīrijas un Tālo Austrumu teritorijā.

Saglabājušās viņa lauka piezīmes no ceļojumiem pa Baikāla apkārtni, Jakutiju, Kolimu, Magadanas apgabalu, Tuvu un Altaju. Ģeogrāfijas institūtā viņam uzticēja Ainavu zinātnes sektora un Komplekso fiziski ģeogrāfisko problēmu laboratorijas vadību. Viņa publikāciju skaits zinātniskajos žurnālos tuvojās simtam, bija izdotas vairākas grāmatas, nolasīti daudzi referāti un lekcijas. Ā. Krauklis bija kļuvis par atzītu zinātnieku, labi pazīstamu visā Padomju Savienībā, par viņa darbiem interesējās arī Vācijas DR, Polijas, Bulgārijas, Čehijas, Japānas un citu ārvalstu zinātniskie centri. Ainavu ekoloģijas jomā viņš bija izvirzījies starp pasaules vadošajiem pētniekiem.

Pēc Padomju Savienības sabrukuma un Latvijas neatkarības atjaunošanas gandrīz pēc 30 gadu ilgas prombūtnes 1991. gadā Krauklis kopā ar ģimeni atgriezās Latvijā, kur turpināja zinātnisko darbību, kļuva par LU Ģeogrāfijas un Zemes zinātņu fakultātes profesoru. Diemžēl 2006. gadā viņa dzīves gājums pāragri aprāvās. Taču Latvijā viņš joprojām tiek atzīts par izcilāko 20. gadsimta otrās puses latviešu ģeogrāfu.

Latviešu ģeogrāfi Pieangaras taigas stacionārā

Pirmie LVU Ģeogrāfijas fakultātes studenti, kas atsaucās Ādolfa Kraukļa aicinājumam doties praksē uz Pieangaras taigas stacionāru un 1963. gada vasarā devās uz Sibīriju, bija 5. kursa studente Lauma Krēmere, Jānis Kleins no 4. kursa un Māris Laiviņš no 3. kursa. Vēlāk izrādīsies, ka šim lēmumam trijotnes turpmākajā dzīvē būs ļoti nozīmīga vieta.

Lauma Krēmere, izmantojot stacionārā savāktos materiālus, uzrakstīja diplomdarbu, pabeidza mācības fakultātē, atgriezās stacionārā un kļuva par Ģeogrāfijas institūta štata darbinieci. Lauma kļuva par uzticamu Ādolfa līdzgaitnieci, un viņi nodibināja ģimeni. Daudzus gadus Lauma turpināja darboties stacionārā ne vien vasarās, bet arī ziemā. Viņas ieguldījums gan stacionāra praktisko jautājumu risināšanā, gan rūpēs par zinātnisko uzdevumu pienācīgu izpildi ir ļoti nozīmīgs. Lauma tāpat kā Ādolfs nostrādāja Ģeogrāfijas institūtā līdz 1991. gadam. Šajā laikā viņa sagatavoja vairākas publikācijas.

Jānis Kleins taigas stacionārā divas vasaras veica ģeomorfologa pienākumus. Viņa sagatavotie maršrutu un teritorijas ģeomorfoloģiskie apraksti tika atzinīgi novērtēti. Vēl pēc vairākiem gadiem viņa veikums tika godāts, nodēvējot kādu stigu stacionārā Jāņa Kleina vārdā. Ģeogrāfijas fakultātē Jānis sekmīgi aizstāvēja kursa darbu, pēc gada – diplomdarbu par Pieangaras plato ģeomorfoloģiju. 1965. gadā viņš atgriezās Irkutskā, lai sāktu darbu Zemes garozas ZPI. Viņš veica pētījumus Tunkinas ieplakā, Hamardabana kalnos, Piebaikālā un Oļhonas salā, vadīja ekspedīciju Piejūras grēdā. Zinātniskajos žurnālos parādījās pirmās publikācijas. Diemžēl sekmīgi sāktā zinātnieka karjera pēkšņi aprāvās, 1968. gada rudenī no Irkutskas pienāca satriecoša vēsts par Jāņa pēkšņo nāvi.

Māris Laiviņš Pieangaras stacionārā kā students praktikants nostrādāja divas vasaras un vienu ziemu. Pēc LVU Ģeogrāfijas fakultātes beigšanas 1966. gadā viņš sāka darbu Irkutskas Ģeogrāfijas institūtā, sākumā vecākā laboranta, vēlāk – jaunākā zinātniskā līdzstrādnieka statusā. Institūtā viņš nostrādāja 5 gadus. 1970. gadā viņš atgriezās Latvijā.

Arī turpmāk līdz pat 1980. gadam daudzi LVU ģeogrāfijas studenti ik vasaru ieradās praksē taigas stacionārā: parasti to bija divi, trīs, dažreiz atbrauca tikai viens, dažreiz – četri, pieci, 1964. gadā bija pat astoņi studenti. Kopumā 18 gadu laikā taigas stacionāra darbā savu pienesumu devuši teju pussimts studentu no Latvijas. 1987. un 1988. gada vasarā stacionārā praktizējās LVU Bioloģijas fakultātes studente Mārīte Kraukle, Laumas un Ādolfa meita, kura nu jau kā Māra Laiviņa diplomande šeit veica zinātniskus pētījumus.

Dzīve un darbs taigā nebija nekāda svētdienas pastaiga, nereti līdz pilnīgam spēku izsīkumam bija jāveic gari pārgājieni pirmatnējā taigā, laužoties cauri biezokņiem un maldoties nepazīstamajā taigā, vasaras sutoņā tērptiem brezenta biksēs un jakās, cīnoties pēc elpas zem odu aizsargmaskām, ciešot sāpes kirzas zābakos noberztajās kājās. Arī nakšņošanu brezenta teltīs gan lielā karstumā, gan salnas naktīs, nevarēja saukt par komfortablu.

