ESPON

EUROPEAN UNION

Co-financed by the European Regional Development Fund

Inspire Policy Making with Territorial Evidence

TARGETED ANALYSIS //

Lake Balaton

Towards an integrated development?

Annex to the Final report // October 2021

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Authors
András Csite, Anett Endrédi, András Igari, Bence Kovács, Zsolt Szendrei, Viktor Varjú, Georgina Verhás

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Contact: info@espon.eu

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Abbreviations

BAHART	Balatoni Hajózás Zrt. (Balaton Shipping Company)
BLI	Balaton Limnological Institute
BUNP	Balaton Uplands National Park
BUNPD	Balaton Uplands National Park Directorate
EU	European Union
EUR	Euro
GDP	Gross Domestic Product
GVA	Gross Value Added
HMS	Hungarian Meteorological Service
HQ	Headquarter
HUF	Hungarian Forint
ITP	Integrated Territorial Program
KSH	Központi Statisztikai Hivatal (Hungarian Central Statistical Office)
KWPS	Kis-Balaton Water Protection System
LAU	Local Administrative Units
LBDC	Lake Balaton Development Council
LBDCA	Lake Balaton Development Coordination Agency
LBRA	Lake Balaton Resort Area
MTÜ	Magyar Turisztikai Ügynökség (Hungarian Tourism Agency)
MTWMD	Middle-Transdanubian Water Management Directorate
NGO	Non-governmental Organisation
NUTS	Nomenclature des unités territoriales statistiques
NIMBY	Not-in-my-backyard
PPS	Purchasing Power Standards
RBMP	River Basin Management Plan
SME	Small and Medium size Enterprises
TDM	Tourism Destination Management
TEN-T	Trans-European Network-Transport
TOP	Territorial Operational Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
VIZIR	Vízügyi Információs Rendszer (Water Information System)

1 Introduction

Lake Balaton is a shallow and freshwater lake in Hungary, the biggest one in Central Europe. The total surface of this lake of tectonic origin is 600 km^2 (length:78 km; width:1.3-14 km; average depth: 3-3.6 m; shoreline length: 235 km), the total water basin area of the lake is 5,181 km^2.

Lake Balaton is a popular touristic destination due to the pleasant temperature of the lake, the favourable climatic conditions, the variety of landscapes around the lake and the diversity of cultural-historical values. The touristic value of the Lake Balaton region is not only determined by the lake water quality and quantity, but also by the natural and built environment, long sandy beaches, traditional vineyards and recreational services built on local traditions.

Lake Balaton is the most popular summer resort in Hungary, the second most popular tourist destination after Budapest. 70-80 thousand summer houses (as second home) can be found around the lake. Due to this, during the summer the population of the lake shore settlements can double, the number of tourists increase this figure further.

Around the lake on the shoreline there are three settlements with a population higher than 10,000 inhabitants (Keszthely, Balatonfüred, Siófok) which are the main working centres around the lake, and there are few other smaller centres (Tapolca, Marcali) farther from the seashore. This means that there are no major centres in the region (the county capitals of 50-100 thousand inhabitants are already located outside the Lake Balaton Region) and the settlement structure is highly fragmented.

The spatial structure of Lake Balaton area is determined by the duality of coastal and background settlements. In the demographic point of view the population is more elderly in shoreline settlements, and its temporary population has a strong fluctuation between the season and the off-season period, while in the background settlements the decline of the population is the main challenge. The difference between the coastal and background settlements can be well observed in the case of economy. The income indicators of the coastal area are higher for decades, but in background settlements the increase is more hectic.

The water quality of Lake Balaton is good; however, its ecosystem is quite vulnerable. Due to human activity, the nutrient load has started to rise since the middle of the 20th century, which contributed to (among others) algae bloom. The area of Lake Balaton has excellent landscape and natural endowment, the geological, natural and cultural values are also recognised widely. Due to these endowments the scientific interests towards the lake region started in the 19th century and the area has been a significant research field for geographers and biologists since then. The research focus has been extended in the past century.

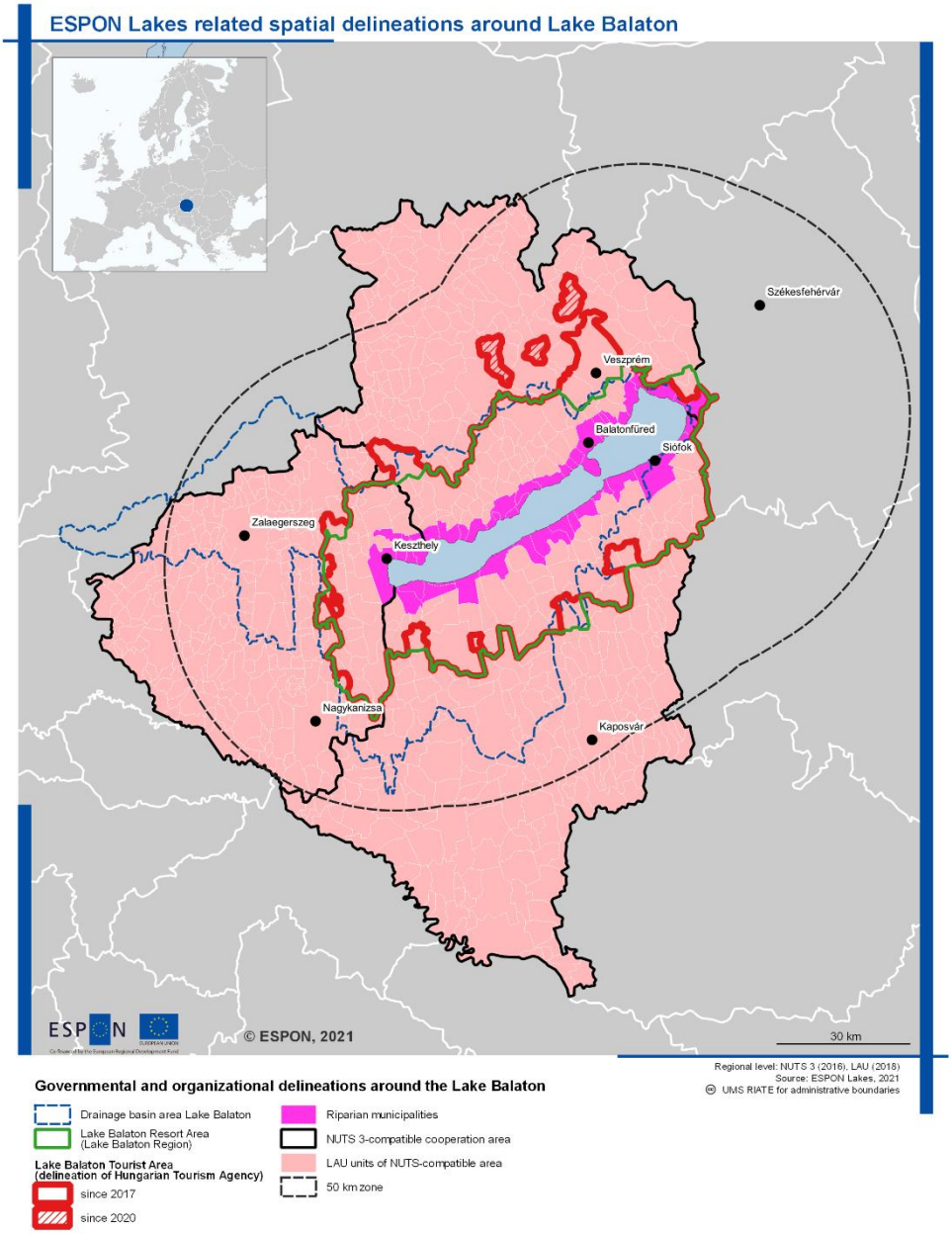
Built-up areas are extending, due to the above-mentioned recreational interest. The need for development of the lake region started in the middle of 19th century and it was highlighted during the 20th century, with different intensities and focuses in different periods. Lake Balaton received special attention during the 5-year plans of socialist period. For instance, the first motorway (M7) of Hungary was built during this era between the capital (Budapest) and the Lake Balaton during the 1960s.

Due to the continuous growing built-up areas, the coastal strips are affected by increased environmental load because of tourism and the overuse of the riparian area. This influences water quality on the long-term and has created several conflicts between the development and nature conservation sectors.

Due to the above-mentioned processes the need for an integrative treatment of the area was raised by spatial planners. It resulted in the creation of Lake Balaton Resort Area (LBRA) as a development unit created by the Act CXII of 2000 – Balaton Act. Since then, there were several arguments about the creation of an independent governmental unit for the lake region as well, but there has not been further action towards this direction so far.

The total territory of the Lake Balaton Resort Area (LBRA) is 3,886 km^2 (without the lake), the permanent population is 271,271 (2017), which means that the average population density is 69.8 person/km^2. LBRA comprises 180 municipalities belonging to three different counties (Somogy, Veszprém and Zala)(balatonregion.hu, 2021). The water catchment area is far extending beyond the 50 km buffer zone of the Lake (Dombi et al., 2018) (Map 1).

Map 1 Spatial delineations around Lake Balaton

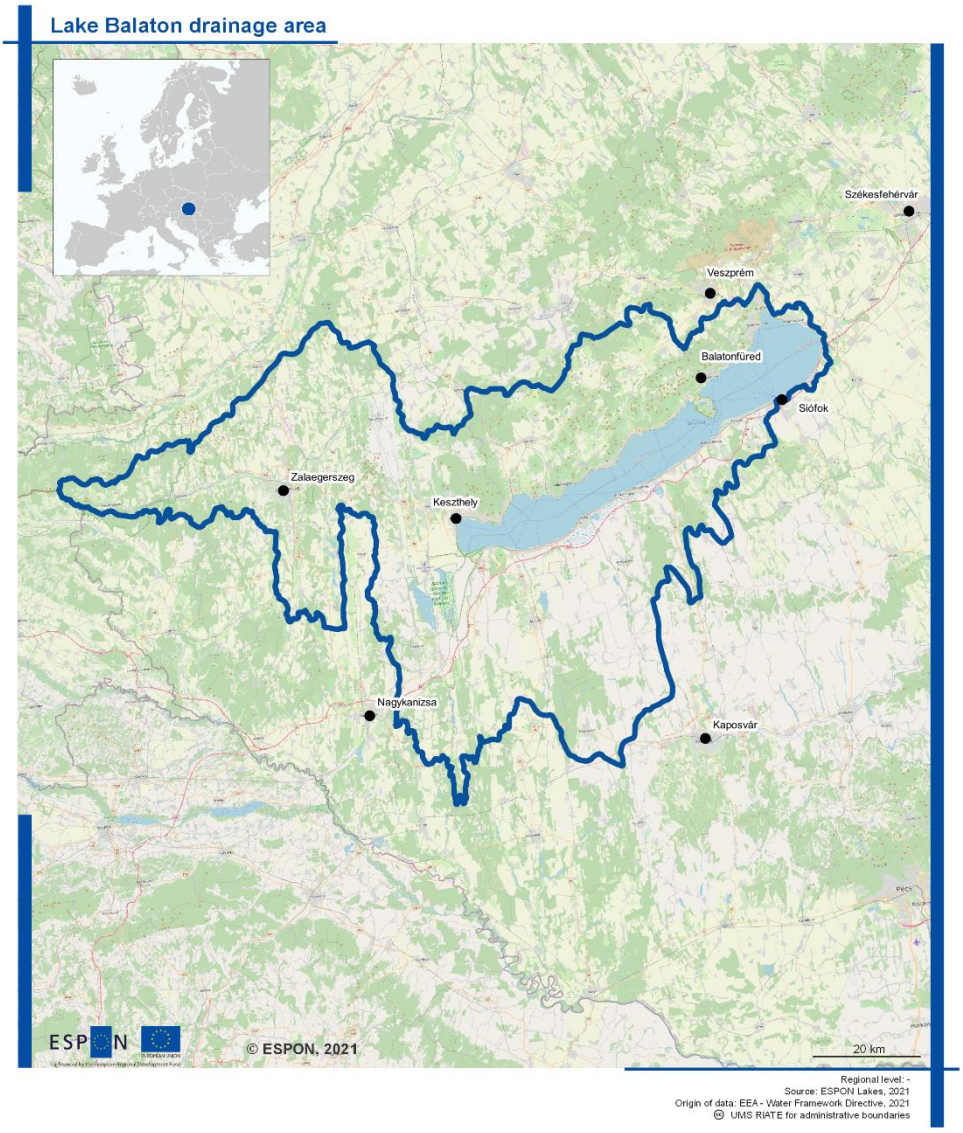


2 Territorial analysis: the lake and its surroundings

2.1 Water quality (chemical / drinking / bathing status)

Lake Balaton is located in the Danube River Basin. Due to its economic importance and ecological/geographical uniqueness in the area, the lake and its catchment area is treated as a separate sub-basin which has its own River Basin Management Plans (Map 2). The most important water bodies in the sub-basin are: 1) Lake Balaton, the largest natural shallow lake in Central Europe; 2) Kis-Balaton Water Protection System (KBWPS) with its two heavily modified waterbodies, Kis-Balaton I. and Kis-Balaton II. reservoirs; and 3) river Zala, the main inflow of the above-mentioned system and the lake. The function of the KWBPS is to catch the sediment and filter the water of river Zala to reduce the nutrient load of Balaton.

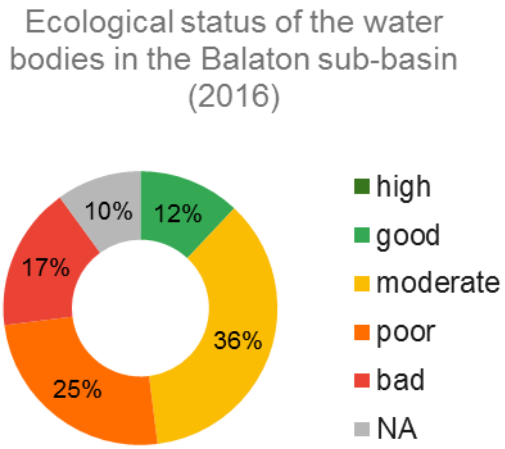
Map 2 Map of the Balaton sub-basin



Ecological status of the lake

In the case of Lake Balaton, oligotrophic/oligo-mesotrophic conditions were considered as reference state. The water quality of lake changed a lot in the last decades. Early signs of eutrophication and water quality problems were already observed from the 50s. From the 1970s onward, the natural aging[1] of the lake continued to accelerate as the rapid development of the surrounding cities (along with the intensive use of fertilizers and growing tourism) had increased the nutrient load of the lake. The nutrient accumulation led to an eutrophication process whith repeated algal blooms, originated mainly from the Keszthely basin. In addition, large-scale fish extinction waves/significant decrease in fish populations was observed, and by the 1990s the water quality has deteriorated. However, thanks to some targeted actions and interventions (e.g., the construction and development of the Kis-Balaton Water Protection system and the sewage system), the status of the lake and its catchment area has improved a lot, and it reached 'good' ecological status by 2010, when the first River Basin Management Plan was made. Since then, this condition has been successfully maintained (2nd River Basin Management Plan of the Balaton sub-basin, 2015).
In the second monitoring period (2009-2012) it was found that only about 12% of the water bodies in the sub-basin were in good condition (Figure 1), while most of them had moderate (36%) or poor (25%) status. The results mostly reflect the status of the biological quality elements.

