

Life by the Lake: The Lubana Region, Its People, Culture and Contemporary Ecosystem

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Abstract: This article is about the coexistence of people and lakes, about responsibility for lakes, and about the consequences of people interfering with the natural processes of nature. Part of the framework of this research is the governance process of surface water resources in Latvia, particularly public lakes, which the authors studied using a three-dimensional governance framing model of complementary dimensions of governance stakeholders, governance content, and governance instruments in order to determine how lakes are governed and how this governance affects local culture. In addition, and following on from this, we looked at what role culture has in lake and public water governance. Lake Lubans was selected for this research, as it is Latvia's largest lake, its area containing an important Natura 2000 protected site, the Lubana wetland complex, in addition to the fact that the region has been inhabited since the Neolithic era. Lake Lubans is governed

by several national institutions, led by the Nature Conservation Agency, as the lake is located in a protected area, with the Ministry of Agriculture being responsible for the governance of the lake dam system and control of farmland around the lake. The territory of the Lake Lubans wetlands was one of the first campgrounds of ancient people in Europe after the retreat of the glaciers, which also determines its importance in the history and culture of Latvia and Europe.

Lake governance is almost solely focused on nature and environmental protection, with economic and social aspects needing to be considered, and residents and other stakeholders needing to be sufficiently involved in governance. Currently, their interests have yet to be considered. Overall, lake governance needs to be improved from this perspective. Lake Lubans and the Lubana wetland complex have not had a mandatory governance plan since 2009, being developed. However, this plan is again missing the governance dimensions mentioned above.

We also found that nature communication and nature tourism are not only potential lake/nature governance sectors but, if properly developed, would be valuable lake governance instruments, maintaining stakeholders' participation while supporting national organisations.

Keywords: Mesolithic and Neolithic settlements, lake governance, socio-ecological system, local traditions, triple governance dimensions model

Introduction. The aim and tasks of the research

For thousands of years, people have lived by Lake Lubans, forming a complex relationship with the lake over this time. Like the ebb and flow of the lake water, this relationship has had its ups and downs: people tried not only to live with the lake but also to subjugate its nature to their own needs, so much so that in recent centuries this largest lake in Latvia is dying and people, realising the consequences of their actions, now have to perform the much more difficult task of saving the lake. As it turns out, this task is more complex because various interests clash and opinions on the way to save the lake and the future life of people living on its shores often differ significantly.

This research aimed to provide a brief insight into the history of relations between Lake Lubans and the people who lived near it, the traditions that grew out of these relations. We also aim to investigate the governance system of the Lubana wetland region, if any, by using an Environmental Governance triple-dimension model. This model is adapted for lake and public water management,

order to assess the current situation regarding the governance of the Lake and the wetland. We also investigating the possibilities for improving the current governance system - what resources are lacking and what stakeholders are present in the region and have not yet been involved in its governance (Ernststeins et al. 2017a; Ernststeins et al. 2017b).

Therefore, one of the tasks of this research was to recognise the main activities and interests of all administrative levels and all socio-economical systems (SES) sector stakeholders. Our aim was to study the complex governance situation of the Lake Lubans, apply the SES approach and governance instruments based analysis frame to facilitate a lake governance framework, which we would use to determine how effectively the lake and wetland are governed, and what, if anything, could have been done differently.

The overall goal of the research was to investigate the culture of the people of the Lubana region and how their culture was affected by the damming of the lake.

The tasks of this research were:

1. Investigation of the history of the lake and its people.
2. Investigation of the culture of the Lubana region inhabitants.
3. Investigation of the changes promoted by the damming of the lake and subsequent changes in regional nature.

Research methods

Case Study Research methodology was applied in the Lake Lubans region using the methods outlined below.

Document studies. Historical materials and research results from archaeological excavations as well as periodicals and legislation regarding the lake over the last 150 years were analysed. The aim was to discover how life was for the inhabitants of the ancient settlements near Lake Lubans and how those lives changed after the lake was dammed. In addition, local life up to that point was analysed along with regional economics and how fields like this changed over time.

Documents about the lake and wetland governance, local administration, and governance of historical and cultural sites, including archaeological dig sites, were also analysed. Governance and planning documents were inves-

tigated at the municipal and national levels that related to lake and wetland governance and to the governance and ownership of culturally and historically significant territories and/or objects such as manor houses, dig sites, monuments, and other similar objects.

Structured interviews. Ninety-nine stakeholder interviews with representatives of six groups – Residents, municipalities, national governance institutions, mediators (NGOs, schools, museums, and media), national experts (archaeologists, environmental specialists) and other groups (tourists, entrepreneurs, etc.) – were performed. The interviews included questions about the governance of the lake and wetlands, local culture, customs, and residents' opinions on the current state of the lake and wetlands. The interviews primarily focused on investigating residents' views on governance, local customs, and how damming the lake has affected the local lifestyle.

In total, 14 municipal representatives, 24 national institution representatives, 16 mediator representatives, 16 local entrepreneurs, 17 residents, and 12 out-of-region experts were interviewed. Of the 99 respondents, aged from 35 to 65, 58 were women. Thirty-eight in-depth interviews were performed, and there were 61 express interviews. Express interviews were no longer than 10-15 minutes, while the in-depth interviews were over an hour long.