Tomēr to kompensēja bagātīgā pieredze, ko studenti guva, kopā ar Ādolfu un citiem līdzstrādniekiem ejot maršrutos, kopā pētot augu daudzveidību, aprakstot augšņu horizontu dziļos atrakumos, klausoties izsmeļošus skaidrojumus, piedaloties diskusijās pie vakara ugunskuriem. Šī radošā gaisotne daudz deva studentu izaugsmei. Izmantojot stacionārā savāktos materiālus, tika uzrakstīti desmitiem kursa darbu un diplomdarbu. Par to augsto līmeni liecina, piemēram, fakts, ka 1969. gadā Vissavienības studentu zinātnisko darbu konkursā Francisks Kovaļenko ar darbu "Pieangaras ainavu ģeosistēmu dinamika" ieguva otro godalgu.

Latviešu ģeogrāfi Lejasirtišas taigas stacionārā

Lejasirtišas stacionāru nodibināja 1966. gadā, lai veiktu pētījumus Rietumsibīrijas dienvidtaigā. Stacionārs atradās Tjumeņas apgabala Uvatas rajonā ap 100 km uz ziemeļiem no Toboļskas pilsētas Irtišas upes labajā krastā mazā apdzīvotā vietā Misija. Līdzīgi kā Pieangaras stacionārā šeit tika izvērsti plaši kompleksi pētījumi, kuros iesaistīja visdažādāko nozaru dabas pētniekus. Ainavu pētnieku grupas vadību uzticēja Mārim Laiviņam, kurš tad jau bija darbinieks Irkutskas Ģeogrāfijas institūtā. Vasaras lauka darbos tika iesaistīti studenti no dažādām augstskolām (Irkutskas, Tomskas, Ļeņingradas), tajā skaitā arī no LVU Ģeogrāfijas fakultātes. Pēc nogurdinošas dienas studenti un darbinieki vakaros pulcējās Irtišas krastā pie ugunskura, kur ģitāras vai akordeona pavadījumā skanēja dziesmas. Pats galvenais muzikants bija Anatolijs Ivanovs – ukraiņu puisis no Donbasa, no viņa visi iemācījās daudz skaistu ukraiņu dziesmu. 1968. gada vasarā Misijā studentu praksē ieradās

Sniedze Ungere – Māra Laiviņa vēlākā dzīvesbiedre. Pēc Ģeogrāfijas fakultātes beigšanas arī viņa iesaistījās darbā Irkutskas Ģeogrāfijas institūtā un kopā ar Māri turpināja strādāt Lejasirtišas stacionārā. 1970. gadā Sniedze un Māris Laiviņi savu misiju Misijā beidza un atgriezās Latvijā. Sibīrijā aizvadītos gadus M. Laiviņš pats vērtē kā ļoti auglīgus: "Tur iegūtā sapratne un dažādu pētījumu iemaņas ir devušas pašpaļāvības un stabilitātes sajūtu turpmākajā profesionālajā darbībā. Sibīrijā redzētais un izprastais ir manas ģeogrāfa karjeras nozīmīgs pamats".

M. Laiviņa zinātnieka karjera Latvijā izvērtās sekmīga: 1983. gadā Tartu aizstāvēta disertācija un iegūts bioloģijas zinātņu kandidāta grāds, 1997. gadā aizstāvēta habilitētā ģeogrāfijas zinātņu doktora disertācija, publicēti vairāk nekā 120 zinātniskie raksti, 1992. gadā viņš kļuva par docentu, vēlāk – par profesoru LU Ģeogrāfijas un Zemes zinātņu fakultātē. Viņa darbība zinātnē joprojām ir aktīva un produktīva. Viņš ir viens no vadošajiem zinātniekiem bioloģiskās daudzveidības un meža ekosistēmu izpētes jomā Latvijā.

Latviešu ģeogrāfi citur Sibīrijā

Tajā pašā laikā, kad daudzi studenti regulāri brauca uz taigas stacionāriem, vairāki citi nonāca Sibīrijā individuālā kārtā vai nu atsaucoties aicinājumam, vai pēc pašiniciatīvas.