Figure 1 Ecological status in the Balaton sub-basin area according to the 2nd River Basin Management Plan (2016)



In this period, the overall ecological status of Lake Balaton was still good (Table 1). The three western basins of the lake (Keszthely-basin, Szigliget-basin and Szemes-basin) showed good conditions, while the Siófok-basin had high ecological status, especially for phytoplankton (a biological quality element which is of paramount importance in lake communities). The other biological quality elements also had a general good status in the whole Balaton sub-basin, except the fish group, which showed a high degree of sensitivity to the land use, the spread of non-native invasive species, and the fragmentation of the water bodies (2nd River Basin Management Plan of the Balaton sub-basin, 2015).

[1] Natural eutrophication process which normally takes 10,000 years

Table 1 The status of the different quality elements in Lake Balaton and the Kis-Balaton Water Protection System according to the 2nd River Basin Management Plant (2016). NA= no data available

	Balaton	Kis-Balaton I.	Kis-Balaton II.
Biological elements	good	high	good
Hydromorphology	moderate	moderate	moderate
General physical & chemical conditions	good	moderate	good
Specific pollutants (As, Cr, Cu, Zn)	good	NA	good
OVERALL ECOLOGICAL STATUS	**GOOD**	**MODERATE**	**GOOD**

The general good status of the lake is due to the fact that most of the waters entering the lake were also mostly in good condition, although, a geographical separation can be observed: while the northern inflows usually had high/good status, the southern ones showed worse conditions, from poor to moderate because of the higher human-related pressures. The water quality of river Zala is only moderate where it reaches the Kis-Balaton Water Protection System, but the system works well and water flowing to the lake from the KBWPS has good status again.

Despite the good results, some recent observations highlighted the sensitivity of the lake to climate change and nutrient balance as well as the importance of maintaining and improving some water management actions in the area. The KBWPS is going through unfavourable changes as the spread of the macrovegetation and the location and amount of sediment deposition obstruct the water flow. Meanwhile, periods of poorer water quality have occurred from time to time in Lake Balaton too, especially in the western basins (leading to algal blooms in August/September of 2019 and 2020). Although the exact causes of this phenomenon are still unknown, it is possibly related to the increased nutrient release from the sediment, and elevated water level.

The nutrient release and the water level are both affected by climate change. According to the observations and predictive models, the average temperature and evaporation of the lake as well as the frequency of extreme events (e.g., heavy rainfalls and long dry and hot periods) are increasing in the area. As a response, the water storage capacity of the lake has been artificially elevated by raising the maximum water level. This can help to deal with short-term drought, but unfortunately not with long-term water-deficit and it increases the risk of floods during the extremely rainy periods. Furthermore, the elevated water level is unfavourable to the macrovegetation (i.e., inhibits the reproduction of reeds) and can have negative impact on the nutrient cycle of the lake. Thus, alternative solutions are needed to handle the predicted effects of climate change.

Chemical status of the lake

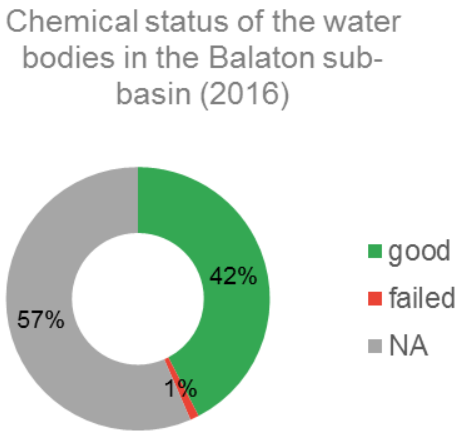
The chemical status of Lake Balaton was found to be 'good' in the time of the first River Basin Management Plan (2010) (Table 2), as/since all the priority substances showed low concentration. This status was successfully maintained until 2016. In the early monitoring period, the Kis-Balaton Water Protection System was not monitored for priority substances, but in the second monitoring period the Kis-Balaton II. reservoir was also tested and received 'good' status too.

Table 2 Chemical status of Lake Balaton and the Kis-Balaton Water Protection System according to the 1st (2010) and 2nd (2016) River Basin Management Plans. (NA=no data available)

	Balaton	Kis-Balaton I.	Kis-Balaton II.
2010	Good	NA	NA
2016	Good	NA	Good

Regarding the whole catchment area of Balaton, only 40 out of the 92 water bodies were monitored before 2016, and only one (the middle section of Sári channel) failed to be 'good' due to its raised cadmium concentration (Figure 2). This substance is well known for its harmful effect on human health; thus, it has long been regulated by the law, and industrial emissions are no longer typical. Its possible sources can be inflows from polluted areas or landfills which have no technical protection.

Figure 2 Chemical status in the Balaton sub-basin area according to the 2nd River Basin Management Plan (2016)



Organic pollution[2]

The main source of organic pollution in the Balaton sub-basin is municipal wastewater. In the 2nd monitoring period (between 2010 and 2012) 33 municipal sewage treatment plants operated in the area and only one of them was considered to be a significant emitter (the sewage treatment plant of Zalaegerszeg, a relatively large city in the catchment area of river Zala).

The wastewater emission and its organic matter load changed a lot between the 1st and 2nd River Basin Management Plans (RBMPs): the amount of emitted wastewater decreased by 26%, while the organic matter load decreased by 59%. The reason for this significant change was partly the reconstruction and technological development of the Zalaegerszeg sewage treatment plant, which reduced the emission of organic materials by 50%. In addition, the modernization of Keszthely sewage treatment plant also contributed to the change by reducing its organic material emission by 50%.

[2] Based on the 2nd Water Management Plan of the Balaton sub-basin.

The effect of a given emission on the affected water bodies can be modelled and significant emission (those that hinder the water body in reaching good condition) can be detected. In the Balaton sub-basin only two discharges (from the Marcal and Őriszentpéter sewage treatment plants) were considered as significant and none of them is connected directly to Lake Balaton. Organic pollution by wastewater is not a significant pressure on the lake, as the reduction of wastewater loads has started decades ago in order to improve the water quality of the lake. As a result, the wastewater of a lot of cities and villages has been drained outside the sub-basin and transferred to other, less important water bodies.

Another potential source of organic material is industrial wastewater, however in 2012, only 30% of the emitted wastewater and 24% of the organic material load originated from industries, the remaining originated from urban waste water.

In the sub-basin, 9 industries were considered as significant emitters between 2010 and 2012. It is much less than in 2007, when 30 industries were characterized as significant emitters. The organic material load also decreased between the two periods.

Drinking water quality (where, how, how much water is extracted for drinking needs)

The size of Lake Balaton's drainage basin according to its management strategy (Közép-dunántúli Vízügyi Igazgatóság, 2016) is 5,757 km^2. Overall in Hungary the hydrological conditions are excellent, and most of the water consumption comes from groundwater. However, in the Lake Balaton area there is also a significant draw from surface water. The main use is utility water, of which 75% is at households. The total drinking water draw is ~ 40 million cubic meters per year, of which 7.4 million comes directly from Lake Balaton, which equals to roughly 20,000 cubic meters per day. At the lake area, 96% of the households are connected to the water system, and 82% to the sewage system – the gap has swiftly closed in the last decade. There are 3 main water suppliers in the area, but only the Southeastern Balaton Regional Water Supplier draws water almost exclusively from the lake.

At least 80% of the water base in the area is potentially vulnerable – it is either surface water, or not deep groundwater. There are 7 water works at the lake which draw water from the lake, but one of them is currently out of operation and two are reserves. There are 114 groundwater works in the area (serving at least 50 people or with a daily draw above 10 cubic meters). All water works, both surface- and groundwater have a protected area around them, as stated by the law. In the area 38 additional mineral water wells are currently being used, 24 of them are for the purpose of bottling.

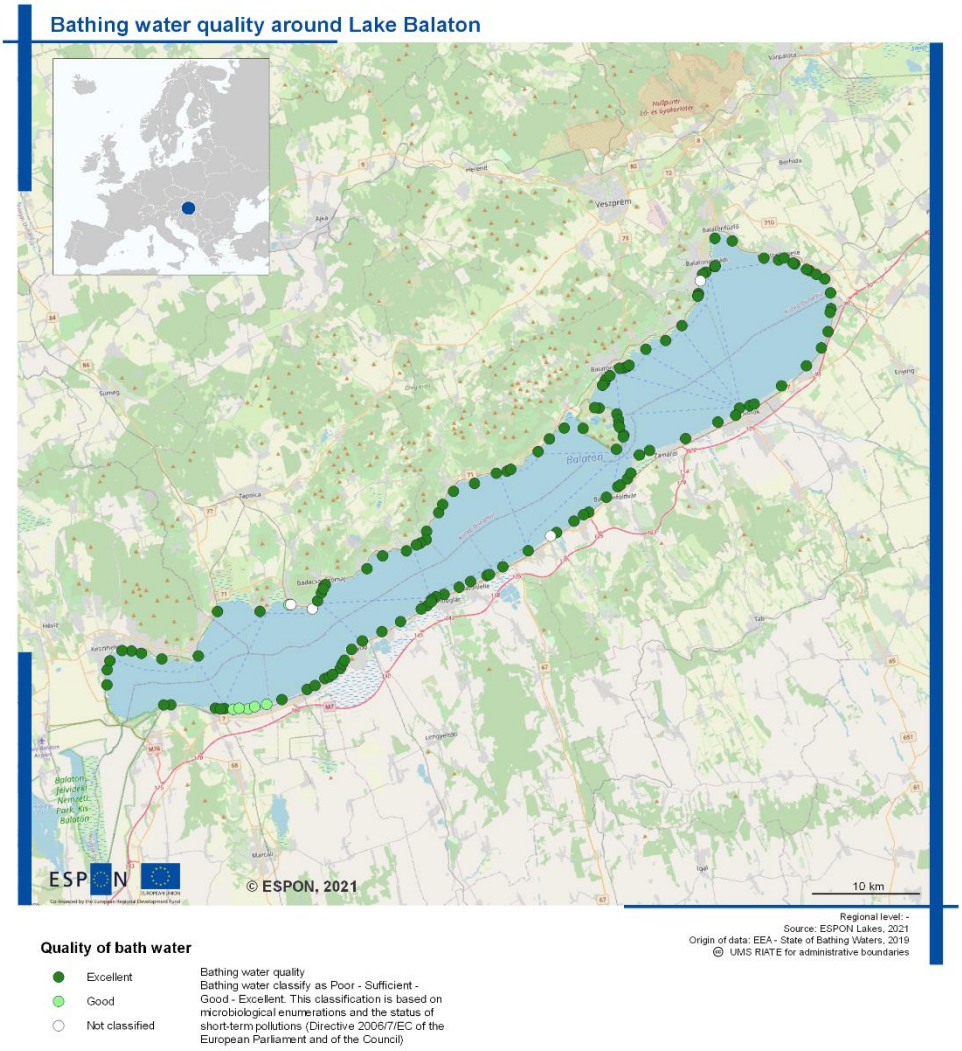
The lake area has a diagnostical system for the water base. It was set up with governmental funding and is currently monitoring 90% of the area. During the last century, the water quality was rapidly declining caused by intense agriculture and the growing tourism for example. In the last decades, however, there was a significant improvement. Based on biological, physical and chemical markers, the overall water quality of the lake is considered to be 'good', and in the eastern basin 'excellent'. This is the part of the lake, from which the aforementioned water supplier draws drinking water.

Bathing water quality (current status and recent evolution)

Bathing water of Balaton - under the umbrella of Bathing Water Framework Directive - has been monitored since 2004. The Lake has 137 monitoring sites. Most of them were in excellent condition in recent years, even in 2019 (Map 3). Some of them had in good or sufficient quality. We could only find bathing points with poor quality in 2007. Since then, there was no bathing side monitored with poor quality.

In recent years there were troubling signs of a possible water quality decline (*Portfolio.hu*, n.d.). In 2019 and 2020 blue algae (cyanobacteria) blooms were detected, which did not happen for decades. The causes are not clear, the danger is however very real – these algae produce toxic substances, which can cause skin and eye irritation or if swallowed, diarrhea and vomiting (*24.hu*, 2020). (These toxins are also very hard to be removed from drinking water.)

Map 3 Bathing water quality in 2019



2.2 Ecosystem and biodiversity protection

Lake Balaton and its surroundings is particularly rich area of Hungary in terms of natural values. This richness is largely due to the fact that the forest-steppe vegetation of the Great Plain areas and the closed deciduous vegetation of the Central Mountains meet in a relatively narrow southwest-northeastern mountain range in Hungary (Dombi et al., 2020). The wildlife of Balaton Uplands is further enhanced by the fact that two large flora regions - the Pannonian and the Western Balkans - meet here and many southern flora elements spread from the Mediterranean in the mountains of Balaton.

Lake Balaton was formed by ditch sowing in the Quaternary period of the Cenozoic Era. The average deep of the water is 3.2 meters. The riverbed is asymmetrical in a north-south direction, abruptly deepening in the north and gradually deepening in the south (Dombi et al., 2020). Lake Balaton is – basically – surrounded by two types of landscape. The northern part (Balaton Upland) is hilly, made up of sedimentary rocks and hallmarked by volcanic mountains, while the southern part has flat and hilly areas as well. A significant part of the northern hilly area is protected nationally and belongs to the Balaton Uplands National Park (BUNP) (established in 1997) with an area of 56 997 hectares. Almost all of it is within the 10 km buffer zone (Map 4), and it covers more than 17% of the area.

Landscape protection areas in Balaton Uplands National Park (BUNP)

BUNP has six landscape protection areas: Kis-Balaton, Keszthely Hills, Tapolca Basin, Káli Basin, Pécsely Basin and Tihany Peninsula. Tihany Peninsula – as a recognition of its outstanding geological values and the work of nature conservation in that region – was awarded of European Diploma in 2003. The northern part includes the initiative of Bakony–Balaton Geopark – the area of which partly covers the National Park – sets the aim of interpreting the geological, natural and cultural values and awakening the consciousness of their social significance. The Bakony–Balaton Geopark became member of the European Geoparks Network and the Global Geoparks Network – assisted by *UNESCO* in 2012' (*Balaton-felvidéki Nemzeti Park*, n.d.).