Interviews were pre-planned and were primarily based on convenience rather than a particular methodology. Respondents were selected in advance based on their membership in stakeholder groups and participation in municipal affairs. For example, residents were chosen from those who were actively involved in the planning and enactment of municipal governance plans and related topics. Most respondents were part of several stakeholder groups, as municipality and state-institution representatives were both residents and entrepreneurs.

The interviews were performed on behalf of the Latvian Nature Conservation Agency in connection with the study on the management of Lake Lubans and the associated wetlands. The purpose of the study was to investigate the current management of the territory and the opinion of the residents on the situation, and to develop recommendations for the development of the lake and wetland nature protection plan (Latvian Nature Foundation 2023). Questions such as “What do you think about nature conservation restrictions?” and “What do you think about recreation options near the lake?” were included. The interviews are archived but not publicly available due to privacy constraints.

The interviews are archived but not publicly available due to privacy constraints and data protection laws, and as such, detailed information about the interviewees is not publishable. The interviewed individuals who will be referred to in this publication are therefore defined as A (Male, 50 years old, municipal employee) B (Female, 50 years old, teacher), C (Male, 30 years old, local nature expert), D (Female, approx. 70 years old, guest house owner), and E (Female, around 30 years old, tourist information centre employee).

Lake infrastructure (recreation, hydro-technical, etc.) and coastal observation. Lake Lubans was visually inspected, and the state of recreation infrastructure and other essential objects, such as guest houses, was studied. Local tourism information centres were visited to evaluate the amount of information about the lake they had (including about local culture) and what other capacities these centres provide.

Intangible cultural heritage research using embodied observation methods. Local customs, including culinary customs, beliefs, traditions, and cultural events, were investigated. The inhabitants of the Lubana region have unique customs and traditions, such as fish smoking and haymaking, which had formed over time due to the fishing lifestyle and lake influences such as floods.

Basic information about Lake Lubans

Lake Lubans is the largest lake in Latvia, with an area of 82.1 km² (Kalniņa 2022). Its catchment basin is also vast, having an area of 2,040 km². The lake is close in size to Latvia's capital, Riga.. The lake belongs to the Daugava River basin and is connected to the Aiviekste River. Historically, Lubans had more rivers feeding it, but most rivers have disappeared over time and the lake has grown much smaller since it was dammed – most of the Lubana wetland was originally part of the lake bed (Figure 2, Figure 3).

Lake Lubans is located in the Lubana Plain on the border of Rezekne and Madona counties (Figure 2, Figure 3). Around the lake are four parishes, Barkava and Osupe in Madona County and Nagli and Gaigalava in Rezekne County (Kalniņa 2022, Figure 2, Figure 3). The lake basin includes the Lubana Wetland complex, one of Latvia's most significant protected territories and a Natura 2000 site (Figure 3).



Figure 1. Lake Lubans. Photo from the website of Madona Municipality <https://www.madona.lv/lat/aktualitates-novada?fu=read&id=9949>.

The lake formed more than 12,000 years ago and was originally three times its current size (Kalniņa 2022). It has gradually shrunk due to reduced water flow and the accumulation of organic material in the lake. Lubans formed initially as a lagoon of the one of predecessors of the Baltic Sea, and the area is rich in amber. Most hills in the area are formed out of dunes (Kalniņa 2022).

The lake was long ago the largest inland source of fish in the country, although it is currently essential at the regional rather than the national level. Idena village in Rezekne County is Latvia's only inland fishing settlement. There were initially many more, but they were abandoned or changed their source of income as the lake grew smaller, fishing harvests were reduced, and farming became easier.

Lubans is the only lake in the country with a large beach area, similar to those found on the Baltic coast, which makes it a popular recreation area during the summer. Having said this, the lake has only one good swimming area as the encroachment of vegetation limits opportunities (Konkovs et al. 2022: 192). The lake has one of Europe's largest water level regulation systems, with few lakes

in Northern Europe, or Europe in general, having a comparatively extensive network of polders, pumps or sluices, and few lakes in Europe are thoroughly dammed (Kalniņa 2022).

The dam system is also the primary cause of many of the lake's issues, as it prevents natural water flow and no fish paths are established. This has resulted in the lake quite rapidly transforming into a swamp. At the same time, the fish population is almost entirely maintained by human activity, and current fish species have changed so that the lake is now dominated by carp-like fishes (Ezeri.lv 2023). In contrast, salmon-like fishes that prefer oxygen-rich water are no longer commonly found in Lubans (Ezeri.lv 2023). The lake also suffers from increasing volumes of reeds, and municipalities have difficulties clearing them as they lack funding and other necessary resources (Kalniņa 2022; Konkovs *et al.* 2022: 192).