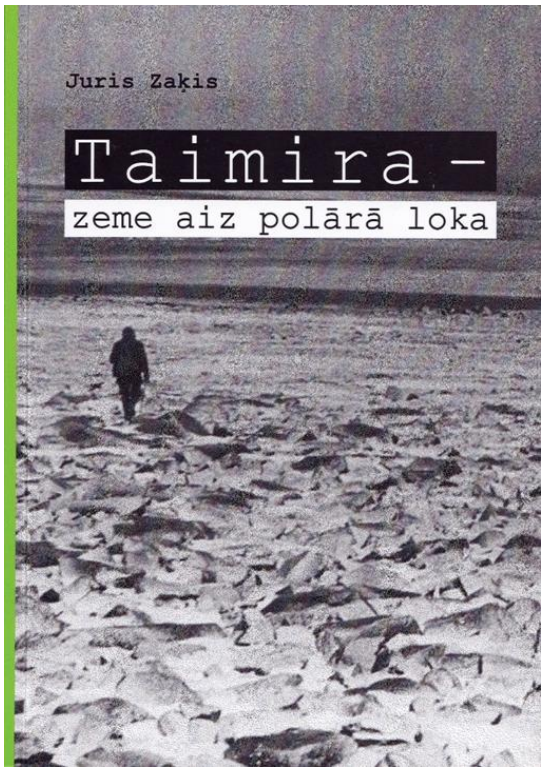
1963. gadā man, šo rindu autoram, izdevās realizēt senu sapni – piedalīties kādā "īstā" ekspedīcijā. Pateicoties noteiktai apstākļu sakritībai, Ļeņingradas Arktikas ģeoloģijas ZPI tematiskās partijas sastāvā nonācu Taimiras pussalā Birrangas kalnos. Tur Augštaimiras upes baseinā iepriekšējos gados ģeoloģiskās kartēšanas gaitā bija atklāts magmatisko iežu masīvs, kurā pēc analoģijas ar līdzīgiem veidojumiem vajadzēja būt urānu saturošiem minerāliem. Mūsu uzdevums bija šī masīva detāla izpēte, lai atrastu perspektīvas urāna rūdas atradnes. Plaši tika izmantotas ģeofizikas metodes. Personīgi es nodarbojos ar topogrāfisko uzmērīšanu un radiācijas dabīgā fona mērījumiem. Tiku atklājis vairākas radioaktīvās anomālijas, kur starojums simtiem reižu pārsniedza dabīgo fonu. Vēl nesen Taimiras pussalā tāpat kā Jamalā un Novaja Zemļā tika veikti kodolieroču izmēģinājumi. To radīto radioktīvo piesārņojumu dažviet konstatēju arī mūsu pētāmajā teritorijā. Atklājot paaugstinātu radiāciju, bija jānoskaidro tās cēlonis – vai radiācija nāk no iežiem, vai ir piesārņojuma sekas. Rezultātā nelielu urāna rūdas iegulu atradām, taču niecīgo krājumu dēļ bez praktiskas nozīmes.

Man piedāvāja iespēju Taimirā strādāt arī nākamajā lauka darbu sezonā, ko es ar prieku izmantoju. Šoreiz tiku iedalīts ģeoloģiskās kartēšanas grupā. Mūsu darba lauks netālu no Čeļuškina raga bija plašs – ap 1500 km² . Tas bija jo interesantāk – daudzveidīga ainava: kalni, upju ielejas, Laptevu jūras piekraste, arktiskā tundra, polārais tuksnesis, kas deva bagātu materiālu diplomdarbam. Dabas pētniekiem šeit ir ideāli apstākļi tajā ziņā, ka dabu un procesus var vērot pirmatnējā, cilvēka darbības

neskartā vidē, jo teritorija ir pilnīgi neapdzīvota. Ģeoloģiskā kartēšana arī šeit notika ar norādi – īpašu uzmanību pievērst radioaktīvos un retzemju elementus saturošu minerālu klātbūtnei. Tāpēc mana pamatnodarbošanās atkal bija radioaktīvā fona mērījumi, kas, maršrutos ejot kopā ar ģeologu, tika veikti nepārtraukti.

Ziemeļu dabas vērojumi un abās ekspedīcijās piedzīvotais šķita tā vērts, lai to pastāstītu plašākai publikai. Tapa grāmata "Taimira – zeme aiz polārā loka", ko 2016. gadā klajā laida Latvijas Universitātes izdevniecība (2. attēls).

1964. gadā Baikāla Limnoloģijas institūts organizēja ekspedīciju uz Barguzinas rezervātu, lai pētītu Baikāla ezera ietekmi uz apkārtējās vides mikroklimatu. Bija paredzēts veikt meteoroloģiskos novērojumus trijos līmeņos – pie ezera, 1200 metru augstumā un uz kailās Barguzinas kalnu grēdas kores 2200 m augstumā. Darbam šajos posteņos uzaicināja studentus. Atsaucās gan Irkutskas, Ļeņingradas, Saratovas un Astrahaņas, studenti, gan divas meitenes – Jadviga Stahovska un Irēna Sprukule – no LVU Ģeogrāfijas fakultātes. Mūsu meitenēm darbs iekrita visgrūtākajā – pašā augšējā postenī starp kailām klintīm. Tur viņas vienas dzīvoja divarpus mēnešus un katru dienu ik pēc trim stundām veica daudzveidīgus meteoroloģiskos novērojumus. Korekti savāktie un perfekti noformētie dati tika nodoti Limnoloģijas institūtam un pašām noderēja kursa darbam.



2. attēls. **Taimira – zeme aiz polārā loka**

1967. gadā Irkutskas Zemes garozas ZPI Piebaikālā organizēja kompleksu ekspedīciju, kurā darbojās vairākas grupas. Ģeomorfologu grupā bija arī Jānis Kleins,

kurš šajā institūtā strādāja kopš 1965. gada (3. attēls). Viņš aicināja ekspedīcijā iziet praksi savas bijušās Alma Mater Ģeogrāfijas fakultātes studentus. Uz to nešaubīdamies atsaucās Jānis Melbārdis. Aizvadīt vasaru pie teiksmainā, gleznainā Baikāla – vai var būt vēl vilinošāks piedāvājums! Vasara pagāja, pētot ezera krastu dinamiku un ģeomorfoloģiskos procesus pieguļošajā teritorijā, kā arī Oļhonas salā. Starp daudziem citiem notikumiem Jānim atmiņā spilgti iespiedusies pieredzētā šim Baikāla apvidum raksturīgā dabas parādība "sarma" – īsa, bet ārkārtīgi postoša vētra, ko izraisa no Piejūras grēdas pa Sarmas ieleju lejup plūstošās vēja brāzmas.

Nākamajā vasarā J. Melbārdis atkal ieradās Irkutskā, lai strādātu nu jau Jāņa Kleina patstāvīgi vadītajā ekspedīcijā Piejūras grēdas rajonā.