Besides the geological features, flora and fauna are protected in 25 nature reserves around the lake. Furthermore, Úrkút paleokarst (part of BUNP, but apart from LBRA) and surface of Tapolca lake cave are also important elements of natural areas with "ex-lege" protection.

The Ramsar Convention entered into force in Hungary in 1979. Since then, the country has inscribed many wetland sites of international importance onto the list. The south part of the Lake Balaton – that is basically a flat area - is characterised by several wetland areas (called "Berek", a grove-like area) – parallelly protected by Nature 2000 initiative – covering around 10,000 ha. This area is registered as Fishponds and Marshlands south of Lake Balaton. (Almost 6% of the 10 km buffer zone around Balaton belongs to the Ramsar area.) The protected surface consists of natural or near-natural marshlands, meadows and fishponds. The Site supports several globally or regionally threatened fish, breeding bird and mammal species as well. The Site is also an important staging area during migration and wintering season for more than 20,000 waterbirds (Fishponds and Marshlands south of Lake Balaton | Ramsar Sites Information Service, n.d.).

In the south-western part of the Lake, Kis-Balaton is an organic part of Lake Balaton. Kis-Balaton is also protected by the international Ramsar Convention, serving the protection of wetland habitats. The shallow water, the marshy meadows and the reeds provide habitat for waterbird and fish species. The vegetation filters nutrients and plays an important role in sediment trapping (Kis-Balaton | Ramsar Sites Information Service, n.d.).

In Hungary, 21% (Főoldal | Natura 2000, n.d.) of the country is under Natura 2000 protection (EU average is 18% (F.A.Q. - Environment - European Commission, n.d.). This percentage is very similar in the case of the wider area of Lake Balaton. It is 21% in the 50 km, almost 30% in the 25 km and over 40% in the 10 km buffer zones. The Natura 2000 protection is stable, between 2012 and 2019 there was only a little change/increase (less than 1 km^2). The Natura 2000 areas, covering partly the National Park and going beyond its area, ensure the possibility of the conservation of habitats, plant and animal species which are of European importance. The whole waterbody of Lake Balaton is protected by Natura 2000 and Ramsar Convention as well.

The traditional farming around Lake Balaton was, of course, based on water and wetlands. However, the "Berek" and the marshlands were opaque and unusable for the manors, so in the first half of the 19th century

the draining of the wetlands around Lake Balaton started. Then, especially in the southern areas, grain production could begin in many places. In addition to the gentle, close-to-nature use of the grove's plants and animals (e.g., hunting, fishing, fresh-water crayfishing), reed harvesting was activity related to traditional grove areas. The harvested material was used for basketwork. Reed served as fodder at a young age and, if grown, the fiber was good for building roofs, fences, sheds, or windows and hotbed covers alike, and could even be heated with the debris that remained. The other important traditional plant, the sedge, was used as fodder (Takács, 1978).

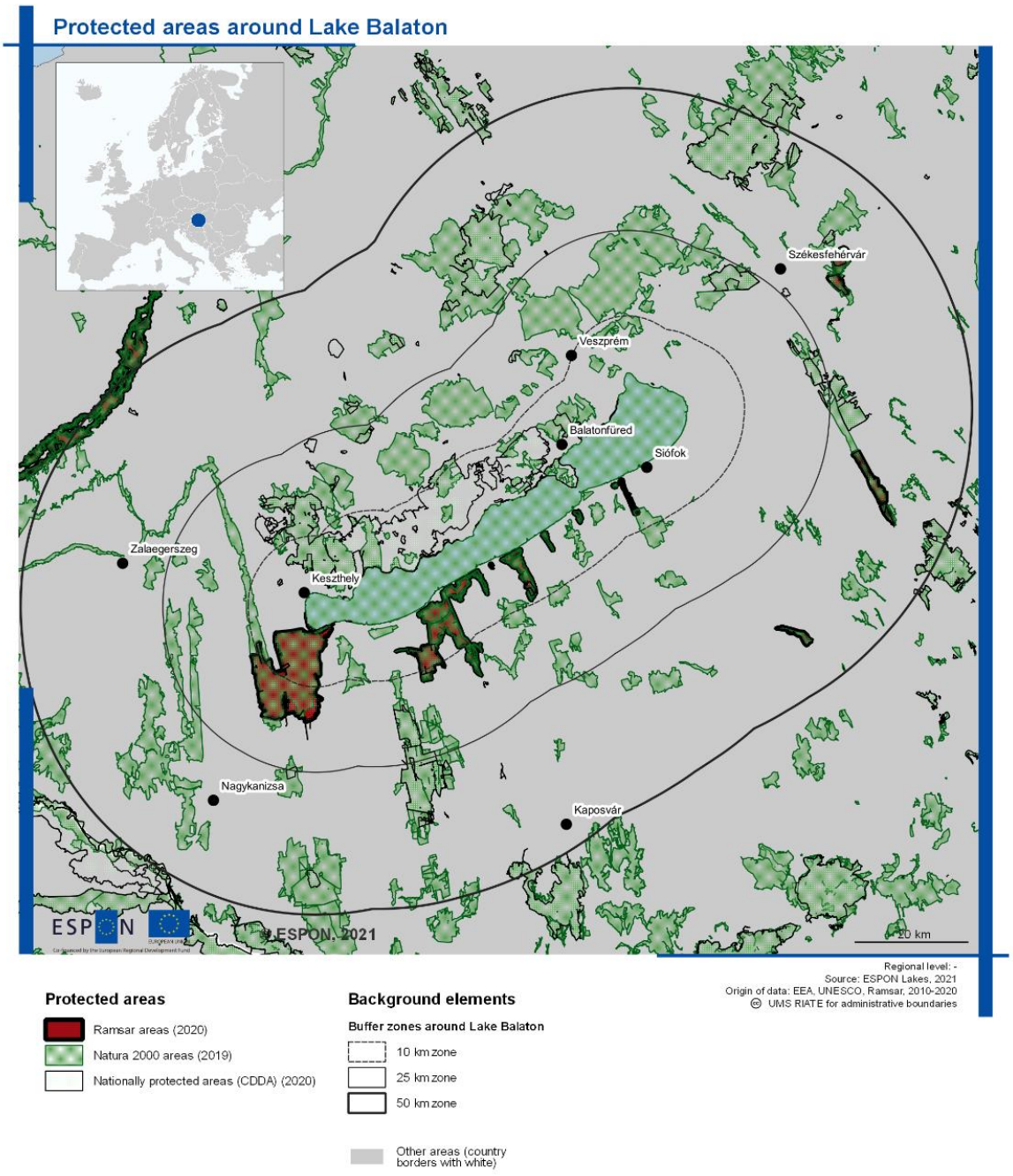
In the past decades, due to the continuous development, most of the shoreline lost its natural bank, however, the different organisations seek to preserve as many reedbeds as possible, as this is ecologically critical, as reeds provide habitat for many, including protected, bird and fish species. Recently the maintenance of bank walls and reed management is the responsibility of MTWMD. They also do reed certification every 5 years that signs that state and quality of reedbeds (form the point of view of ecology). Forest reserves are protected forested areas (consisting of strictly protected core area and buffer zone) where all human activities are ultimately stopped so that the natural processes of the forest can prevail and thus become easier to recognise and study. In the last few decades such areas were designated in numerous European countries; most of them have a diverse structure, rich and specific flora and fauna and also show natural dynamics. In the 1990's the establishment of a forest reserve network started in Hungary as well. The Hungarian network includes 63 forest reserves at present, from which 9 belong to the Lake Balaton area (*Balaton-felvidéki Nemzeti Park*, n.d.).

Change in fraction of ground surface covered by green **vegetation** – as an indicator - refers to the change of the vegetation between two dates in time. In order to use this indicator and layers (provided by the EEA, Copernicus Land Monitoring Service) we chose two time points (June 30, 2010 and June 30, 2020) to follow the changes within 1 years (Map 5). As shown on Map 5, a huge loss of vegetation can be detected between 2010-2020 in the south part of the riparian area of Lake Balaton. Basically, this is the most urbanised part of the riparian area and the loss of vegetation is due to the new resort building activity alongside the southern riparian area of the lake. On the northern side - where nationally protected areas are situated (see above) - much less negative vegetation change can be detected. In fact, in some Nature 2000 areas (e.g., around Szigliget and Tihany), increase of vegetation cover can be seen, due to the regeneration of the vegetation. In the southwestern part, crossing the 25 km buffer zone, a significant negative vegetation cover change can be observed at the side of Kis-Balaton. The reason of this latter change might be the creation of the third water reservoir at Kis-Balaton, which is responsible for the improvement of the quality of water flowing into the Lake Balaton.

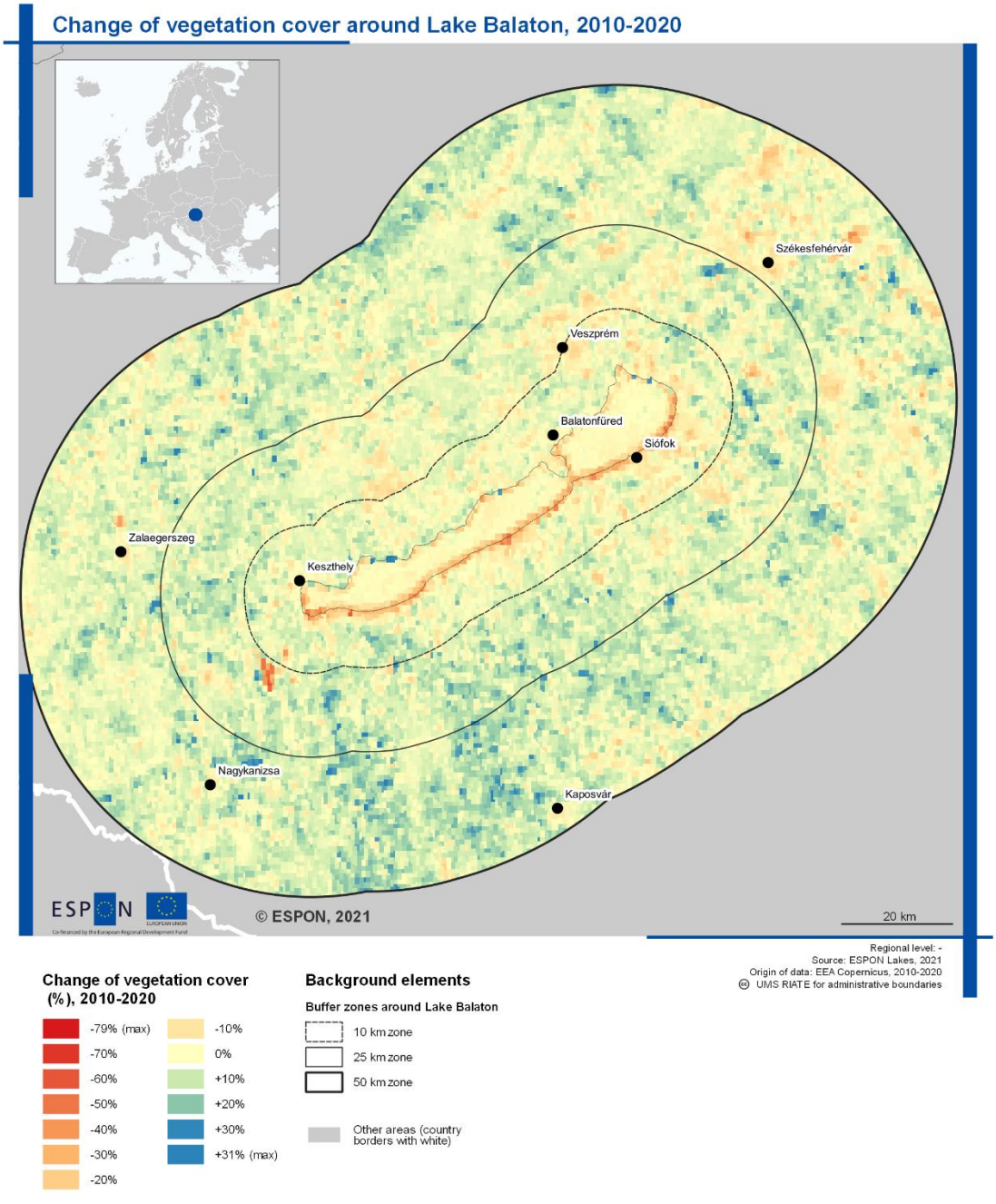
It also must be mentioned that comparing the vegetation cover between other year pairs (e.g., 2010-2015 or 2015-2020), the trends are similar. It means that, we can exclude other factors/reasons of change (such as change in cultivated plants).

As it can be seen above, the Lake Balaton is covered significant amount of various protected areas (Map 4). Some of them are overlapping reinforced the protection of these areas. The 10 and 25 km buffer zone of the lake are rich in natural and geological values. However, due to the continuous increase of in-built areas and construction sites, the land use has changed alongside the shoreline that cause high risk for the ecosystem.

Map 4 Protected areas around the Lake Balaton



Map 5 Change of vegetation cover between 2010 and 2020 around the Lake Balaton



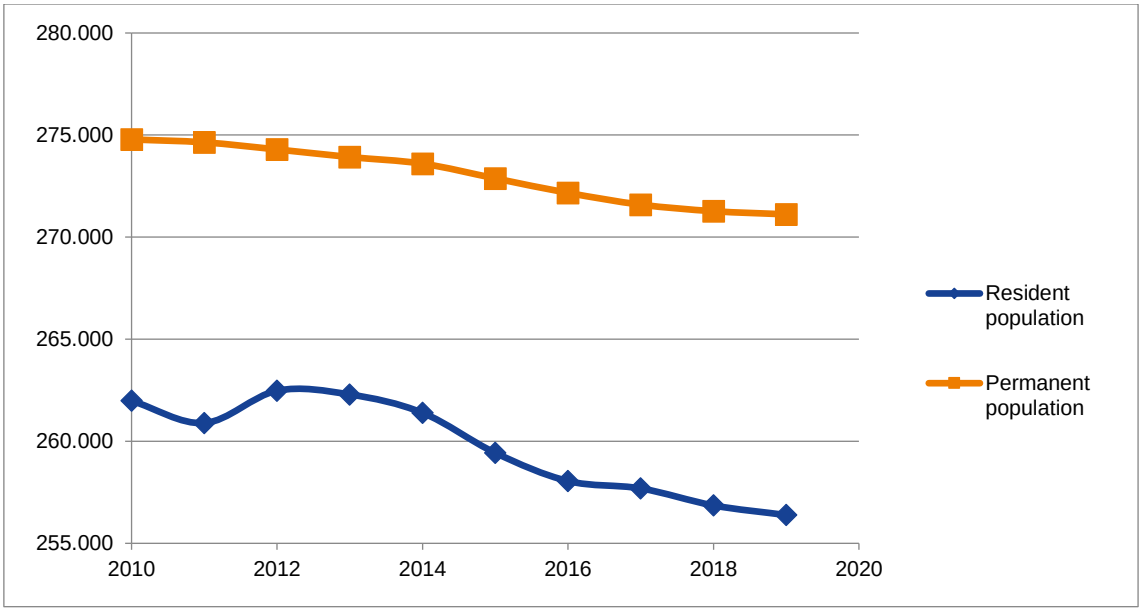
2.3 Social and economic situation in the lake region

Demography and settlement structure

In Lake Balaton Region – as in Hungary in general – the population has been declining for decades. The population of smaller settlements (which means the majority of all settlements of the Lake Balaton Region) is declining, while in towns as well as in the suburbs of larger cities (e.g., Veszprém), the population is growing or stagnating due to immigration. However, the lakeshore area has an additional attraction due to the above average living conditions and the nice environment, so the migration situation in the lakeside areas is basically positive. Furthermore, the aging of the population is significant in the lake region, which exceeds the national trends: in lakeshore settlements the proportion of 65+ years old people from the population is 25%, while in nationally it is 20%.