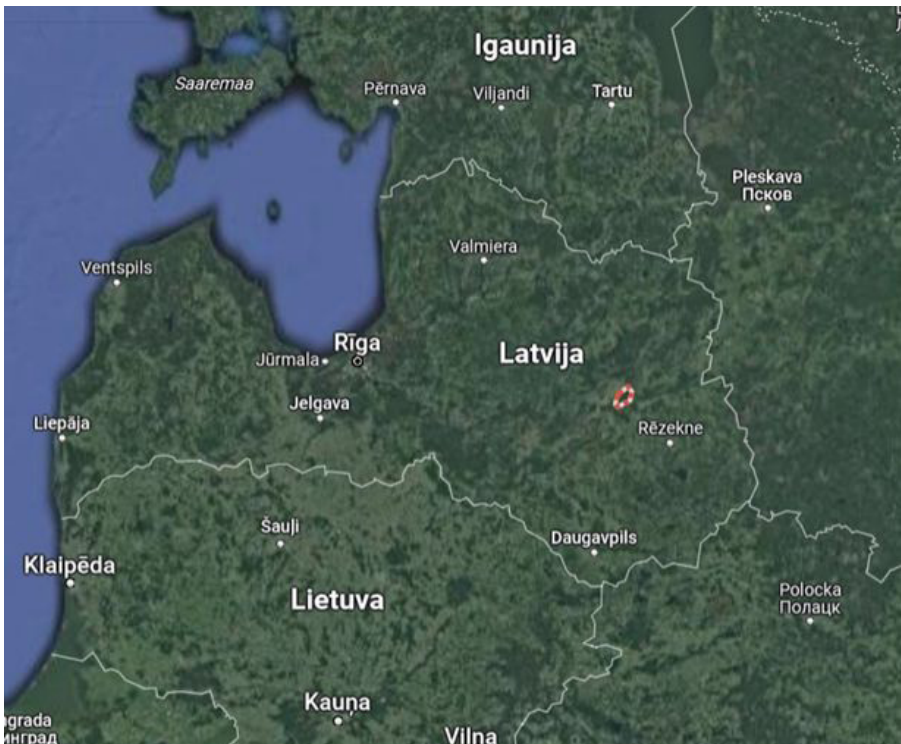


Figure 2. The Location of Lake Lubans in Latvia. Image taken from Google Maps. The lake area is highlighted in red.

The area around the lake is different depending on the coast. The north coast is covered with marshes, agricultural land, and forests, while the southern coast contains large fish ponds and farms (Figure 3). The Madona (north) side has the most farmland in the region. In contrast, the Rezekne (south) side is traditionally the area's fishing and recreational centre, and the lake beach is located in Rezekne municipality. Forests cover more of the Madona side, making it more challenging to navigate during winter as the woods limit visibility and significantly increase the risk of running into wild animals (Latvian Nature Foundation 2023).

The territory near Lake Lubans is sparsely populated; there are relatively few roads near the lake, and even fewer leading directly to it. The roads are often based on the dams surrounding and partially crossing the lake; most are old and worn out. Visibility during winter is limited, especially in the region's northern area. Furthermore, many places near the lake are not connected to the road network and are only accessible by boat or foot (Konkovs et al. 2022:199).

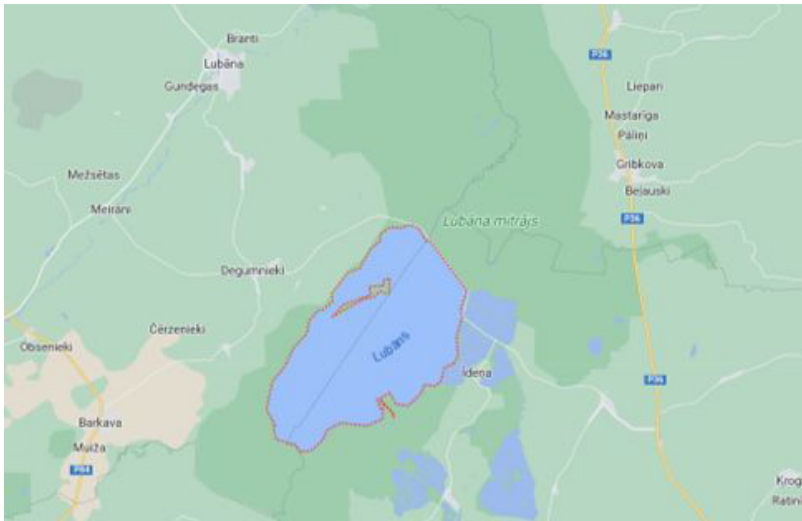


Figure 3. Map of Lake Lubans's surroundings. Image taken from Google Maps.

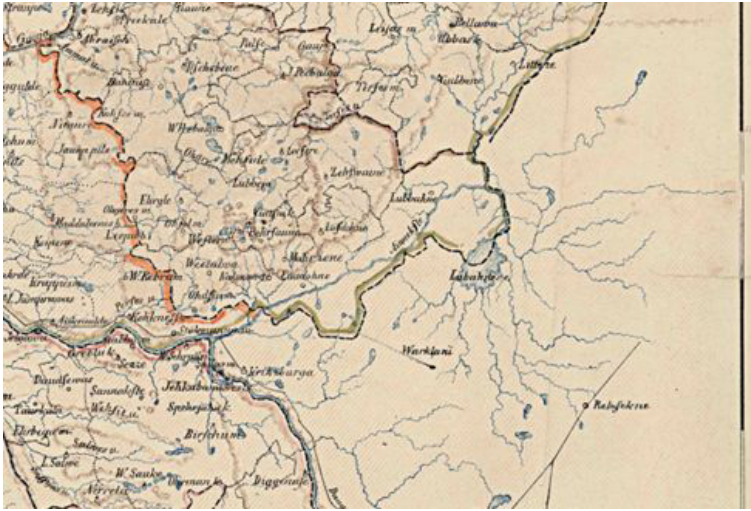


Figure 4. Lake Lubans on an 1859 map of Latvia. From the National Library of Latvia collection.