3. attēls. **Ekspedīcijas vadītājs Jānis Kleins pie Baikāla 1968. gada vasarā** (foto no autora personīgā arhīva)

Divās vasarās gūtā pieredze Jānim Melbārdim ļoti noderēja. 1969. gadā viņš beidza LVU ar teicami aizstāvētu diplomdarbu "Oļhonas salas krasta dinamika un piekrastes ģeomorfoloģija". Tūlīt pēc izlaiduma viņš atkal devās ceļā uz Baikālu, nu jau kā trešā kursa studentu mācību prakses vadītājs. Baikāls Ģeogrāfijas fakultātē kļuva par tradicionālu studentu tālās prakses mērķi. Melbārdis vien praksi vadīja četras reizes. Tādējādi Baikālu un Sibīriju pagājušā gadsimta septiņdesmitajos gados iepazina daudzi topošie ģeogrāfi. Kādu no šīs prakses braucieniem aprakstījis Andrejs Dripe grāmatā "Brīnumu meklējot".

Ģeogrāfiem sibīriešiem ir izveidojusies tradīcija katru gadu tikties "Taigas dienā". Tikšanās iniciatori bija pats Ādolfs Krauklis un Lauma Krēmere. Pirmais

salidojums notika 2001. gadā Rēzeknē, kur ar patiesu latgaliešu viesmīlību visus uzņēma Antona Kūkoja ģimene (Antons bija apņēmis par sievu ģeogrāfi Veroniku Pekšu). Pēc tam šādas tikšanās notiek katru gadu Ikšķilē "sibīrietes" Andas Avenas-Ozolas mājās.

Pirmās tikšanās laikā Krauklis visus aicināja par Sibīriju rakstīt atmiņas. Diemžēl atmiņu krājumu "Sibīrijas iepazīšana" (4. attēls), kurā apkopots divdesmit piecu autoru rakstītais, Krauklis nesagaidīja, tas iznāca tikai 2009. gadā. 2017. gadā tika laists klajā atkārtots papildināts izdevums. Tajā liela vieta ierādīta Ādolfa Kraukļa piezīmēm, kas izdarītas pagājušā gadsimta astoņdesmitajos gados un deviņdesmito gadu sākumā ceļojumos pa Jakutiju, Altaju, Magadanas apgabalu, Kolimu, Baikāla apkārtni un Tuvu.

LVU Ģeogrāfijas fakultātes absolventi ir strādājuši ne vien Irkutskas Ģeogrāfijas institūtā un Zemes garozas ZPI. 1967. gadā uz Latvijas PSR Ģeoloģijas institūta bāzes Rīgā izveidoja Vissavienības Jūras ģeoloģijas un ģeofizikas ZPI. Būdams vēl piektā kursa students, 1969. gadā tur Cieto derīgo izrakteņu nodaļā Arktisko jūru grupā sāka strādāt Uldis Alksnis. Šajā institūtā Alksnis nostrādāja astoņus gadus, kuru laikā pētniecības darbs aptvēra minēto Ziemeļu ledus okeāna jūru šelfa piekrastes joslu vairāk kā 1000 km garumā. Ilgus gadus Jūras ģeoloģijas un ģeofizikas institūtā strādāja Jānis Kļaviņš, taču viņa darbs lielākoties norisinājās PSRS Eiropas daļas jūrās – Barenca, Baltijas un Melnās jūras akvatorijā. Vienīgi 1986. gadā viņš Vladivostokas grupas sastāvā piedalījās ar naftas un gāzes atradnēm saistītos pētījumos Ohotskas jūrā un Sahalīnā.

1. attēls. **Atmiņu grāmatas 2009. un 2017. gada izdevums**

Tāpat arī zināms, ka LU Ģeogrāfijas un Zemes zinātņu fakultātes profesors ģeologs Valdis Segliņš 1977. gadā ir piedalījies detalizētos ģeoloģiskās izpētes darbos Taimiras pussalā.

Sibīrija arvien ir vilinājusi ne vien dabas pētniekus, bet arī tūristus. Protams, viņu vidū ir ne mazums ģeogrāfu. Piemēram, Klāva Zommera grupas brauciens pa Ļenu; Ulda Alkšņa grupas pārgājieni Jakutijā Oimjakonas rajonā; neskaitāmi ģeogrāfu braucieni uz Tālajiem Austrumiem (Kamčatka, Sahalīna, Kuriļu salas).

5. attēls. **Latvijas ģeogrāfu darbošanās vietas Sibīrijā** (kartes pamatne – Jāņa sētas Pasaules ģeogrāfijas atlants)

1 – Ļeņingradas ZPI ģeoloģiskā ekspedīcija Tazas baseinā 1962. g.; 2 – Irkutskas Ģeogrāfijas institūta Pieangaras taigas stacionārs; 3 – Irkutskas Ģeogrāfijas institūta Lejasirtišas taigas stacionārs; 4 un 5 – Arktikas ģeoloģijas ZPI ekspedīcijas Taimiras pussalā 1963. un 1964. g.; 6 – Baikāla Limnoloģijas institūta ekspedīcija Barguzinā 1964. g.; 7 – Zemes garozas institūta ekspedīcijas Piebaikālā un Oļhonas salā; 8 – Vissavienības jūras ģeoloģijas un ģeofizikas ZPI ekspedīcijas Austrumsibīrijas un Čukču jūras šelfa zonā; 9 – tūristu ekspedīcija Čerska kalnos.

Noslēgums

Dziļu iespaidu uz mums – Latvijas ģeogrāfiem – atstāja taigas varenums. No atmiņu pierakstiem joprojām smaržo sveķi taigas biezokņos, noslēpumaini šalc vēji ciedru galotnēs, dveš mūža mežu maģiskā elpa un staro bezgalīgais plašums rudens

krāsu daudzveidīgajās niansēs. Visiem, kas pabijuši Sibīrijā pēc sirds aicinājuma, tur pavadītais laiks ir nozīmīgs pat tad, ja tur aizvadīta tikai viena vasara, jo tur gūti iespaidi, kādus ne par kādu naudu nevar iegūt nekur citur. Ģeogrāfus sibīriešus saista kāds vienojošs spēks, ko varētu saukt par dvēseļu radniecību.