In Hungary, the **number of population** could be calculated based on two main methods: the resident population is based on the real number of inhabitants and calculated by the census (definition: the total number of persons with place of residence on the respective area having no place of stay elsewhere, as well as of persons with place of stay on the same area), while the permanent population means the number of persons having place of residence on the respective area (Hungarian Central Statistical Office, 2017). The difference is significant: the resident population of the Lake Balaton Resort Area (Lake Balaton Region) was 256 thousand in 1st January 2019, while the permanent population was 271 thousand (Figure 3).

Figure 3 Evolution of resident and permanent population in Lake Balaton Region, 2010-2019 January 1. Source: (Hungarian Central Statistical Office, 2021a)



Source: Hungarian Central Statistical Office, 2021a

Both the resident and permanent population have been decreasing in the past few years (the increasing of resident population in 2012 is caused by the modifying effect of the 2011 Census). The population loss is around 5 thousand inhabitants in the last decade; the declining of the resident population is a little bit faster. The seasonal population change is much bigger than long-term population change: the population almost doubles during summertime because of the holiday home owners. (Hungarian Central Statistical Office, 2014).

The **decreasing of the population** is mostly based on the negative natural change – total deaths is between 3,000-3,500 in each year in the last decades, while total births is around 2,000 per year. So, the natural loss is around 1000 inhabitants in each year. On the other hand the net migration rate is fluctuant: in some years the immigration, in other years the emigration is higher and in the last decade it is slightly positive (Dombi et al., 2020). After 1990, the main direction of population migration was no longer from villages to cities, but from more populous cities to the surrounding villages and small towns (suburbanization), and to more distant areas (e.g.: Balaton Uplands) in the 2000s, which were left out from the previous deurbanization period. The

migration balance of the former micro-regions between 2000 and 2008 highlights two areas where the balance is positive: one is the strip surrounding the eastern basin of the lake (Balatonfüred, Balatonalmádi and Siófok) and the other is Hévíz and Keszthely (Hungarian Central Statistical Office, 2021a).

The **evolution of the population** also has spatial heterogeneity. Increasing of the population is observable in the northeastern side of the lakeshore, in the surroundings of Keszthely and Hévíz, and some smaller villages in Balaton Uplands. On the other hand, in the southern periphery of the region the population loss has been significant in the last few years. In the related NUTS 3 regions (Veszprém, Somogy and Zala Counties) the decreasing of population is also characterisitic (Map 6).

The other main characteristic of the population living around Lake Balaton is the **high proportion of seniors.** The share of 65+ years old people from the resident population is quite high, 22.7% (it is 22.5% in permanent population) which is higher than the European (20.2%) and Hungarian average (19.3%). The evolution of this age group is completely differing from other age groups: while young age population is stagnating, and active age population is descending, the number of 65+ years old population has been increased with 10 thousand people since 2012: from 51 thousand to 61 thousand. In the lakeshore the share of seniors is much higher: in average it is 25.1% and in some of them it is higher than 30% (Balatonberény, Balatongyörök, Révfülöp, Ábrahámhegy, Balatonszepezd). The share of seniors is also high in spa towns (Hévíz, Zalakaros). The cause is that the favourable living conditions attract many elderly people, which cause intensive ageing in the region. A little farther from the lakeshore the share of 65+ years old people is lower: mostly between 15 and 25% (Map 7).

Overall, the **demographic situation** of Lake Balaton Region is mostly based on three main characteristics. Firstly, the moderately positive net migration (partly due to the fact that the cities around Lake Balaton have higher-than-average living conditions compared to other Hungarian towns (Igari et al., 2020), secondly the high death rate and thirdly the high proportion of elderly people. However, heterogeneity between settlements remain. Most of the local centres (except Keszthely) of the Lake Balaton Region have balanced age structure (neither the seniors nor the young age population has high proportion): Siófok, Balatonfüred, Balatonalmádi, Tapolca and Marcali. These settlements are the main working centres of the region, this is why the share of the active age group is quite high. While the number of the population is stable or mostly grooving, ageing is the biggest challenge in the smaller villages in the lakeshore (and also in spa settlements). It means increasing need for medical and social services, while the active population is decreasing. Finally, in the northern and the southern edge of the Balaton Lake Region the youthful age structure is characteristic but there is difference between the two parts: in the southern edge it occurs with massive population loss, while in Balaton Uplands the population change has mosaic spatial pattern (Map 8).

In the Lake Balaton Region, the **settlement structure** is very fragmented and there are no bigger cities in the lakeshore. In the region the smaller towns and villages prevail: 84 settlements from the 180 have less than 500 inhabitants, and other 34 settlements have 500-1000 inhabitants. These smaller settlements are concentrated in two main parts of the region: in the western part of the northern side of the lake (in Veszprém County) and in the southern side (Somogy County), farther from the lake.

Table 3: Changes of resident population of the main towns in the Lake Balaton Region, 2001-2019.

	Location		Resident population (end of the year)		
Main towns	**County**	**Lakeshore**	**2001**	**2011**	**2019**
Siófok	Somogy	Yes	23.460	25.385	25.822
Keszthely	Zala	Yes	21.944	20.380	19.183
Tapolca	Veszprém	No	17.914	16.114	14.861
Balatonfüred	Veszprém	Yes	13.289	13.258	12.732
Marcali	Somogy	No	12.575	11.786	11.075
Balatonalmádi	Veszprém	Yes	8514	8538	9204

Source: (Hungarian Central Statistical Office, 2021a)

The biggest towns in the lakeshore are Siófok, Balatonfüred and Keszthely, which are located in different parts of the region. Siófok is located in Somogy County, Keszthely is located in Zala County and Balatonfüred is located in Veszprém County. Near to Balatonfüred there is another smaller town, Balatonalmádi. Furthermore, there are two other smaller centres in the lake region, a little farther from the lakeshore: Tapolca and Marcali (**Error! Reference source not found.**). In the Lake Balaton Resort Area, there are not any bigger cities; the closest middle-sized city to the lake is Veszprém (population: 59 thousand inhabitants) which is the county seat of Veszprém County. It is located out of the formal Lake Balaton Resort Area but the connection between the city and the lake region is strong: Veszprém is located 10 km from Lake Balaton, and it has four direct road connections to the lake. Furthermore, the functional urban area of Veszprém also overlaps with Lake Balaton Region. There are four other big cities in the 50 km buffer zone of the lake: Székesfehérvár, Zalaegerszeg, and Kaposvár.

The **population potential** – which is defined as the accessible population in each place within 45 minutes by road – is highest in northeastern corner of the lake because the proximity of the cities of Székesfehérvár and Veszprém; the towns of Siófok, Balatonfüred and Balatonalmádi are also located in this part of the lake (Map 9). Furthermore, the impact of the main transportation roads (see in chapter 2.6) is also significant: in both sides of the lake, they facilitate the higher population potential (the most important is the M7 highway which runs on the south side of the lake). But a little farther from the lakeshore – both in northern and southern sides – the population potential is lower: on one hand because the low population density, and on the other hand because of the poor road connections and accessibility.

All in all, the Lake Balaton Region faces two main demographic challenges: the aging of lakeside areas, and the population loss of peripherical areas. The settlement structure also facilitates the situation, as small settlements (the proportion of which is outstanding in the region) have a low attractiveness, which also effect on many socio-economic challenges.

Employment and business dynamics

This subsection presents the multifaceted relationships between society and the economy in the Lake Balaton Region. A significant spatial heterogeneity is observed, not only by place of residence but also by place of work. Most of the jobs are related to enterprises of different sizes (large companies, SMEs, micro-enterprises). These inequalities can be to the detriment of rural villages without significant tourism potential, which may lead to further population loss. Furthermore, because the volume of economic production depends on the labour market and enterprises, these factors play a key role in revealing the economic pattern of the region.

In the last decade (since 2011) the **number of employees** (and also the **employment rate)** has increased in the three NUTS 3 region: the growth of employment has been 41 thousand people together in these three counties, while the number of active age population has decreased by 5-10 thousand people in each year. The increasing of employment stopped in 2020, due to reaching almost full employment. In the lakeshore **part-time (seasonal) jobs** have significant importance. These jobs are mostly connected to tourism: the accommodation and food service activities are the biggest employers of part-time workers in summertime. This seasonal need for labour attracts many (mainly young) people from outside the region (Dombi et al., 2020; Hungarian Central Statistical Office, 2014).

The **employment data in LAU level** is only available for the year of 2011 (based on census). Map 10 shows the employments by workplace in the active age population living in the settlements. This differs from the commonly used method of the employment rate (share of employees aged 15-64 living in the settlement) in that it compares the employees working (not necessarily living there) in the settlement to the active age population living there (this is the main reason why there are some settlements where the employment rate is higher than 100%). This shows the level of labour demand in the given settlement; thereby it also refers to the attractiveness of the workforce and, indirectly, to commuting (see this topic below). Most of the LAU units in the Lake Balaton Region have quite low this rate: in 148 from 180 settlements this employment rate is lower than 50%, which means that more than half of the active age population is not working at all or commuting to other settlements. These settlements are mostly villages or smaller towns, while the biggest towns and some smaller specialised villages are the main working centres. In five settlements the number of employed persons is higher than the active age population: Hévíz and Zalakaros are famous for their spas, the small villages of Kékkút and Óbudavár (less than 100 inhabitants in 2019) host headquarters (HQs) of large enterprises, while Szántód is a small village in the lakeshore with significant touristic functions. In

general, the settlements in the lakeshore have higher rates than in farther settlements: Siófok, Keszthely, Balatonfüred, Tihany etc. have 65-90% employment rate, while smaller lakeshore settlements have 25-70% employment rate. In farther areas only two towns (Marcali, Tab) have over 70% employment rate, while other settlements have lower employment rate.

Because the county seats and bigger towns are the centres of labour attraction **commuting** is significant in this area and it is one of the most regular and massive relation between the cities and the smaller settlements. The very important role of commuters is also reflected on how their numbers relate to the number of employees living and working locally. Zalaegerszeg, Veszprém and Székesfehérvár stand out as the proportion of commuters exceeds 60% of the local population (Neumanné and Kántor, 2020). The permanent residence of the commuters is Budapest, while their second home, holiday home is mainly located in the area of Balatonfüred, Balatonalmádi, Fonyód, and Siófok (Eastern third of the Lake). A relatively new phenomenon is that more and more people use the Lake Balaton as a primary home while working in Budapest. This phenomenon became significant during the pandemic. Those who could move into their second home around the lake - for home office work - during the lockdown did it causing strain on the social services (e.g., on GP service) and on the internet network.

Based on commuting zones **functional areas** could be delineated in Lake Balaton Region. The main cities (Veszprém, Zalaegerszeg, Nagykanizsa, Kaposvár and partly Székesfehérvár) have the biggest functional areas around the lake but the smaller centres also have smaller range functional areas: both Siófok, Marcali, Tapolca, Balatonfüred and Keszthely and Hévíz together. Among the larger settlements, Balatonalmádi has no separate zone, as it is part of the functional area of Veszprém. (Map 11).

The majority of employees are working in **enterprises**. In the Lake Balaton Region, there is only one real big (in country level) enterprise: the headquarter of Flextronics is located in the town of Tab and it is the 3rd biggest enterprise in Hungary based on net income. There are other big enterprises in Siófok, while other main firms of the three NUTS3 regions around the lake are mostly concentrated in county centres (Veszprém, Kaposvár and Zalaegerszeg), out of the cooperation area. The main enterprises in the Lake Balaton Region are mostly related to manufacturing. The largest of them (Flextronics International) is engaged in the manufacture of electronic products, but most of these enterprises are strongly linked to the agro-industry or construction. The biggest firms in the wholesale sector are also linked to agro-industry. In Siófok a regional centre of gas and water supply is located, while in Balatonfüred there is a regional centre of financial and real estate activities (Table 4).

Table 4: Main enterprises in Lake Balaton Region, based on net income (2017);

Rank	Name	Location of HQ		Sector	Activity	Net income, 2017 (million HUF)
		Settlement	County			
1	Flextronics International Kft.	Tab	Somogy	C	manufacturing of electronic goods	715 010
2	FGSZ Zrt.	Siófok	Somogy	D	pipeline (gas) transportation	101 418
3	DRV Zrt.	Siófok	Somogy	E	water supply	19 501
4	HALKER Kft.	Balatonboglár	Somogy	G	wholesale of meat products	16 542
5	Z + D Nagykereskedelmi és diszkont Kft.	Keszthely	Zala	G	wholesale of drinks	16 309
6	ZIEHL-ABEGG Kft.	Marcali	Somogy	C	manufacturing of coolers	13 248
7	Sió ECKES Kft.	Siófok	Somogy	C	manufacturing of soft drinks	10 611
8	Rockwool Hungary Szigetelőanyaggyártó és Kereskedelmi Kft.	Tapolca	Veszprém	C	manufacturing and wholesale of insulations	9935
9	77 ING Vagyongazdálkodási Kft.	Balatonfüred	Veszprém	K	financial and insurance activities	9466
10	BF Invest Ingatlanhasznosító Kft.	Balatonfüred	Veszprém	L	real estate activities	8697

Source: (Napló, 2019; Somogyi Hírlap, 2018; Zalai Hírlap, 2019)

In the lake region Small and Medium-sized Enterprises (SMEs) and micro-enterprises dominate. The number of SMEs was 712 in the cooperation area in 2018, while the number of micro-enterprises was 7654. The density of these kinds of enterprises is the following: the number of SMEs per 1000 inhabitants is 2.77, while the number of micro-enterprises per 1000 inhabitants is almost 30 (29.8) in the cooperation area. By comparison the Hungarian average (without the values of the capital city, Budapest) is 2.82 and 26.6 (Hungarian Central Statistical Office, 2021a).