The history of the relationship between people and the lake

The territory of the Lake Lubans wetlands was one of the first campgrounds for ancient people in Europe after the retreat of the glaciers. After the exploration and excavation work in the Lake Lubans wetlands, realised over an extended period from 1962 to 1999, from 2007 to 2009, and from 2011 to 2012, the archaeological map of this territory has gradually had 27 Mesolithic and Neolithic settlements added. Archaeological excavations have been carried out in 18 of the 27. As a result, the Lake Lubans wetlands were found to have been inhabited as early as 9230-8230 BC (for more see Loze 2015).

Archaeological findings show two types of settlement, those with sedentary year-round occupation and those with seasonal occupation. The artefacts found make it possible to create a relatively clear picture of the lifestyle of the inhabitants of these settlements, their economic activities and social relations. The artefacts also witness how the people who inhabited these settlements formed their relationship with the lake. Thus, the study of the settlements allows the

conclusion that the location and specificity of the way of life were directly related to cycles of transgressive and regressive changes in the lake's water level.

The people near the lake learned not only to live with the lake but also to use its specificities to their advantage. Thus, the sedentary lifestyle gradually transitioned to the introduction of farming as an economic regime. We can assume that this transition was partly facilitated by the developing understanding that, for example, the sapropel that remains on lake and river shores after the flood cycle is a valuable fertiliser.

However, large areas suitable for agriculture could only be partially used due to floods, in addition to rising water levels, which could destroy people's residences. For centuries, the inhabitants of the lake's shores adapted to the lake's rhythm, considering the problems that this coexistence created. Thus, most settlements in the region are located on hills, which became islands during flooding.

Memories of this relationship are preserved in several folk tales about Lake Lubans, which belong to a larger group of Latvian stories about flying lakes. For example, one of these tales reminds us of a past event when an ancient lake was looking for a new place to live. The lake rose into the air and flew straight to a lovely area with houses, like a prosperous town. One day, while washing clothes by the river, young girls saw a big cloud. One of the girls called its name, and it fell to the ground, drowning the entire river valley. But the girls – because they guessed the name of the lake – were thrown ashore and remained alive (Balss 1888: 6).

Geological surveys and available historical materials show that at the beginning of the 20th century, the lake level still rose to 2.5 metres, and the area covered by water increased eightfold. It took about 270 days for the lake to return to its normal level. The damage to agriculture caused by floods was the main reason for the radical human intervention in the lake's natural ecosystem at the end of the 19th century and during the 20th century, especially during the Soviet era. Thus, in the 19th century, several canals and dams were built in the Lake Lubans wetlands to mitigate flooding. Wealthy nobles organised the digging of the first canal under the leadership of Baron Wolff in 1848. Digging the trench took three years at the rate of five kilometres per year. However, this canal, named the Meiranu Canal, turned out to be too narrow and too shallow for the natural current (Zukova 1992: 13).



Figure 5. Floods in Lubana in the 1920s. Photo by Alfreds Gravers from the Madona Museum of Regional History and Art collection.

In 1922, the bed of the Aiviekste River was widened, deepened and straightened. As a result of this transformation, the size of Lake Lubans decreased from 100 to 25 square kilometres during periods of low water, and reeds and swamps formed where the lake once was. The digging of canals and the construction of locks and dams continued even during the Soviet era. At that time, a fish farm was established in Nagli with ponds covering 3,200 hectares. “When all the main transformation works of the lake and its lowland were finished, the dying lake was inundated as it was – with trees, islands, and islets covered with bushes, trees, and reeds... This is how the history of Lake Lubans pollution began. Everything was missing: money, energy resources, working hands, equipment, will – in a word, there was a different way of thinking” (Zukova 1992: 13). Now only the older inhabitants of the vicinity near the lake remember its clear blue water.

What is happening with the lake now?

After the lake was dammed, many newer settlements were built much closer as flooding became rarer. Nevertheless, despite the 20th-century flood-limiting canal and dam system, the region around the lake is still subject to frequent flooding, affecting local settlements and people, with much of the lake area being covered in water. The last major flood was in 2016. It affected most of the agricultural land around the lake, with the Rezekne side losing most farms and loss of crops and property damage. Unfortunately, the farms went bankrupt because of limited government assistance in recovery from the floods.

At the same time, as the lake becomes smaller due to human activity, several settlements initially established in areas near the lake that were protected during floods have become significantly farther away from the lake. Many former coastal towns, such as Lubana, are now found kilometres from the lake, although centuries ago they were fishing villages.

However, people living near the lake, as well as those living further away, agree that Lake Lubans is subject to severe overgrowth, regular but minor suffocation of fish, and overall there has been lake and area degradation due to damming. As described above, the damming was intended to limit floods in the area. However, it needed to be better thought out. Instead, it functionally turned the largest lake in Latvia into a massive pond, which no longer has a natural flow of water. The river inlets and outlets connected to the lake were mainly overgrown, and fish paths were destroyed.

The fish population has also reduced in both number and quality, as there are limited means for fish to replenish their population. Fish growth is mainly supported by artificial means, as severed river connections mean no fish paths exist. Furthermore, the fish population is declining as fishers, hobby anglers, and birds overconsume. Fish-eating birds, in addition to fishers and anglers, have also affected the variety of fish species, and in only 50 years the fish population has almost completely changed. Initially, the lake had salmon and other similar fishes, but now, carp, tench, and zander are the most common (Latvian Nature Foundation 2023).