ĢEOGRĀFI – JŪRAS ĢEOLOĢIJAS PĒTNIEKI

GEOGRAPHERS – MARITIME GEOLOGY RESEARCHERS

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Summary

The paper sheds light on the active involvement of Latvian geographers and maritime geologists in exploring coastal regions and maritime geology throughout the 20th century. It highlights the establishment of the All-Union Marine Geology and Geophysics Scientific Research Institute in 1967, which played a pivotal role in advancing geological research in Latvia.

Key researchers such as R. Knaps, V. Ulsts, E. Grinbergs, and I. Veinbergs are mentioned for their significant contributions to studying coastal erosion, sediment flow, and the relief of the Baltic Sea. These experts embarked on expeditions, gathering valuable data and sediment samples, often using specialised ships for geodetic measurements.

The text underscores the interdisciplinary nature of the research, involving collaboration between geographers, geologists, cartographers and other professionals. Their efforts led to the creation of detailed profiles, maps, and geological charts, contributing to a deeper understanding of Baltic Sea geology and coastal erosion patterns.

The narrative also touches on the challenges and risks encountered during maritime expeditions, including unfortunate fatalities. The author concludes by highlighting ongoing engagement with the Latvian Geographical Society and collaboration with fellow researchers and educators in the field of geography.

In essence, the text offers insights into the enduring contributions of Latvian geographers and maritime geologists in advancing the understanding of coastal dynamics, maritime geology, and larger endeavours of scientific exploration in the Baltic Sea region.

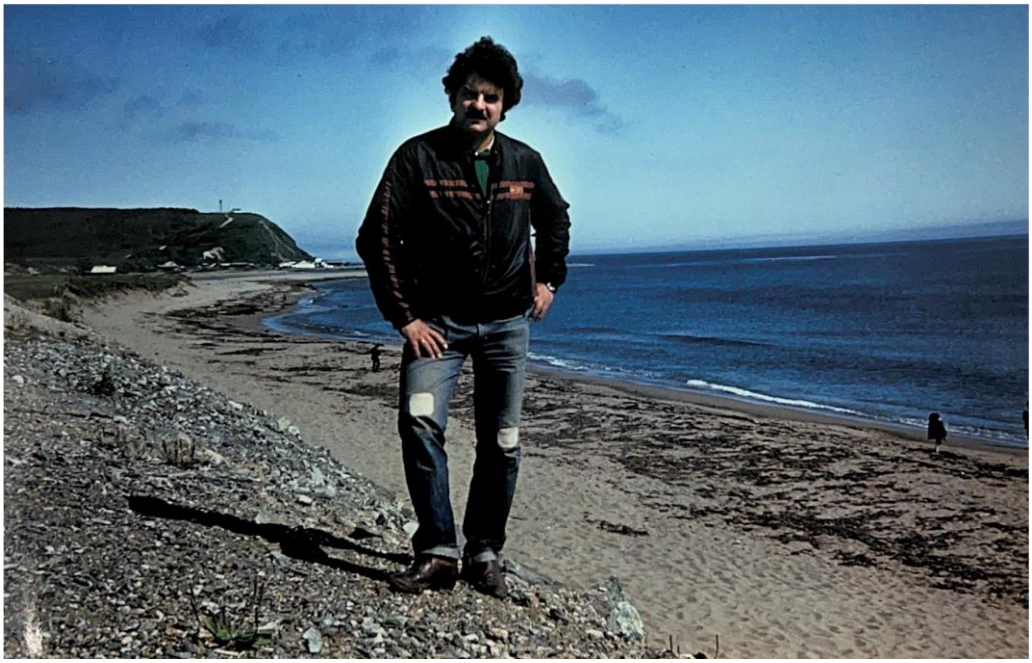
Ģeogrāfi 20. gadsimta otrajā pusē izglītību un ģeogrāfa – ģeogrāfijas pasniedzēja diplomu ieguva Latvijas Valsts universitātes Ģeogrāfijas fakultātē, kurā bija divi galvenie studiju virzieni – ekonomiskā ģeogrāfija un fiziskā ģeogrāfija, kuras ietvaros bija iespējams apgūt tikai atsevišķus vispārīgus kursus saistībā ar ģeoloģiju. Studenti, kuri vēlējās plašāk apgūt ģeoloģiju, mācījās papildus nodarbībās.

Latvijā 1967. gadā darbu sāka jauna zinātniski pētnieciska iestāde – Vissavienības Jūras ģeoloģijas un ģeofizikas zinātniski pētnieciskais institūts (VNIIMORGEO), kurā bija nepieciešami ģeologi, ģeogrāfi un citi dabas pētnieki, arī jaunas aparatūras konstruktori un izmēģinātāji. To izveidoja iepriekšējā Latvijas ģeoloģijas zinātniskās izpētes institūta vietā (Danilāns 1994). VNIIMORGEO ļoti strauji "izpletās" gan strādājošo darbinieku skaita ziņā, gan tam uzdoto darbu daudzveidības un izvietojuma dēļ. Zinātniskās iestādes nosaukums vairākkārt

mainījās, jo tika nomainītas PSRS ministrijas, kuras koordinēja šī institūta darbību. 1979. gadā izveidoja Vissavienības jūras inženierģeoloģijas zinātnisko ražošanas apvienību ("Sojuzmorinžģeoloģija"), kurā saglabājās VNIIMORGEO ar Latvijas ģeoloģijas nodaļu.