In the lakeshore the micro-enterprises have outstanding density: in most of the lakeshore settlements the number of micro-enterprises per 1000 inhabitants is higher than 30. The density is especially high in the northern side (and not only on the lakeshore but also a little further from the lake), while in the southern side only the lakeshore settlements have above average value (Map 12). Many of the micro-enterprises are connected to tourism which is the main factor of this (lakeshore-oriented) spatial pattern. In the case of SMEs the spatial pattern is totally different: all of the main centres have above average value, but the highest rates are mostly connected to some specialised smaller towns or villages.

The most common indicator which is used for describing regions' **economy** is the regional GDP, but it is mostly available for NUTS 3 or higher territorial level. In lower level the real GDP is not well-interpretable, and it has some localisation problems, which is the reason why official LAU level GDP data is not available in Hungary (and also in many of other countries). However, in some cases it is necessary to know the estimated economic power of municipalities (or other territorial units below NUTS 3 level). Hungarian researchers (Lőcsei Hajnalka and Nemes Nagy József, 2003) have found the way to calculate **local GDP** (it is called Spatial Economic Force): it is estimated from NUTS 3 level GDP based on taxable incomes, municipal tax revenue and number of enterprises[3].

Map 13 was prepared based on this methodology and it shows the estimated economic production of the settlements around Lake Balaton. The main economic centres around the Lake Balaton are the county seats: Veszprém, Kaposvár, Zalaegerszeg (and Székesfehérvár which is located out of the NUTS-compatible cooperation area and which is the 5th biggest economic centre of Hungary based on this estimated GDP). In the Lake Balaton Region, the most populated towns produce the most (estimated) GDP: Siófok, Keszthely and Balatonfüred. Based on this indicator, the second level of the economic centres are Tapolca, Hévíz, Balatonalmádi and Marcali. The colours of the LAU units show the value of estimated GDP per inhabitant. The map shows that the settlements in riparian area have higher GDP per inhabitant than the farther settlements. Furthermore, spa towns (Hévíz, Zalakaros) also have outstanding economic performance per inhabitant (30 – 40 thousand Purchasing Power Standards (PPS) per inhabitant). Furthermore, there is a difference between the northern and southern edge of the region: in the southern part most of the settlements have a value below 10 thousand PPS, while in the northern part of the Lake Balaton Region these values are mostly over 10 thousand PPS.

However, the COVID-19 pandemic has a serious impact on the enterprises and the labour market. As a result of the pandemic, many tourism-related companies were forced to close (however, they were allowed to open in the summer of 2020), which also had a strong impact on economic performance as well as the number of employees. The final effects are still unpredictable (spring 2021), but without significant economic support, the future of many companies and workers could be endangered (Balás, Csite, et al., 2020; Balás, Koltai, et al., 2020).

All in all, the labour market of the areas around Lake Balaton are largely determined by the significant attractiveness of the main cities (and the low attraction capacity of the smaller villages). But because these cities are located out of the cooperation area, high share of population commuting out from the area. However, lakeside settlements also attract some workforce: tourism-related micro-enterprises and summer part-time jobs attract many people. However, these sectors are particularly vulnerable to crises (highlighted by the current pandemic situation), causing vulnerable labour market situation in the whole lake region.

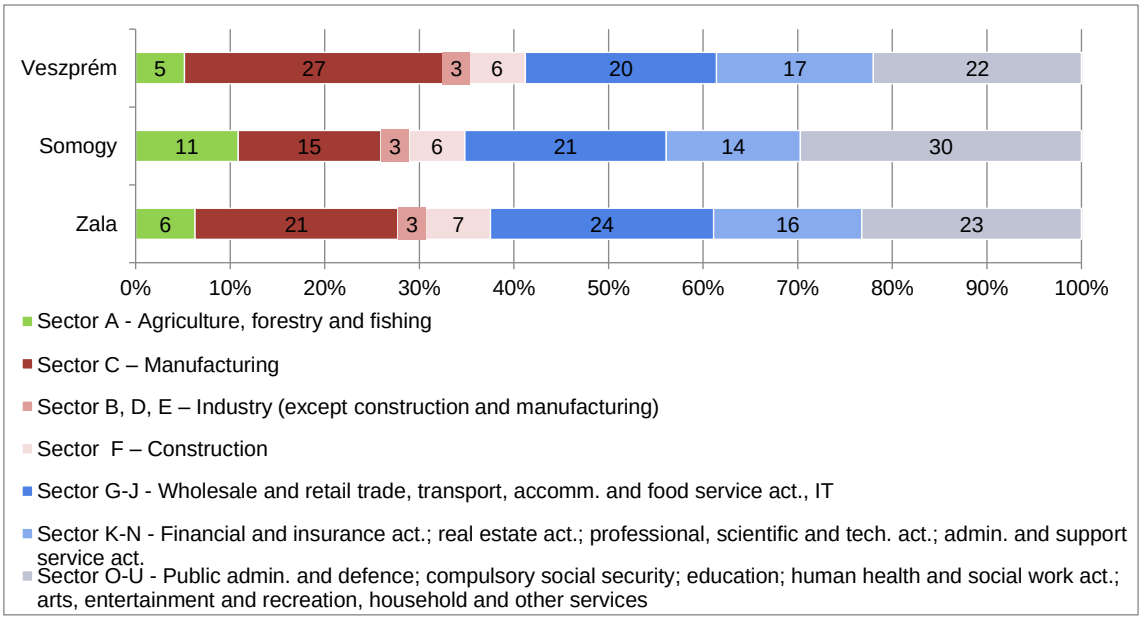
[3] In the first step, the share of settlements in the taxable income of their own county, the volume of local taxes and the number of registered enterprises is determined, and then the estimated GDP of each settlement is calculated based on the average of the received shares.

Sectoral dynamics in the lake area

In addition to the labour market situation and the enterprise structure, the sectoral distribution also plays a significant role in exploring the economic potential of the region. There are many economic sectors in (NUTS-compatible) cooperation area, and the lake region is a mix of many areas with different economic structures. On the one hand, this is a significant challenge and, on the other hand, it can provide an opportunity for local economic development.

The **share of economic sectors** from the economy could be observed in three main ways in Hungary. Firstly, the share from the GDP is available in NUTS 3 level. The three NUTS 3 regions (counties) which are related to Lake Balaton Region have different economic structure: in Veszprém County, manufacturing has an outstanding share (27%), in Somogy County, agriculture (11%) and public services (sector O-U, 30%) dominate the economy, while in Zala County, the share of economic sectors is close to the Hungarian average (Figure 4). Compared to the European level the percentage of agriculture and industry is rather high. Another good indicator is the share of economic sectors from employment. In this case the pattern is the same: in Veszprém County, the proportion of manufacturing, in Somogy County, the share of agriculture and public services, while in Zala County, the share of transportation, accommodation and food services is above-average.

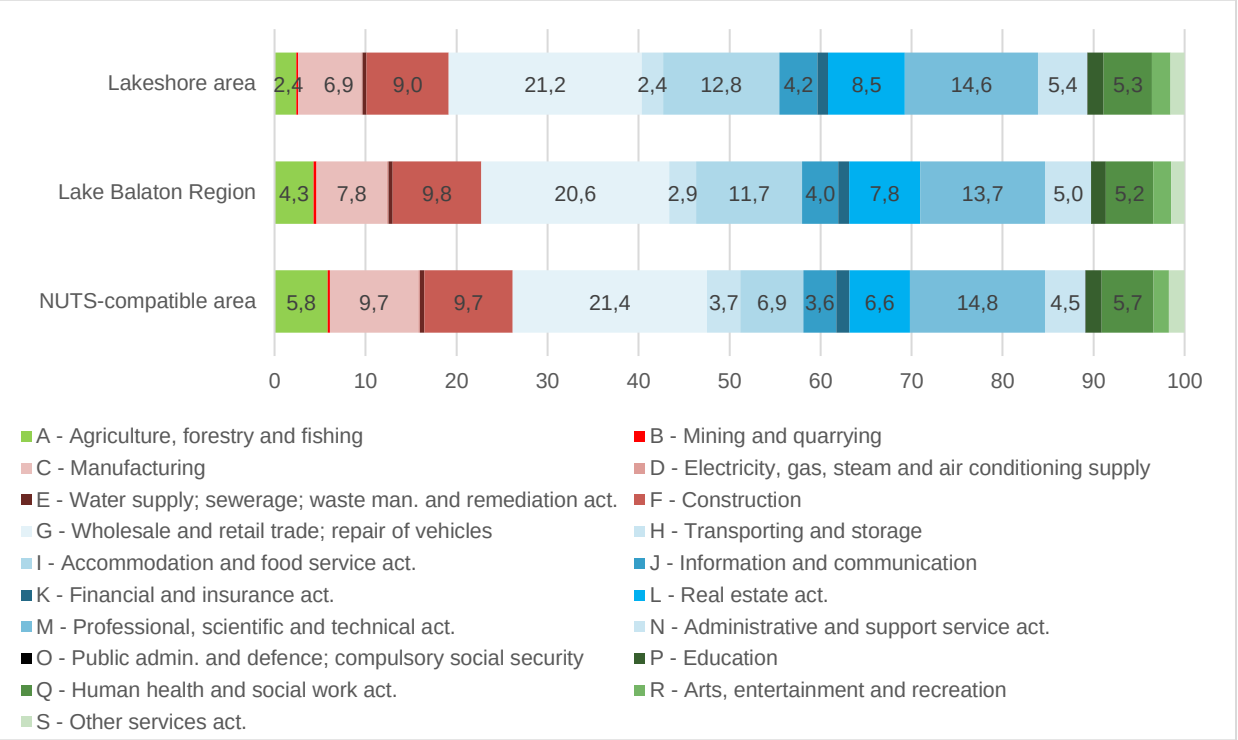
Figure 4 Gross Value Added (GVA) of main economic sectors in the three NUTS 3 region related to Lake Balaton Region, in 2018.



Source: (Eurostat, 2021)

Finally, the economic structure also could be described based on the **distribution of enterprises by main sectors** (Figure 5). This indicator both available at NUTS 3 and LAU level; now we use the latter for a more detailed spatial view. The number of all enterprises was 8379 in the Lake Balaton Region in 2018. Most enterprises are related to the Wholesale and retail trade (1729 enterprises, 20.6% of all firms) the Professional, scientific and technical activities (1150 enterprises, 13.7%) and the Accommodation and food service activities (977 enterprises, 11.7%). In the lakeshore area, the share of these three sectors is even more significant: together they account for almost half of all companies. Furthermore, in the three related counties (Veszprém, Somogy and Zala) the share of the primary (sector A) and secondary (sector B-F) activities of enterprises is 26%, while in the cooperation area it is only 23%, and in the lakeshore area it is 19%.

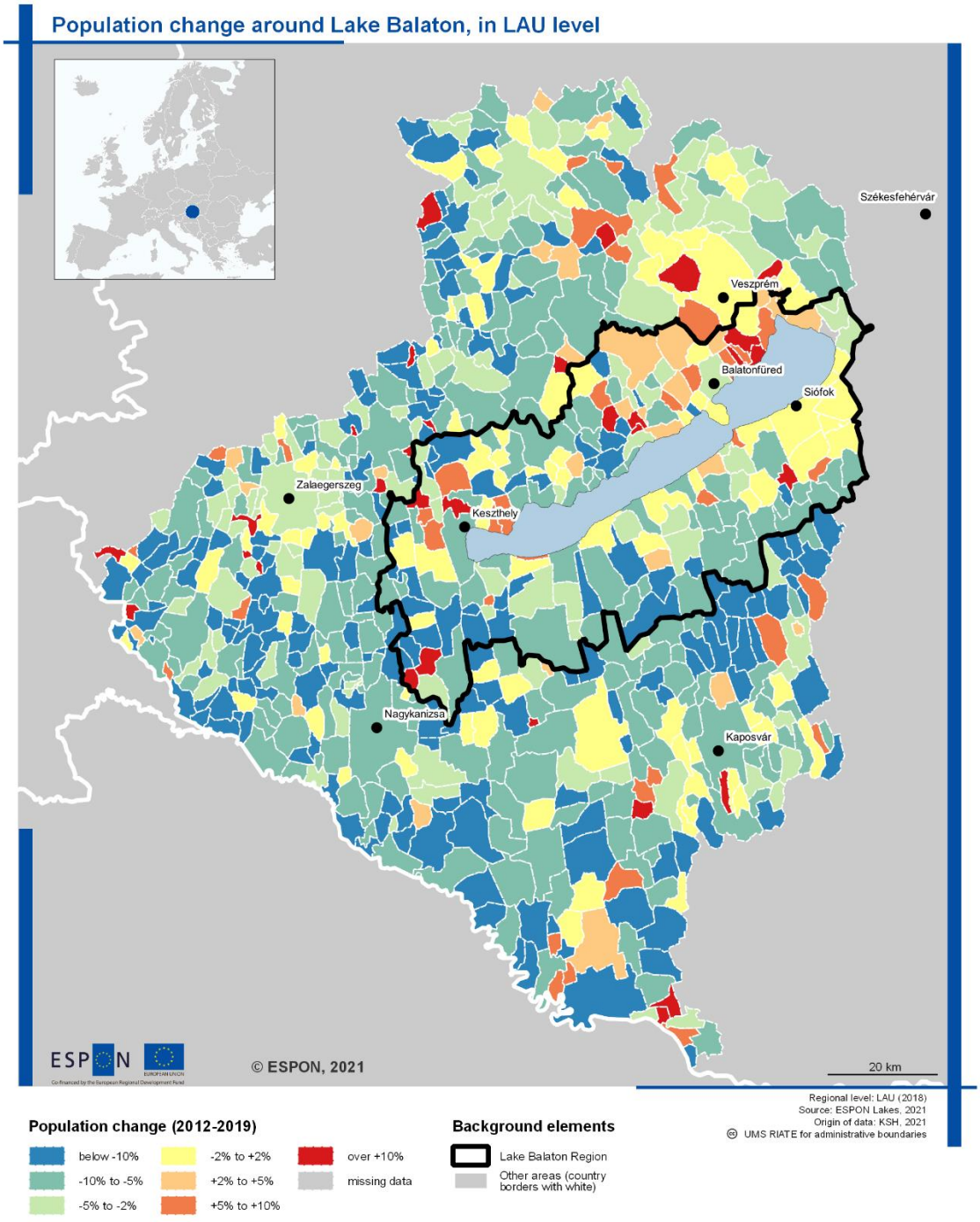
Figure 5 Distribution of enterprises by economic sectors in Lake Balaton Region, in lakeshore area and in the NUTS-compatible area, 2018 (%).