The flood control system has also created other problems. Thus, due to nature conservation restrictions and cost, most farmers must use more fertiliser to avoid depleting the soil. Previously, floods provided nutrients necessary for

soil fertility directly from the lake. Therefore, since the damming, agricultural productivity has reduced, as artificial fertilisers are less effective than lake biomass, and the usage of such fertilisers is strictly regulated. All regional farms are therefore functionally eco-farms (Konkova et al. 2022: 192, 195).

As a result of the factors described above, almost half of the villages around the lake have been abandoned as they could no longer support themselves or were absorbed into larger settlements over time. Because many of the former settlements were fishing villages, as the lake shrunk, it moved away and thus, the villages lost their traditional business. Farming communities, in turn, could no longer afford to grow crops due to the region becoming swampland and to the decrease in the fertility of the land or because of nature conservation restrictions (Konkova et al. 2022: 194).

About governance of Lake Lubans and its wetlands

Governance is defined as everything managed in the region relating to the lake and the municipalities in the area, including culture and economics. In the case of the governance of Lake Lubans and its region, too much emphasis has been placed on the protection and governance of nature and the environment, as the region consists mainly of protected areas, but at the expense of socio-economic sectors, which have been largely overlooked (Konkova et al. 2022: 191, 192). Local economic areas, such as farming, fishing and lumber harvesting, need more support, and overall regional economics stagnates. The education and cultural sectors are well developed, but infrastructure, recreation, and other areas of socio-economic governance must be developed appropriately and sufficiently when governing the region (Konkova et al. 2022: 193, 194).

Tourism in the region is mainly focused on nature and recreation, as the area lacks alternative development options as a result of limited support from national organisations and difficulties in accessing many essential objects, such as archaeological dig sites, which lack proper access roads or are located in swamps, preventing tourists (or locals) from visiting (Kalniņa 2022).

In the case of the Lubana region, most governance instruments are institutional (organisations that perform governance) and infrastructure instruments (such as lake dams). Most groups of instruments are used, although the communication and finances still need to be improved, while planning tools are only

now being adequately developed. Therefore, the most active target groups are the state administration and local municipality groups. In contrast, residents and other target groups (including tourists) must be sufficiently involved and represented (Konkovs et al. 2022: 198-200).



Figure 6. Recreational trail bridge at the Lubana wetland TIC. Photo by Karlis A. Konkovs.

Lake Lubans is currently governed not by a single organisation but by several: The Nature Conservation Agency of Latvia, which oversees the lake and protected areas; The State Environmental Services, which regulates the usage of natural resources and pollution; the Ministry of Agriculture, which is responsible for fishing quotas and controls the hydro-technical infrastructure; and the local municipalities, which develop local parishes and are responsible for the infrastructure of swimming areas, roads. In addition, local municipalities

suggest changes in fishing quotas, and have some input on who manages and protects cultural and heritage sites. These groups formally govern the lake together, but their cooperation could be improved as each group has its own duties and there are conflicts of interest relating to the lake and who controls what exactly (Konkova et al. 2022: 196). Resources of any kind that could be used for governance are also minimal, and only a few specialists are able to find employment managing the lake or wetland. Most of the tasks that professionals should perform are instead performed mainly by local volunteers, as national institutions and municipalities lack personnel. Apart from the NCA, most governing organisations are not directly involved in managing the lake area or wetland (Konkova et al. 2022: 197, 198).

The lake's area has only two information centres immediately beside the lake, the Lubana Wetland Information Centre in Osupe, Madona municipality, and the Lighthouse Water Tourism Development Centre in Gaigalava, Rezekne municipality. Other regional-level information centres are around 50 km from the lake, located in the closest towns and cities. However, most of these information centres have limited information about the lake and local nature and even less knowledge about local culture (Konkova et al. 2022: 200).

The Wetland TIC is the primary source of information on the region's nature and on Lake Lubans. The centre has a wide range of tourist information, especially about nature tourism and bird watching. It also organises guided wetland walks and education events, trains bird watchers, and holds lectures in local schools. The centre also accommodates tourists, organises recreation events, participates in planning work, and mediates between municipalities, state institutions, and local inhabitants regarding the lake and wetland. The centre therefore serves both as a mediator and a valuable planning instrument for tourism and environmental protection, representing a wide range of target groups. The centre is located in Osupe and is close to the border of Rezekne and Madona municipalities, next to one of the dams (Latvian Nature Foundation 2023).

The Lighthouse Water Tourism Centre is located in the Rezekne district and was founded initially to popularise and develop water tourism in the region. The centre is almost next to Lubana Beach in a cleverly rebuilt pumping station, and its entire area was adapted to provide good recreation opportunities. The centre is near the Kvapānu fish ponds and is popular among bird watchers. Initially, the centre was managed by local governments. However, for various

reasons, it was leased to a private company, which is still developing the vision of the centre's future operation. Within municipal administration, the centre offered many recreation opportunities and organised lake and bird-watching events. Under the management of the current owners, the centre continues this work although on a much more limited basis. The centre no longer operates during the winter, and its functionalities as an information centre are reduced (Latvian Nature Foundation 2023).

Regarding the recreation opportunities available to residents and tourists, it should also be noted that the Lubana region has one beach in Gaigalava and a half-dozen small guesthouses, including the two mentioned lakeside information centres. Furthermore, one of the guest houses also serves as an unofficial information centre for bird watchers. Apart from this, recreation options and infrastructure are limited, and residents and visitors often complain about the quality of infrastructure, with beach and bird-watching infrastructure needing extensive improvement and repair (Latvian Nature Foundation 2023).