Tanī laikā Latvijā jau bija ievērojami ar jūras pētniecību saistīti zinātnieki – R. Knaps, V.Ulsts, E. Grīnbergs, I. Veinbergs, u.c. Ģeoloģijas doktora Viktora Ulsta un Rūdolfa Knapa pētījumi bija saistīti ar liedaga un zemūdens sanešu plūsmu pētīšanu gar krastu, lai rastu risinājumus Latvijas mazo ostu aizsērēšanas un jūras krastu izskalošanas mazināšanai un aizsardzībai. Ģeogrāfijas fakultātes docenta ģeoloģijas doktora Eduarda Grīnberga disertācija bija veltīta Baltijas jūras seno attīstības stadiju krasta līniju noteikšanai, uzmērīšanai un izpētei, veidoja darba grupas savu pētījumu veikšanai. Nedaudz vēlāk šai jomai pieslēdzās Ints Veinbergs. Habilitētais ģeoloģijas doktors Ints Veinbergs ir veicis kvartāra un mūsdienu nogulumu litodinamiskos pētījumus jūru krasta zonā.

Ģeogrāfijas fakultātes docents Eduards Grīnbergs, kura disertācija 1957. gadā bija veltīta Baltijas jūras seno stadiju krasta līniju atrašanai, uzmērīšanai un izpētei. Savu pētījumu veikšanā E. Grīnbergs iesaistīja studentus, arī šī raksta autoru (1. attēls).



1. attēls. **Docents Jānis Kļaviņš** (fotogrāfija no autora personīgā arhīva)

Tie studenti, kuri savas studijas sāka pagājušā gadsimta sešdesmito gadu beigās un arī vēlāk, sāka piedalīties Baltijas jūras un tās krastu un citu jūru izpētē, piesakoties VNIIMORGEO ekspedīcijās. Sāka darboties Baltijas jūras izpētes grupa ar bāzi Klaipēdā, Barenca jūras izpētes grupa ar bāzi Murmanskā, Melnās jūras izpētes grupa

ar bāzi Gelendžikā, Z-Sibīrijas jūru izpētes grupa Čaunas līča rajonā (ar bāzi Pevekā), Tālo austrumu jūru (Ohotskas) izpētes grupa ar bāzi Vladivostokā un Južnosahaļinskā. Viena no darba grupām Inta Veinberga un Mārtiņa Rozenblata vadībā pat nokļuva Arāla jūrā, lai savāktu sanešu paraugus un izdarītu secinājumus par jūras sanešu plūsmām Arālā abu lielo ietekošo upju Amudarjas un Sirdarjas noteces dēļ. Barenca jūrā mūsu darbs tika pārcelts uz Ņencu autonomā apgabala piekrasti (bāze Narjanmarā), uz Varandejas ciematu, uz Pečoras upes līci, uz Kolgujevas salas krastiem un pašā jūrā, arī strīdīgajās teritorijās starp PSRS un Norvēģiju, jo tur jau nelielā apjomā bija veikta ģeofiziskā jūras gultnes izpēte un urbšana. Pārlasot interneta materiālus, uzzināju, ka pašlaik Varandejas piekrastē (2. attēls) no jūras iznāk naftas vai gāzes vadi, kuru produkcija tiek savākta un transportēta tālāk, arī galvaspilsēta Narjanmara ir ieguvusi mūsdienu pilsētas vaibstus. Tajos tālajos gados izlūkošanas urbumos iegūtā nafta vai gāze vienkārši tika uz vietas sadedzināta. Visas šīs jūras pētījumu aktivitātes piesaistīja Ģeogrāfijas fakultātes studentus, jo radās iespēja kaut kur tālu aizbraukt, daudz ko interesantu redzēt, dzirdēt, izbaudīt ģeogrāfam raksturīgo dabas romantiku, nopelnīt papildus naudu, jo pienācās ziemeļu un Tālo austrumu piemaksas.

2. attēls. **Varandejas piekraste (**fotogrāfija no autora personīgā arhīva)

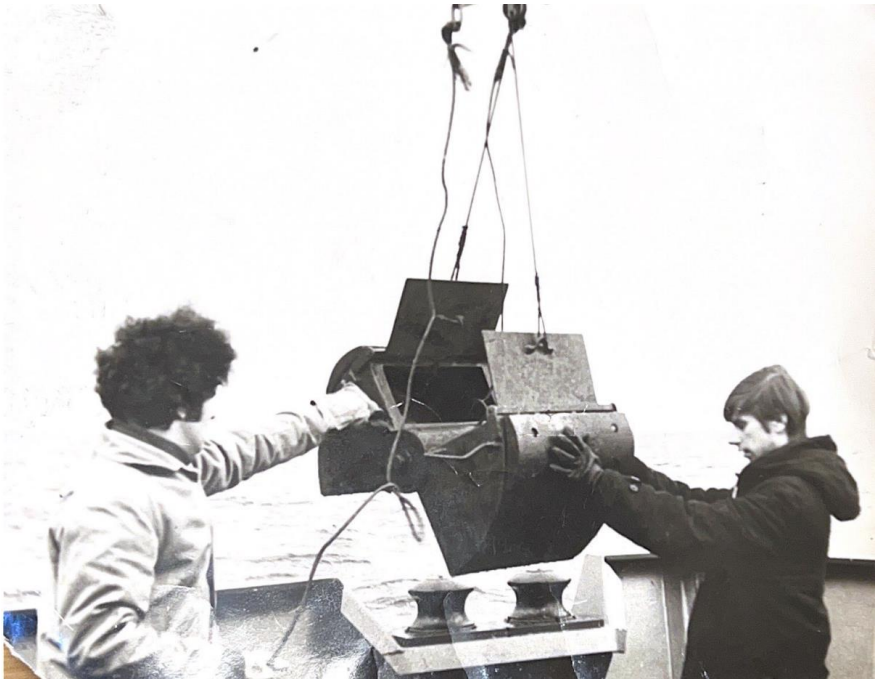
Jau studiju laikā es iestājos darbā (1968. oktobris) šajā zinātniskajā institūtā, sagādādams sev brīvā apmeklējuma studiju grafiku. 1970. gadā pēc veiksmīgas studiju pabeigšanas turpināju tur strādāt līdz pat 1986. gadam. Lai izbēgtu no dienesta padomju armijā (Universitātes kara katedrā bija iegūta jaunākā leitnanta dienesta pakāpe), ātri nokārtoju iestājeksāmenus aspirantūrā un trīs gadus jūras pētījumos ieguvu precīzus datus par Baltijas jūras reljefu un ievācu jūras gultnes nogulumu