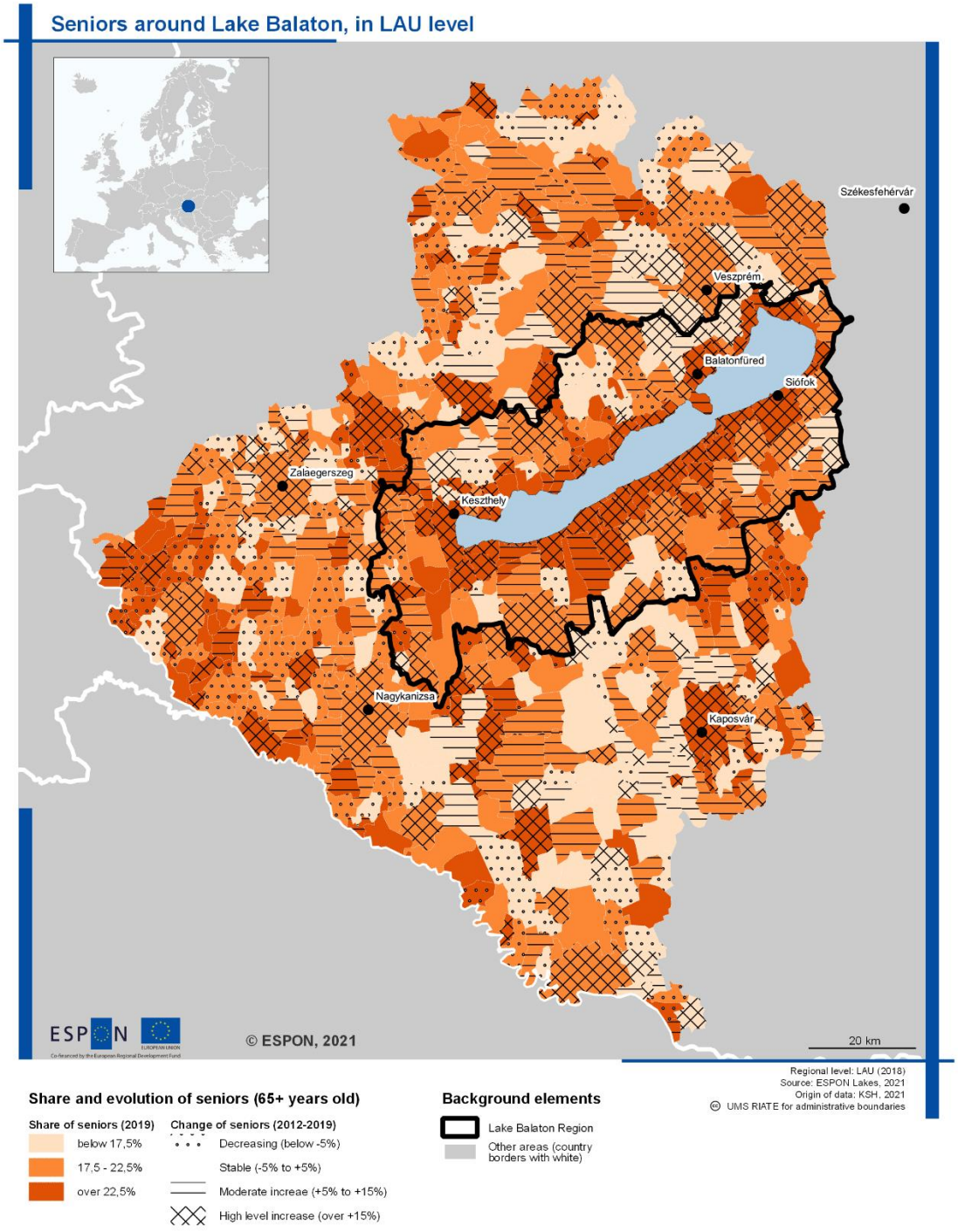
Source: (Hungarian Central Statistical Office, 2021a)

In summary, tourism has an above-average role in the economy of Lake Balaton Region (mostly in lakeshore areas and spas), and the share of the manufacturing and wholesale trade (which are partly related to agriculture) sectors are also significant. The economic structure of the three counties connected to the lake region differs: in Veszprém County, manufacturing (automotive, chemical industry and the heavy industry) is the strongest sector, in Somogy County, agriculture and food industry (and wholesaling) has outstanding position, while Zala County has more mixed economic structure.

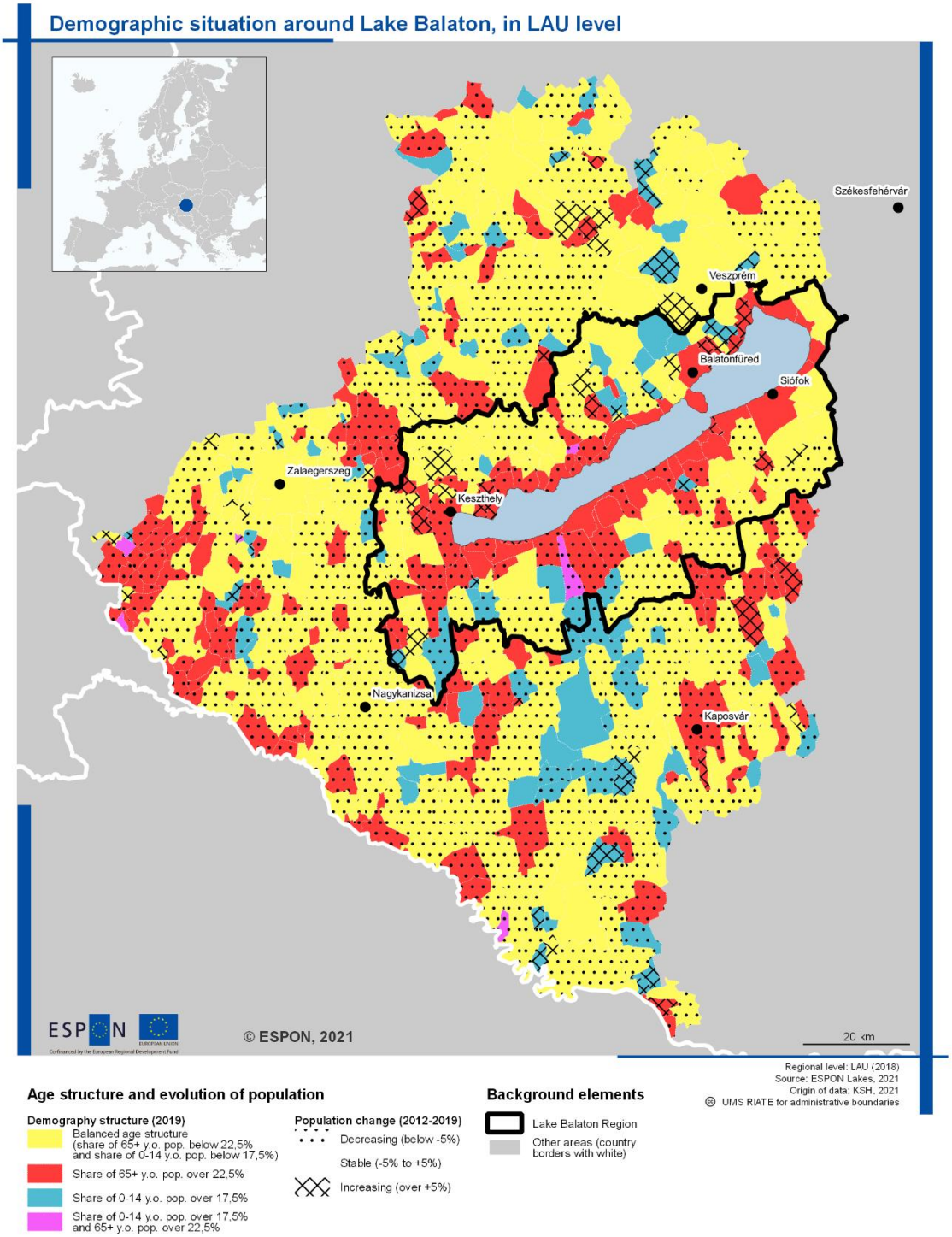
Map 6 Population changes in the three NUTS 3 counties around the Lake Balaton on LAU level, (2012-2019)



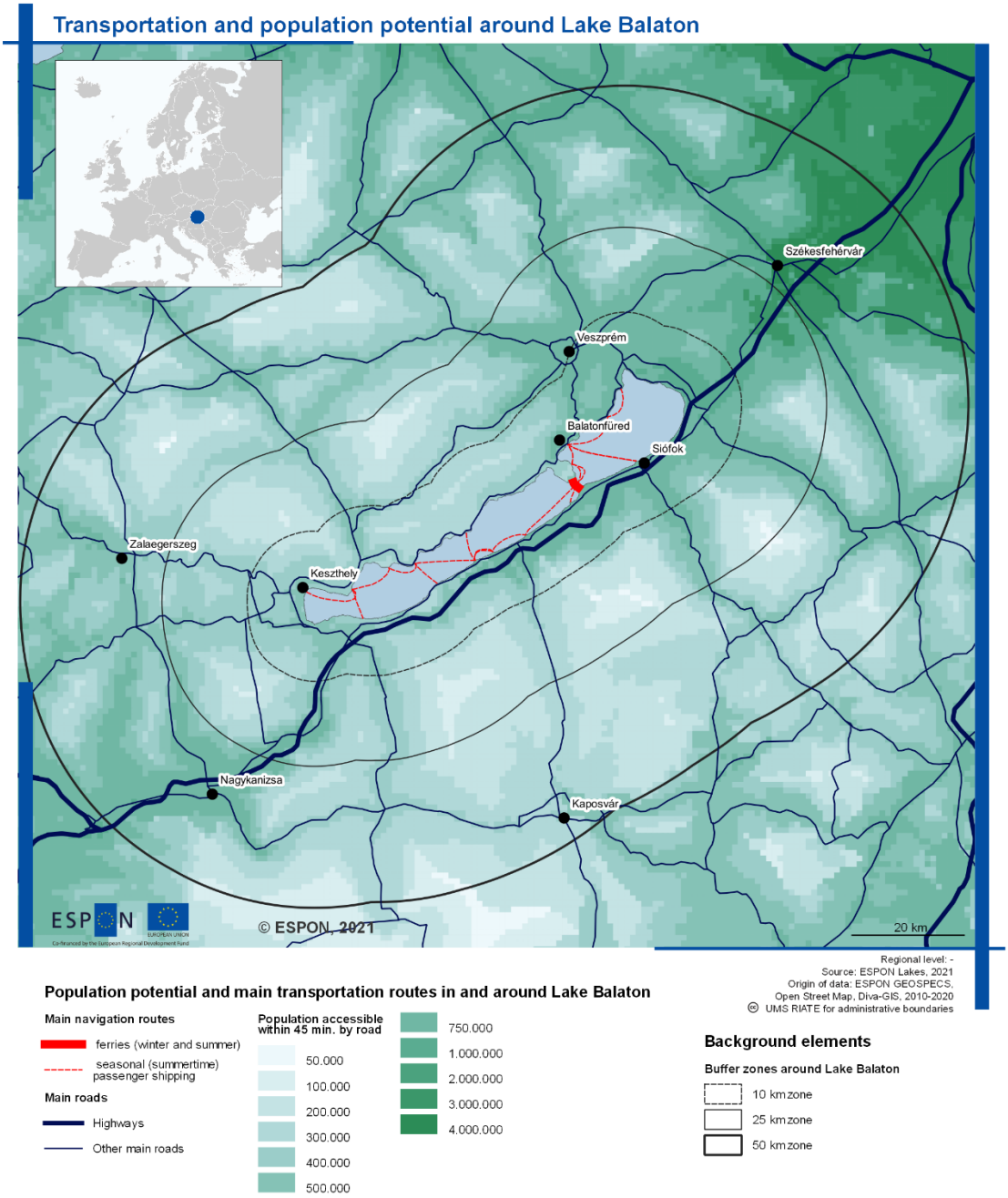
Map 7 Share and evolution of seniors in NUTS 3 counties around the Lake Balaton, (2012-2019)



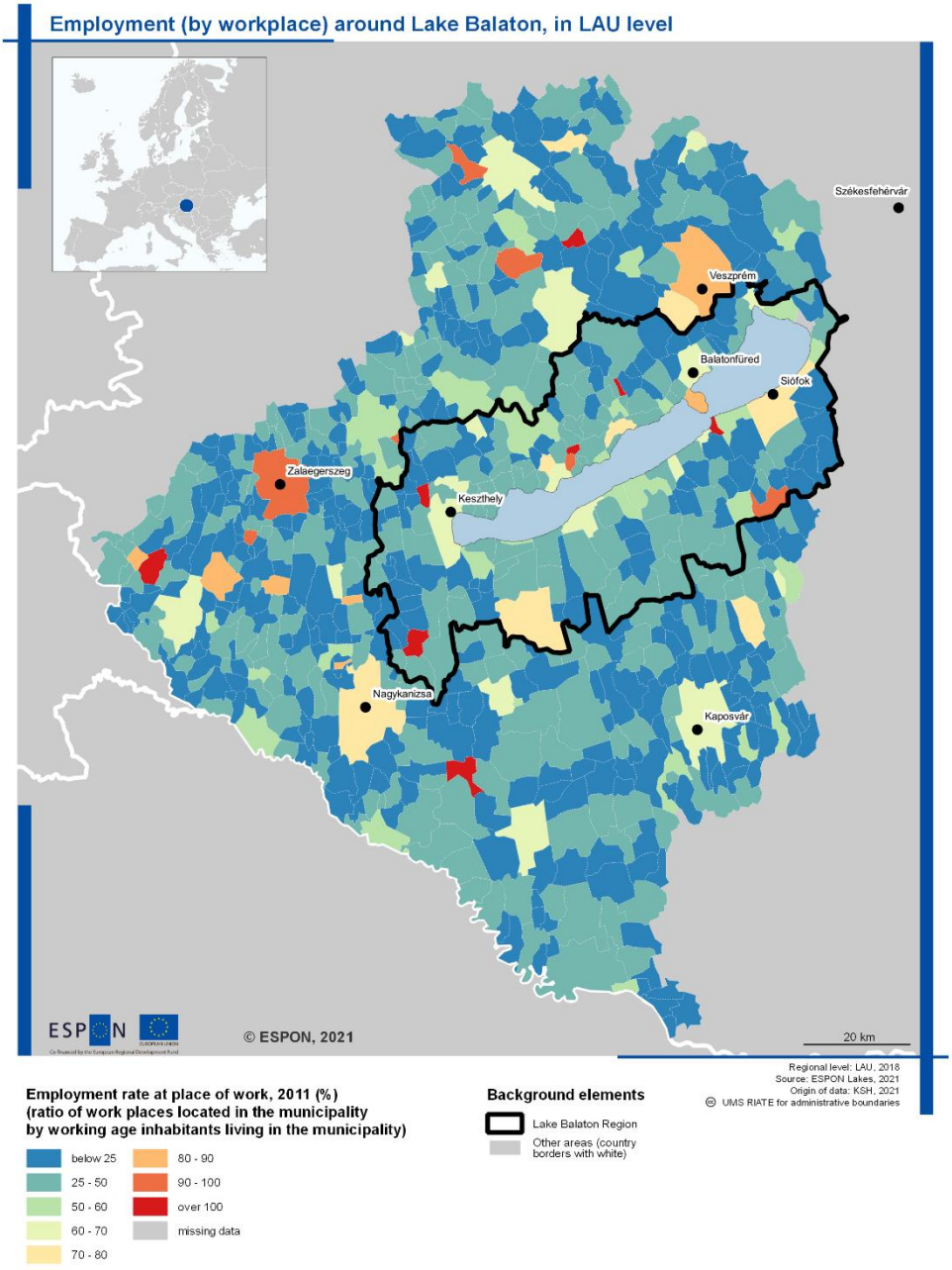
Map 8 Complex demographic situation in the three NUTS 3 counties around the Lake Balaton