In the region, berries and mushrooms are actively collected (an additional source of livelihood for the poorest inhabitants), hunting is organised, quotas set and administered, and angling is practised in the lake throughout the year. Hunting collectives operate in every parish and include inhabitants from other regions. Nature walks and birdwatching are popular, and the Wetland TIC and Stikani guest houses act as centres for local birdwatchers. Birdwatchers can observe many birds, including eagles, living or feeding in and around the lake's wetlands (Latvian Nature Foundation 2023).

Near Lubans are the Teirumnieku nature trail and Idena Castle Hill, and there are several old churches in the villages near the lake. Some archaeological sites, such as the Abora Neolithic settlement, can also be visited by tourists, although most are not accessible. Apart from guesthouses and churches and a few tourist and recreation facilities, most of the lake's tourist attractions are not accessible outside of the summer season, as there are few good roads, and there is little for tourists to see or do near the lake during winter. Tourism is mainly developed by municipalities and residents (Latvian Nature Foundation 2023). Cultural tourism would be a beneficial solution to the need for more regional visitors, as this sector has a huge unused potential.

Tourism in the region has become a crucial economic and governance sector, partly as a way for locals to preserve their way of life and regional nature, and to earn reliable income, as nature conservation regulations make alterna-

tive forms of business, such as farming, somewhat tricky. In contrast, other businesses, such as lumber harvesting, are almost impossible. Tourism uses local cultural, historical, and natural values (such as the wetland) in a way that provides the most benefit. However, tourism development has sometimes been thoughtless, as it was developed independently by various residents, parishes and municipalities (Latvian Nature Foundation 2023).

The involvement of target groups in the tourism sector is different because residents, people in business, and tourists are more active in this area. In contrast, local and national administrative structures must be adequately involved in governing tourism (Latvian Nature Foundation 2023).

Tourism stakeholders are shared mainly with overall regional governance, although they include more active involvement from residents and their representative organisations (such as NGOs) and the owners of local guest houses, recreation centres, and other entrepreneurs who profit from more customers or whose services are directly tied to supporting visitors to the region (vehicle renters, banks, etc.). The municipal segment was also actively involved, as the Rezekne and Madona municipalities have tourism departments. However, the national segment is barely affected, with only the Latvian State Forests being properly interested because of their own nature trail (the Teirumnieki nature trail) and its associated infrastructure. In contrast, other national-level interest groups are involved as part of regional governance rather than out of interest in developing tourism (Latvian Nature Foundation 2023).

How the lake and its transformations have influenced local life and customs

Due to the transformations in Lake Lubans during the 20th century, the traditional lifestyle of people who live by the lake has become endangered, as many of the residents' traditional occupations have been impaired in many ways. Moreover, they have difficulties adapting in such a relatively short time to the rapid changes that happened with the lake – the lake was dammed just a few generations ago, and the consequences are only now visible more clearly. For example, local fisher village culture and culinary customs have been well-preserved, although changes in the lake make it difficult for them to be as common as they were historically. However, the cultural-historical memories

of living with the lake and adapting to its nature can still be seen at every step that an interested observer takes in this area. Most local customs, including those related to weddings, are tied to the lake, and there are many other folk tales and legends about it.

Here are some examples of such customs

Specific house-building traditions can be seen in the homes of older residents. Local people built elevated homes to limit flooding indoors. Roofs were often made from lake reeds (many still make such roofs today), and windows were not placed facing the lake to preserve heat during winters as the wind gained momentum on the lake and could cause a loss of warmth; windows could even break during storms. Buildings were typically built using locally available materials.

Locals often kept boats at home to use as transport during floods. Until the lake was dammed, boat crafting was an everyday activity in the region; today the craft is still alive, although much less widely practised.

The local people have also preserved other craft traditions because, living by the lake, most settlements had to be self-sufficient. On the other hand, from ancient times, it was also clear that anything that could not be locally made had to be obtained through trade, exchanging products made on the settlement for what was needed. Thus, there is speculation that one of the two Neolithic amber processing centres in the eastern Baltic area was in the Lake Lubans wetlands. The artifacts found by archaeologists prove that amber was exchanged for high-quality flint from the region of the Volga River, where they mainly collaborated with the inhabitants of Valdai Hills. Amber pendants from Lubans were also found in the Kukarkoskena cemetery, 18 km north of the Turkish city of the same name (Loze 2015: 248-249). Today, the ancient Amber Road has acquired new contours.

People near the lake developed native cuisine that revolved around fish (smoked or in soups) and local farmland produce. Locals also have their own fish-smoking recipes and traditions.

In 2018, the documentary film *Lubans for Latvia: Then and Now* was made as part of the project under the same name (Jātniece 2018). The film reflects the history of the damming of Lake Lubans during the Soviet era. It includes photo and film archive materials and the stories of people who lived before the

damming and after. This film conveys a message about how these people feel the closeness of Lubans in their everyday lives and what their, and other local inhabitants', thoughts, feelings, future predictions, and perspectives are. Their stories testify that local inhabitants developed a deep reverence for the lake over the centuries, as it was their primary source of sustenance (through fishing and fertilising farmland) and their main threat, as flooding could devastate large areas and isolate settlements often for most of the year. This resulted in locals having a much greater appreciation of nature and the local region. In their perception, the lake is a living being with a character and soul that can hurt people when it is harmed. Therefore, many perceive what has been done to the lake as their own pain. As Velta Dragune, one of the film's heroines, whose house was once on the shore of the lake, said: "What good is there? The good is bad".