paraugus. Tolaik ģeofiziķi bija konstatējuši iespējamās naftu saturošās Liepājas struktūras atrašanās vietu jūrā. Tāpēc 4–5 gadus tika veikta lielas Baltijas jūras daļas izpēte, sākot no Pāvilostas līdz pat Sambijas pussalai uz dienvidiem, un gandrīz līdz neitrālajiem ūdeņiem rietumu virzienā. Tiku uzaicināts šai darbā par ģeologu, lai aprakstītu no gultnes izceltos nogulumu un iežu paraugus. Ģeodēziskā uzmērīšana tiem laikiem bija ļoti kvalitatīva. Kuģi nāca no galvenās ģeodēziskās pārvaldes jūras bāzes Arhangeļskā. Aprakstīju iegūtos paraugus katrā mērījumu punktā. To bija daudz, apstrādāju ap 5000 paraugu, kuru aprakstus pēc tam ievietoja Baltijas jūras navigācijas kartēs (šifrētas jūrniecības terminos). Darbs bija pamatīgs un precīzs, līdz mērogam 1:25000 Liepājas struktūras pacēlumā, varbūt pat līdz 1:10000. Kuģi bija speciāli būvēti Somijā, tiem bija navigācija ar kosmosa satelītiem. Kuģi bija nosaukti krievu jūras pētnieku vārdos, piemēram, "Dmitrijs Ovcins". Tā man izdevās savākt labu materiālu par Baltijas jūras gultnes reljefu un nogulumiem un iesākt rakstīt disertāciju, kuru diemžēl nepabeidzu. Beidzot darbu zinātniski pētnieciskajā apvienībā "Sojuzmorinžģeoloģija", visus savus šajās ekspedīcijās iegūtos materiālus atdevu Inta Veinberga litodinamikas grupai.

3. attēls. **Jūras gultnes reljefa izpēte Rīgas jūras līcī (**fotogrāfija no autora personīgā arhīva)

Kopā ar Inta Veinberga grupu daudzas vasaras sezonas pavadīju Baltijas jūras krastu izpētē, sākot no Ventspils līdz Lapmežciemam Rīgas jūras līcī. Šie jūras pētījumi veidoja it kā divus dažādus darba posmus – ar iznomātu kuģi (parasti zvejas kuģi) veicām jūras gultnes reljefa uzmērīšanu līdz jūras 4 metru dziļumam krasta virzienā, paņemot arī grunts paraugus (3. attēls). Nofiksējām profila galapunktu, tad ar aprīkotu laivu devāmies līdz krastam, gan strādājot ar eholoti, gan paņemot grunts

paraugus. Katru parauga paņemšanas vietu fiksēja mūsu krasta grupa ar divu teodolītu palīdzību pēc rācijas signāla uz ehogrammas laivā. Tā ieguvām pilna jūras gultnes reljefa profilu no jūras līdz pat liedagam. Krastā mūsu jūras profili tika piesaistīti kādam noteiktam reperim. Visvairāk šādus darbus veicām Kolkas ragā, pie Staļģenes, pie Mazirbes, Rojas, Engures, Ragaciema, kur bija nepieciešams veikt pastiprinātu krastu un liedagu erozijas izpēti. Pieminētais darba posms no kuģa uz krastu Latvijas apstākļos praktiski nebija grūts vai bīstams, tomēr drošība bija jāievēro – uzmanīgi jāseko laika prognozei un situācijas maiņām darba veikšanas laikā jūrā.



4. attēls. **Jūras gultnes reljefa izpētes laikā (**fotogrāfija no autora personīgā arhīva)

Bīstams šis darbs kļuva Barenca jūrā pie Kolgujevas salas, Pečoras līcī un pie Varandejas ciemata, jo tur ir atklātā tipa jūra ar "okeāna garšu", tāpat arī Ohotskas jūrā Sahalīnas salas ziemeļu daļā. Notika arī nelaimes gadījumi. Mūsu jaunie kolēģi, Ģeogrāfijas fakultātes studenti un jaunāku gadu absolventi, labprāt pievienojās šiem sezonālajiem darbiem. Tā, piemēram, Varandejā bija nokļuvis Dzintris Kolāts, vēlākais Latvijas Radio ģenerāldirektors. Bet jāpiemin arī neatgriezeniska nelaime Sahalīnas salas ekspedīcijā, kuras laikā, apgāžoties laivai, dzīvību zaudēja jauns ģeogrāfs Ilgvars Ozoliņš. Atklāto jūru hidroloģisko īpašību un laika apstākļu pārmaiņu dēļ krasta darbu apjoms iznāca ievērojami mazāks nekā jūras darbu apjoms, kuros veicām eholotēšanu un izlases veida grunts paraugu pacelšanu. Barenca jūrā 1980. gadā kā ģeologs piedalījos atsevišķā ekspedīcijā uz liela ledlauža tipa kuģa. Biju vienīgais no Latvijas, pārstāvot Murmanskas jūras darba grupu, pārējie darbinieki – ģeofiziķi un hidrogrāfi no Maskavas iestādēm. Veicām tīklveida ģeodēzisko uzmērīšanu un paraugu ņemšanu un aprakstīšanu neoficiāli tā sauktajos jūras "strīdus" apgabalos pie robežas ar Norvēģiju. Darbi notika tālu jūrā, dziļumā ap 400-600 metru,