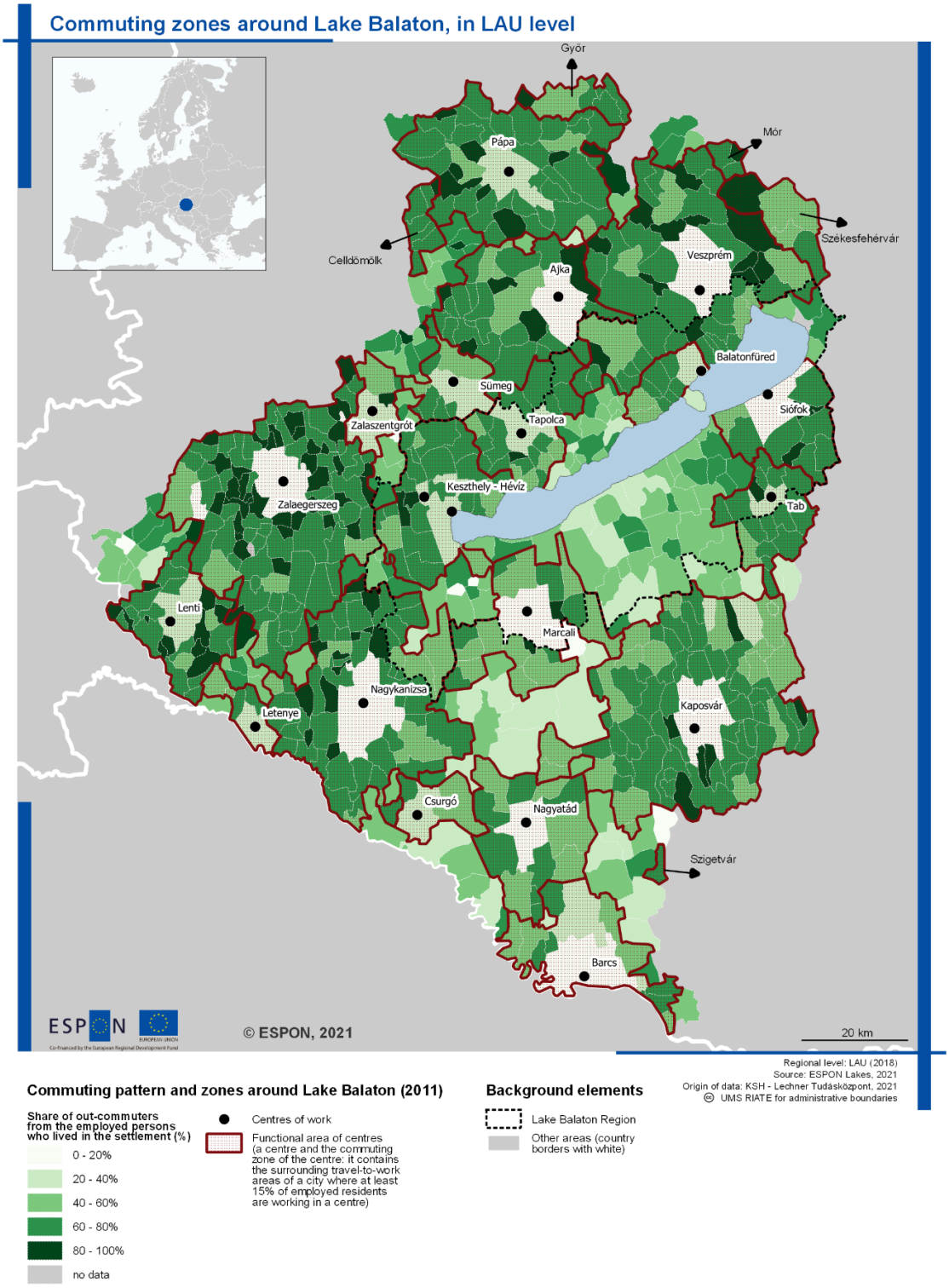
Map 9 Population potential and main transportation routes around the Lake Balaton



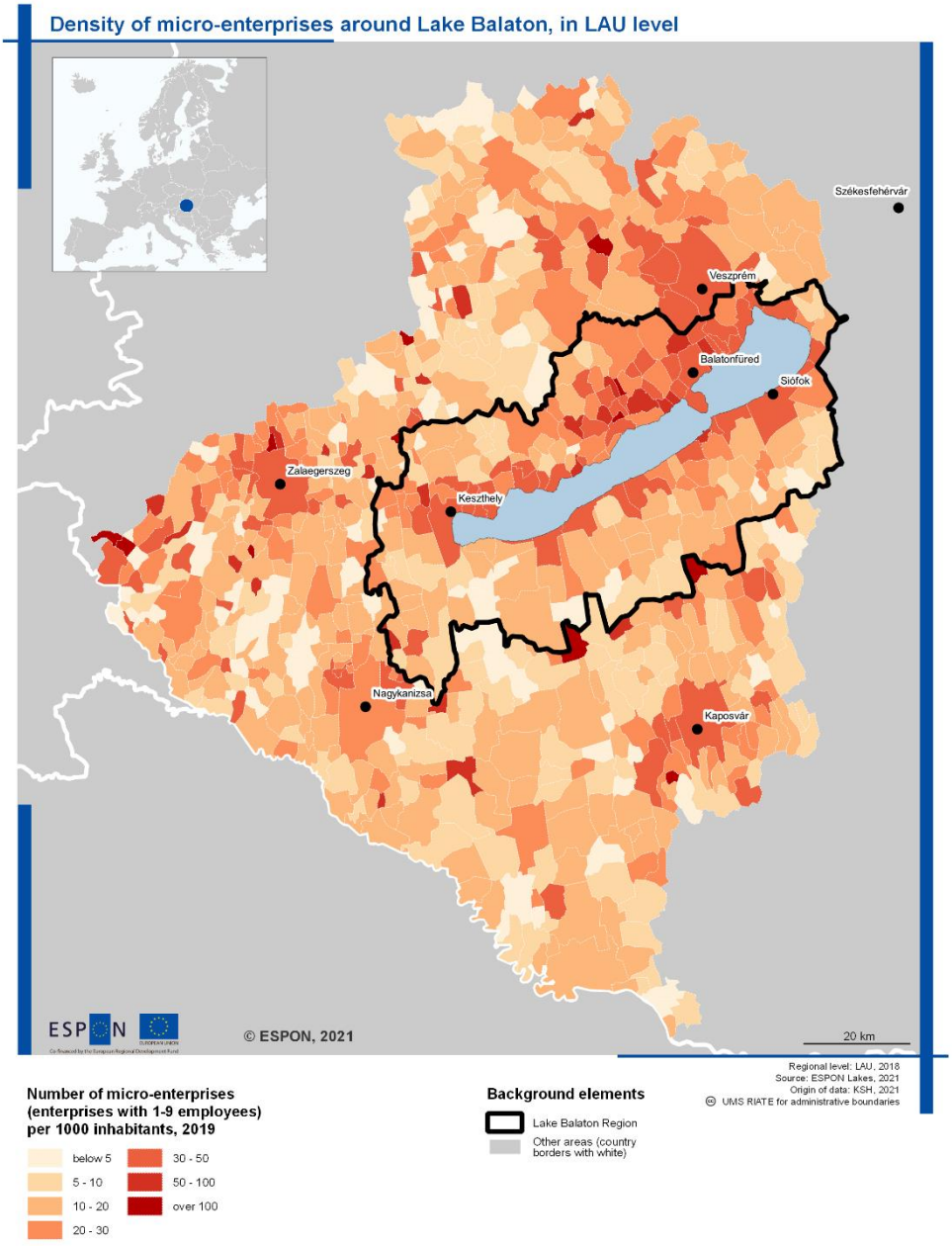
Map 10 Employment rate by LAU by place of work



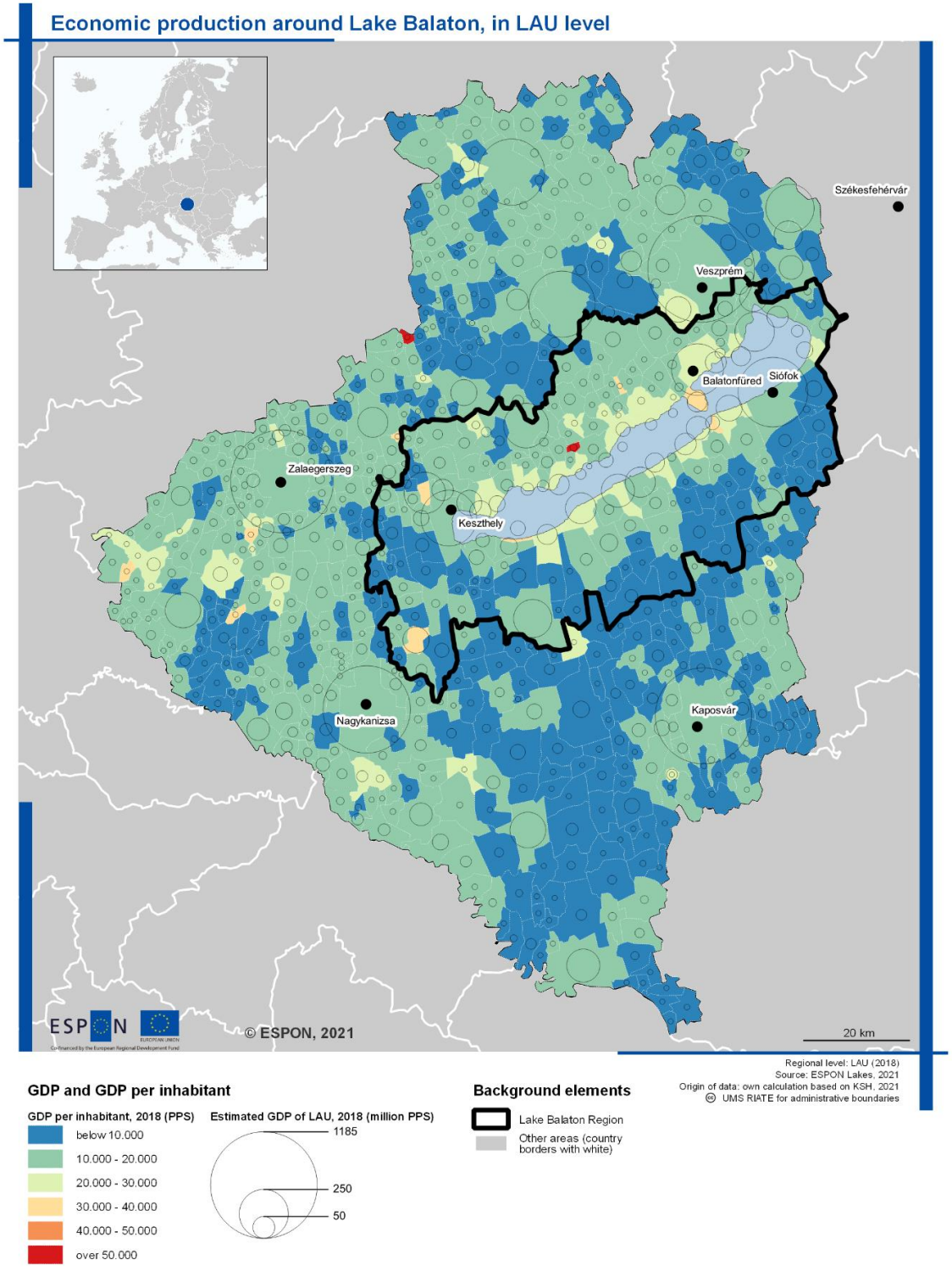
Map 11: Commuting pattern and commuting zones around the Lake Balaton, 2011



Map 12 Density of micro-enterprises in the three NUTS3 counties around the Lake Balaton



Map 13 Economic production around the Lake Balaton, 2018



2.4 Tourism and cultural / natural heritage

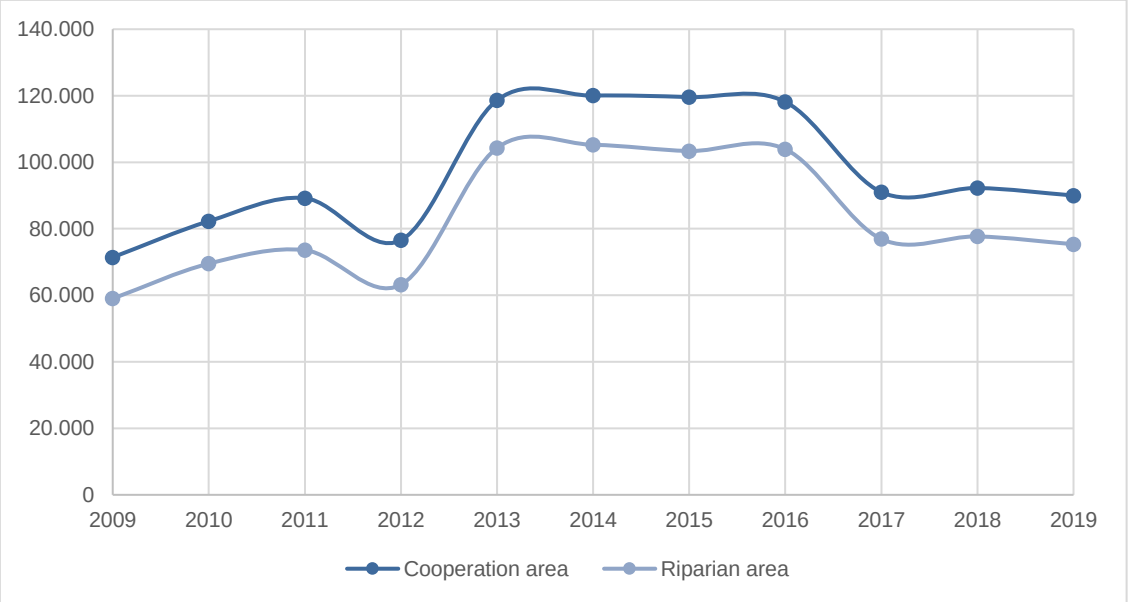
Touristic accommodations and tourism attendance

Tourism, as one of the most important economic sectors around the lake, play an important role in the social-economic situation of the Lake Balaton Region. The significance of tourism is strongly connected to the accommodation capacities, which have relatively high density in the cooperation area (compared to country-level values). However, the high number of tourists (and holiday home owners) presents not only economic benefits but also many social and environmental challenges: high pressure on local services; conflicts between resident population, holiday owners and tourists; high (and growing) pressure on environment. Both the negative and positive effects could strengthen by the currently starting tourism-related construction fever which effects will only be occur in a few years. Furthermore, the sector is strongly exposure for crises which cause high level vulnerability in the lake region.