The future of the lake and its wetlands

Although the Lake Lubans dam system is an important achievement of European hydro-technical infrastructure, the people who live on its shore, and many experts such as local birdwatchers and historians from the University of Latvia believe that the lake has changed too much. Most of these changes, for example, regulating lake intakes with sluices, are very harmful to the lake. Residents are increasingly convinced that the lake is no longer what it used to be, as everything from fish species to coastal areas has changed, and not necessarily in a good way. The lake water has become murky; fish are fewer and smaller; and the lake has become much shallower and is becoming overgrown. It is often compared to a puddle or a pond rather than a lake. The lack of flooding is the only positive thing in these changes. The inhabitants of the area are now less isolated than before. Initially, the lake and its flooding made the site difficult to reach, with some settlements, such as Idena, being remote islands for most of the time. Now, settlements are all on dry land, making travel easier. However, it is debatable whether residents feel this way as the previous floods also had an important beneficial function, and residents had adapted to them very well. Older residents fondly remember the ancient lake and believe Lubans is no longer a lake.

The lack of flooding makes local farmers happy, although they note bitterly that they now have regular bird attacks that destroy crops, and farmland

is no longer as productive as it used to be due to the absence of lake sludge, previously delivered onto the fields during floods. Although Bird watchers are very happy about the wetland, most say that the lake should be returned to its original, natural, state, as there are fewer birds due to the gradual drying of the wetland and the lack of food.

The residents' opinions about the lake's future could be more precise, as their views differ on the damming of the lake, the governance of the region, and the development of the Lubana territory and its surrounding municipalities.

The local farmers approve of its damming and water regulation, as it has prevented yearly floods, and much of the land recovered by draining the lake is used as farmland. However, the farmland is becoming less fertile due to a lack of lake sludge feeding the soil.

In contrast, local fishermen and nature enthusiasts would rather have the dam torn down. The area has been heavily degraded, the lake is becoming overgrown, and fish harvests are lower than before. However, most birdwatchers think that the lake water level should be even further reduced, and thus, the lake would become a swamp.

Most residents are happy about the lack of floods but not about the lake becoming overgrown or getting smaller.

Almost all interviewees believe that the dam operation should have been thought through better. The system should be modified, as the dams did not include any means of preserving the natural flow of water to the lake. The lake has been severed from the river basin, turning it into an artificial reservoir rather than a natural lake. The damming of the lake was initially for the benefit of farmers, although other than providing farmland and creating the wetland complex, any other benefits of the damming have gradually been lost. Furthermore, before the lake was dammed, the wetland complex was probably much larger and had a wider diversity of species.

Most of the older people who live by the lake remember that the area where they live was under water for a long time, with most villages present as islands isolated from each other. At this time boats were the primary means of transit, and the lake water used to be clear. While floods no longer cause problems, older villagers are very nostalgic for a region they see as better than it is now. The current changes in the lake have badly affected the local way of life and culture, as much of the old fisher and farming lifestyle that defined the region

is now more challenging to practice causing younger people to leave their ancestral homes and move to towns and cities.

For residents, the disappearance of the lake would be catastrophic because it is precisely the lake that holds local communities together. They had developed for centuries around the lake, using everything it provided and calmly accepting its whims.

Residents' opinions on the situation

The opinion about the changes to the lake and the strict nature conservation restrictions is much divided, as are ideas of how to develop the region. Most residents believe that the lake water is too low and that much more work should be done on the lake itself. There should be some form of fishing restriction, and water weeds and reeds should be cut and collected from the lake periodically. However, local nature experts (most of whom are bird watchers) say that the lake water should be lowered even further to be better for migratory birds. Other nature experts suggest that the most critical task for the lake is restoring its natural water flow, at least to some extent. As one stated, "Lubans is not a lake, but a pond. It no longer has any natural water flow" (interviewee B 2023). Other experts say that the nature conservation restrictions were poorly conceived and are no longer effective if they ever were. "When the restrictions were set up, no nature protection plan existed. There still is not one, and no one is certain that the protected values and species are found in the area anymore" (interviewee B 2023). The restrictions also prevent maintenance felling, as all woodcutting near the lake is strictly regulated. According to one of the interviewed forestry experts: "No one is cutting any trees near the lake. Even the state forestry services have to get permission from the Nature Conservation Agency, and even then they might not allow the clearing of fallen trees. Some areas in the wetland are overgrown, but it is forbidden" (interviewee E 2023).

Opinions about local infrastructure, tourism, and development are more unified, as most stakeholder groups believe the region should have more tourism, business, and opportunities for recreation. Some interviewees stated, "There is little to do for anyone in the region. Tourists visit and see everything in just a day, and the lake area is mainly just for passing through" (interviewee C 2023). "Lubans is the largest lake in the country. It has a beach like the

sea, but there is just one. People would like more beaches, but establishing a new one is unlikely” (interviewee B 2023).

Opinions on the governance of the area are almost identical regardless of the interviewees’ stakeholder groups: “No one is governing the lake or the wetland. The municipalities and state organisations govern their areas of responsibility. They all have their own interests, and they do not cooperate. They help each other, but no one governs the entire area” (interviewees A, B, D 2023).