jo ģeofiziķi bija konstatējuši interesi izraisošas struktūras pamatiežos. Tomēr Norvēģijas gaisa spēki bija konstatējuši, ka strādājam "strīdīgajos apgabalos". Nebijām visu nepieciešamo darba apjomu beiguši, kad saņēmām skarbu pavēli no Maskavas darbus pārtraukt un ar kuģi ierasties Murmanskā. Kā saka, saskārāmies ar lielo valstu politiku.

Līdztekus jūras pētījumiem dažādās jūrās un krastu izpētes darbiem Ģeogrāfijas fakultātes ģeogrāfi, ģeologi, ģeomorfologi, kā nu katrs sevi tajos sešdesmitajos līdz deviņdesmitajiem dēvēja, bieži varēja atrast iespēju nokļūt Murmanskā, Klaipēdā, Gelendžikā, arī Maskavā un Ļeņingradā, lai piedalītos dažādu arhīvu materiālu izpētē, semināros, zinātniskajās konferencēs, lai iegūtu materiālus gan saviem kursa darbiem, gan pat diplomdarbam.

Sezonālo jūras ekspedīciju materiālus vajadzēja apstrādāt kamerālos apstākļos, strukturizēt, vajadzēja zīmēt grafikus un profilus, kartoshēmas, laboratorijā analizēt iegūtos iežu paraugus. Tāpēc šajā jūras pētnieciskajā iestādē strādāja arī kartogrāfes, laborantes, tekstu korektores ar mūsu, toreiz Latvijas Valsts universitātes Ģeogrāfijas fakultātes, gan arī Maskavā, Ļeņingradā, Viļņā vai vēl citur iegūtu augstāko izglītību. Es ar lielu cieņu un bijību atceros kopīgi veiktos darbus, sarunas, izstrādātos zinātniskos rakstus, piedalīšanos tālos komandējumos arhīvu izpētē ar kolēģēm, pazīstamām zinātniecēm Ievu Dzilnu, Ņinu Ozoliņu, Liju Bērziņu, Agru Veinbergu, kā arī daudzās darba dienas, kas pavadītas kopā vienā darba kabinetā ar Anitu Stūri-Balodi. Viktora Ulsta un Inta Veinberga darba grupu savāktie iežu paraugi bieži nonāca pie manas ģeogrāfijas studiju kursa biedrenes Laimdotas Kalniņas (pašlaik mūsu Ģeogrāfijas un Zemes zinātņu fakultātes vadošās pētnieces) Latvijas Ģeoloģijas pārvaldes laboratorijā, kur tika detalizēti analizēti, lai varētu izdarīt svarīgus secinājumus par dažādu pavadoņminerālu klātesamību Latvijas liedagu smiltīs un sanešos, kuri norāda uz reto metālu (hromšpinelis, piropi, olivīns u.c.) un dārgmetālus saturošu iežu esību Latvijas piekrastē vai zemūdens slāņos.

Autors daudzus gadus darbojas Latvijas Ģeogrāfijas biedrībā, sadarbojas ar biedrības struktūrā esošo ģeogrāfijas skolotāju grupu, cenšas piedalīties biedrības konferencēs, semināros, ekspedīcijās.

Atsauces

Danilāns, I. (1994.) Ģeoloģijas institūts. In: *Daija, G., Markots, A., Štrauhmanis, J. and Zelčs, V. (eds.) Ģeogrāfijas fakultāte 50 gadi.* Rīga: Latvijas Universitāte, 33-34.

INSTRUCTIONS FOR AUTHORS

NORĀDES AUTORIEM

Ģeogrāfiski Raksti / Folia Geographica publishes original papers contributing to general and applied geography. Research reports, new trends, ideas and generalizations as well as efforts to integration of research, education and everyday geography in Latvia's and the world context are expected contributions. All manuscripts are reviewed by the editor and two external reviewers.

Manuscripts must be submitted in an electronic format and sent to email: lgb@inbox.lv. The text should be typed with standard-size letters (12 points) on paper of A4 format, with 1 ½ spacing and margins at least 2.5 cm. The pages should be numbered throughout, including tables and legends to figures.

Recommended length is from **6 to 8 pages**. The article is accompanied by an abstract (not exceeding 200 words) and a summary in Latvian (not exceeding 200 words), and **keywords (up to 5).**

The manuscript should include: (1) title (as short as possible, precise and well understandable), (2) author(s) name(s), institution, e-mail addresses, (3) abstract (up to 200 words) and key words, (4) main text (in a conventional research paper – introduction, materials and methods, results, discussion and conclusions, acknowledgements), (5) references, (6) summary (up to 200 words in Latvian). The submission of a manuscript does imply that this paper has not been published elsewhere.

References to published materials, when cited in the text, must be written as follows: (Gregory, 2000; Rutkis (ed.), 1967; Johnson and Wilson, 2017; Andrews et al., 2022; Rediscovering Geography Committee, 2020). In the list at the end of the manuscript they should be arranged in alphabetical order. Names of journals and separate books should be written in *italics.* In case web page use, the address should be noted in the reference list (by specifying the date when it was accessed).

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Examples / piemēri:

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