While there were no proper interviews with younger people, some of the interviewed individuals stated that: “Younger people are more active regarding the lake. They gladly join nature clubs, are involved in birdwatching, and want to participate in improving the area, but their opinion is listened to only by the municipalities. Many of their ideas were ignored because there was not enough money to support them, or most residents didn’t even understand the ideas, for example, having catering services at the TICs. The most of the locals feel the tourism information centres and additional tourist services as competition, not the possibility to participate in these services” (interviewee D 2023).

Comparisons to other countries

1. Impact of lake damming in other countries

The impact of lake damming is more extensively studied in other countries. Recent research regarding this topic in Bulgaria has highlighted how damming lakes, especially to the extent that Lake Lubans has been, has a generally negative impact on both the lake itself and the lake catchment basin, as hydrological networks are severely altered. This can cause gradual lake drying, and surrounding coastal areas become increasingly swampy, as soil around the lake becomes much more damp (Nowak & Grzeškowiak 2010). Such changes can cause drastic alterations in local habitats, such as an increase in trees that thrive in poorer soil. This can be remedied either by (at least partial) restoration of natural lake water flow, extensive amelioration work, such as digging drainage ditches, or a combination of both (Tammeorg et al. 2023). In Latvia, this topic is not very well studied, so it would be beneficial to take the experiences of other countries and implement them here appropriately. For example,

as the damming has caused an increase in lake overgrowth because silt was not being transported from the lake during the floods, reed biomass could be potentially used as a source of biofuel for local settlements. However, despite the opportunity, this has not been adequately investigated in Latvia as such methods are relatively new and untested. In addition, current nature conservation restrictions discourage potential investors in this area (Vávrová et al. 2023; Sandar 2022; Kiani 2023; Latvian Nature Foundation 2023, Archive of Latvian Nature Foundation 2023).

2. Development of tourism in protected areas in other countries

Protected areas, such as Natura 2000 areas, are popular among nature tourists, with many such sites being developed in other regions of Europe, such as the Balkans (Murillas-Maza et al. 2023; Berkes 2004; Strzelecka et al. 2023). In these countries, one of the goals for protected areas is to ensure their continued usage and accessibility as recreation and tourism objects for future generations; as such, they were often developed to be welcoming to potential visitors (Murillas-Maza et al. 2023; Berkes 2004; Strzelecka, Prince & Boley 2023). However, in Latvia, nature conservation restrictions on this topic are often needlessly strict. Much of the potential in this area is not being utilised, and many protected areas are being protected from people, rather than for people. If properly developed, tourism can be a beneficial source of revenue in areas with restrictions on economic activity (such as the Lubana wetland region), as it can serve to promote development in other socio-economic sectors such as transport (Thommandru et al. 2023). In the Lubana wetland area, tourism is a crucial economic sector that is purposefully not being developed, partly because there was no nature protection plan. Local municipalities and residents (who are the main actors in promoting tourism in the region) often lack resources to create new tourist attractions in the area before considering nature conservation restrictions (Van den Broek et al. 2023; Silva, Silva & Vieira 2023; Zsuzsa, Kupi, & Happ 2023; Breib 2023). The dam system could be a valuable tourism asset, as it is one of Europe's largest lake damming systems. It could be a valuable tourism object if incorporated into tourism plans. The region has tremendous tourism potential, but this is hampered by nature conservation restrictions and lack of a clear vision for the region – is it to be developed as an agricultural area, nature reserve, tourism area, or all of these? Other countries have a clearer view on how and

for what purpose to develop protected areas, while Latvia is still developing its environmental governance sector.

Conclusions

Due to an ill-conceived flood control system, Lake Lubans is currently a dying lake. This situation also dramatically affects the daily lives and prospects of the people living on its shores. The lake, wetland area, and resources mainly provide work, recreation, and entertainment opportunities.

The general situation of governance of Lake Lubans and its territory, both from the point of view of public governance, and local life, could be better. Lake governance is overly and exclusively focused on nature protection, while economic development and other issues are viewed superficially, if they are even addressed. Most of the governance instruments and target groups are not involved, and socio-economic aspects (including culture) need more support from the state. The need for a dedicated wetland governance and protection plan has partially caused this situation. The wetland complex was created a protected area in 2009, although the plan has been in development only since 2021, and is still incomplete. Existing disagreements between municipalities and other involved target groups slow down the development of this plan. There is also general uncertainty about the direction of the region's development, as local municipalities and residents need to be sufficiently involved, and they have different opinions about the future of the lake and surrounding territory. Tourism governance and development has only recently been examined as a separate topic because it was previously developed in addition to the overall economy of the region (or municipalities), or residents developed it, or entrepreneurs and NGOs, separately from the regional administration to provide income for themselves when alternatives are in short supply.

The tourism sector in the region needs to be better developed; it lacks infrastructure and has even more underdeveloped and underused communications instruments than the rest of the current governance system. Information for tourists and residents on local nature and objects of interest could be more comprehensive. Therefore, the governance of Lake Lubans and the region needs more resources, and the governing organisations need to have appropriate

awareness and opportunities to govern the lake effectively and with a positive future perspective.

Behind these problems is the dying lake, once one of the largest in the Baltics. Today people are gradually getting used to the idea that they belong to the last generations who can still live by the lake.

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