In addition to the favourable natural and geographical features, the success of the region is due to the fact that the reception of guests in private accommodation is a very common phenomenon. Many people have a private holiday home along Lake Balaton, staying there could increase the population by 200,000 people during summer season. Furthermore, 180 settlements offered more than 201,000 places in 582 commercial accommodations (hotels, boarding houses, camping sites, bungalow complexes and community accommodations) and more than 18,500 private accommodations for tourists visiting the area in the summer of 2017 (Dudás et al., 2019). The spatial distribution of capacities shows a certain concentration, private accommodations are provided in each of the 44 shoreline settlements, and only 36 settlements did not have that type of accommodation in the whole region. In contrast, commercial accommodations operate in only almost the third (70) of municipalities of the region, mainly in shoreline settlements.

The number of bed-places fluctuated significantly the cooperation area (Lake Balaton Resort Area) between 2009-2019. As Figure 6 shows outstanding capacity was available in the period 2013-2016, but this was mainly due to the significantly increasing camping capacity of a settlement (Zamárdi), which then decreased again from 2017. The majority of bed-places in the region is concentrated on the lake shore, but this is largely due to the capacity of the campsites. Furthermore, new commercialisation models such as Airbnb contributed to raise accommodation standards. In many cases, these alternative accommodations are not part of tourism statistics, they could be the part of the "grey zone" in the economy, which means a new challenge in the region.

Figure 6: Number of available beds in tourist accommodations in the whole cooperation area and in the lakeshore settlements, 2009-2019; Source: (Hungarian Central Statistical Office, 2021b)



Map 14 shows that the accommodations are densely concentrated near the shore, as well as in the larger towns (e.g.: Veszprém and Székesfehérvár). The main destinations are Balatonfüred on the north and Keszthely in the southwestern corner, while on the southern shore there is a continuous strip with accommodations (main locations: Siófok, Balatonföldvár, Balatonlelle). However, away from the shoreline, there are hardly a few accommodations, while there are several places to stay in the Balaton Uplands. Health tourism is the main attraction in several settlements due to their high mineral content medicinal waters such as Hévíz, Zalakaros, where spa and wellness hotels can be found. Furthermore, another smaller lake, Lake Velencei (in the north-eastern part of the 50 km buffer zone) is also a significant hub of hotels and other accommodations. The main towns of this area are Gárdony and Velence.

As for the tourism attendance, in 2019, the accommodation establishments in Balaton registered in total more than 2.7 million guests and almost 8.7 million guest nights; the number of guests increased by 4.2% and the number of guest nights by 3.2% compared to 2018 (

Table 5). This fits well with the trends of previous years; the number of guest nights has been steadily increasing since 2010. The number of domestic guests was 2 million (5.9 million nights spent), while the number of foreign visitors was 657 thousand (2,8 million nights spent). Based on the number of nights spent in tourist accommodation by foreign visitors, the countries of origin of foreign visitors are mostly Germany, Russia and Austria. Income from commercial accommodation establishments reached over HUF 48 billion (Hungarian Tourism Agency, 2021). However, the number of guest nights decreased significantly in 2020 (by roughly 40%), mainly due to the lagged number of foreign guests because the pandemic situation.

Year	Guests (persons)	Night spent	Domestic guests	Number of nights spent by domestic guests	Foreign visitors	Number of nights spent by foreign visitors
2018.	2 602 187	8 394 821	1 952 467	5 646 214	649 720	2 748 607
2019.	2 710 253	8 662 670	2 053 227	5 906 246	657 026	2 756 424
Change	*4,20%*	*3,20%*	*5,20%*	*4,60%*	*1,10%*	*0,30%*

Table 5: Number of guest nights spent in the region; *Source:* (Hungarian Central Statistical Office, 2021b)

Year	Guests (persons)	Night spent	Domestic guests	Number of nights spent by domestic guests	Foreign visitors	Number of nights spent by foreign visitors
2018.	2 602 187	8 394 821	1 952 467	5 646 214	649 720	2 748 607
2019.	2 710 253	8 662 670	2 053 227	5 906 246	657 026	2 756 424
Change	*4,20%*	*3,20%*	*5,20%*	*4,60%*	*1,10%*	*0,30%*

In Hungary, the most popular destination for multi-day trips (inbound) was Balaton in 2016 (14.9 million days). Balaton as a destination is still the most popular among the people living in Budapest, Pest county and Western Transdanubia. The most popular destination for longer trips (at least 4 nights) was also Lake Balaton (Palasics and Hinek, 2018). As the map shows, within the Lake Balaton Region, the most visited settlements are located in the lakeshore (Siófok and Balatonfüred in absolute measure, Tihany and Zánka in relative measure – per 1000 inhabitants), or are related to a spa (Hévíz, Zalakaros). The Balaton Uplands is also a popular destination, while the number of visitors is very low on the south-eastern edge of the region – this area is mostly left out of tourism (Map 15).

Construction of the lake as a tourism destination

Lake Balaton is one of the most popular tourist destinations in Hungary, the largest freshwater lake in Central Europe, which awaits visitors with unique natural values and cultural attractions almost all year round. The highest turnover - typically in the product range of family waterfront holidays - is experienced during the summer season.

Bathing is the main attraction of the region: the water of the shallow lake heats up quickly in summer and attracts hundreds of bathers: primarily Hungarians, but also foreigners. 38 km from the 235-kilometer shore of the lake is occupied by beaches; they attract up to nearly 1 million people in the high season. The water quality and land services of more than 70 beaches are of excellent quality almost everywhere, with its family-friendly beaches, adventure baths and wellness resorts. Another important factor is that there is a continuous increase in the number of domestic wellness vacations. **Health tourism** services are available mainly in the western part of the region. Hévíz, the centre of the health tourism is a significant travel destination as well. Zalakaros is also an important spa town in the region (Oláh, 2013).

Further potential is observable in the active tourism. Lake Balaton is popular area for **water sports**. Kékszalag (Blue Ribbon Round) the Lake Balaton Race is an international sports event held in Balaton every year. Within the country, sailing on Lake Balaton is of touristic importance. Boat services can also be interpreted as independent tourist attractions. In addition to the high season, fishing, the 210 km long Lake Balaton Bike Trail, adventure parks and theme parks, hiking trails and visitor centres in the Balaton Uplands National Park are also major tourist attractions in the pre- and post-season. Many of these opportunities are related to the **natural values** of lake region. Large landscape units such as large lake surfaces, swamps, plains, basins, buttes, and mountains have contributed to the formation and survival of rich wildlife. The natural values of the area are special, some of them are unique, like the buttes of Tapolca basin or the Kis-Balaton. Besides that, the geological values of the region are rich (Dombi et al., 2020; Oláh, 2013).

The **cultural tourism** is also important in Lake Balaton Region; it bases on the rich cultural heritage (built and intellectual) of the region and the high number of cultural events. The landscape and the built environment of Lake Balaton is unique; it was formed by the overlapping of the different cultures of the last two thousand years. Huge amount of **cultural heritage element** is found in the region. We can find architectural monuments from Roman times (Baláca), medieval castle ruins and churches (e.g. Tihany Benedictine Abbey), buildings from the modernist (Tátika restaurant, Tihany port postoffice (kortárs balatoni építészet, n.d.) and from the contemporary architecture (Laposa winery). Folk architecture is very decisive in the region and it fundamentally determines the atmosphere of the area and the nature of the landscape. The character of historical settlements, rural farms, wine cellars, noble mansions, churches and stone crosses are the emphatic part of the Lake Balaton landscape. The folk culture of the region is really diverse, different ethnographic landscapes meet there (Bakony, Göcsej, Somogy, Mezőföld).

In addition to the built heritage, the present **intellectual heritage** has many untapped opportunities in the development of the image of the region. The main keeper of cultural values are the museums, cultural institutions and non-governmental organizations, which play important role in the preservation of traditions. Furthermore, one of the first Hungarian language documents is kept in the Tihany Abbey (Establishing charter of the abbey of Tihany from 1055). The region is rich in **cultural events**. Music festivals are important attractions of the area (e.g., Balaton Sound, VeszprémFest, Jazz Picnic) as well as the cultural festival of the Valley of Arts in Kapolcs. In the field of wine and gastronomy, Lake Balaton is characterized by continuous renewal. The appearance of the beach food and bistros on Lake Balaton, the newly opened, high-quality places and local products play a key role in this. Thanks to the entrepreneurial cooperation with the quality restaurants the wines from the region became a well-known brand, which also means significant cultural value (Oláh, 2013).

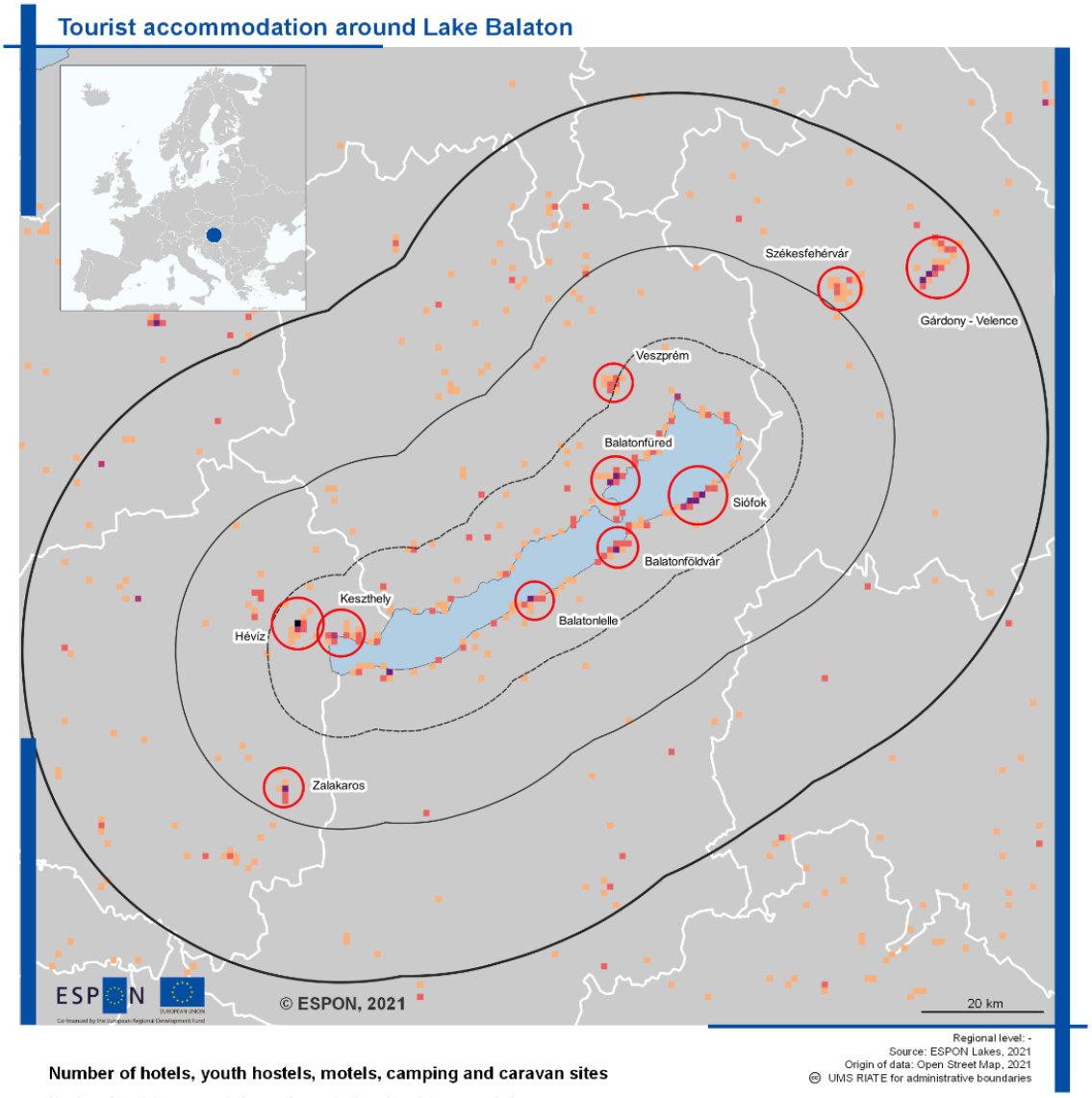
This rich natural and cultural heritage gives the basis of the **regional identity**. The most relevant elements are the landscape character and the traditional architecture which defines the spirit of the region. Fortunately, the transformation processes of the last decades have not completely deleted these values, and the character of the landscape has been preserved. Many kinds of **protection** help to reserve these cultural and natural heritages in the Lake Balaton Region. the Lake Balaton Resort Area has 61,6 thousand hectare protected area from which 57 thousand ha is the Balaton Upland National Park (see Map 4 Protected areas around the Lake Balaton). This is one of the most significant and most visited national parks in the country (Dombi et al., 2020). Significant part of the settlements in the region contains a protected urban areas or street views (this protection is on local government level). There are several monuments (churches, historical buildings, statues, etc.) which are under national protection. Besides that, the local

protection is also an important tool for preservation of cultural heritage. The wine produced in the region is a national value registered in the Collection of Hungarian Values (Hungarikum, n.d.)

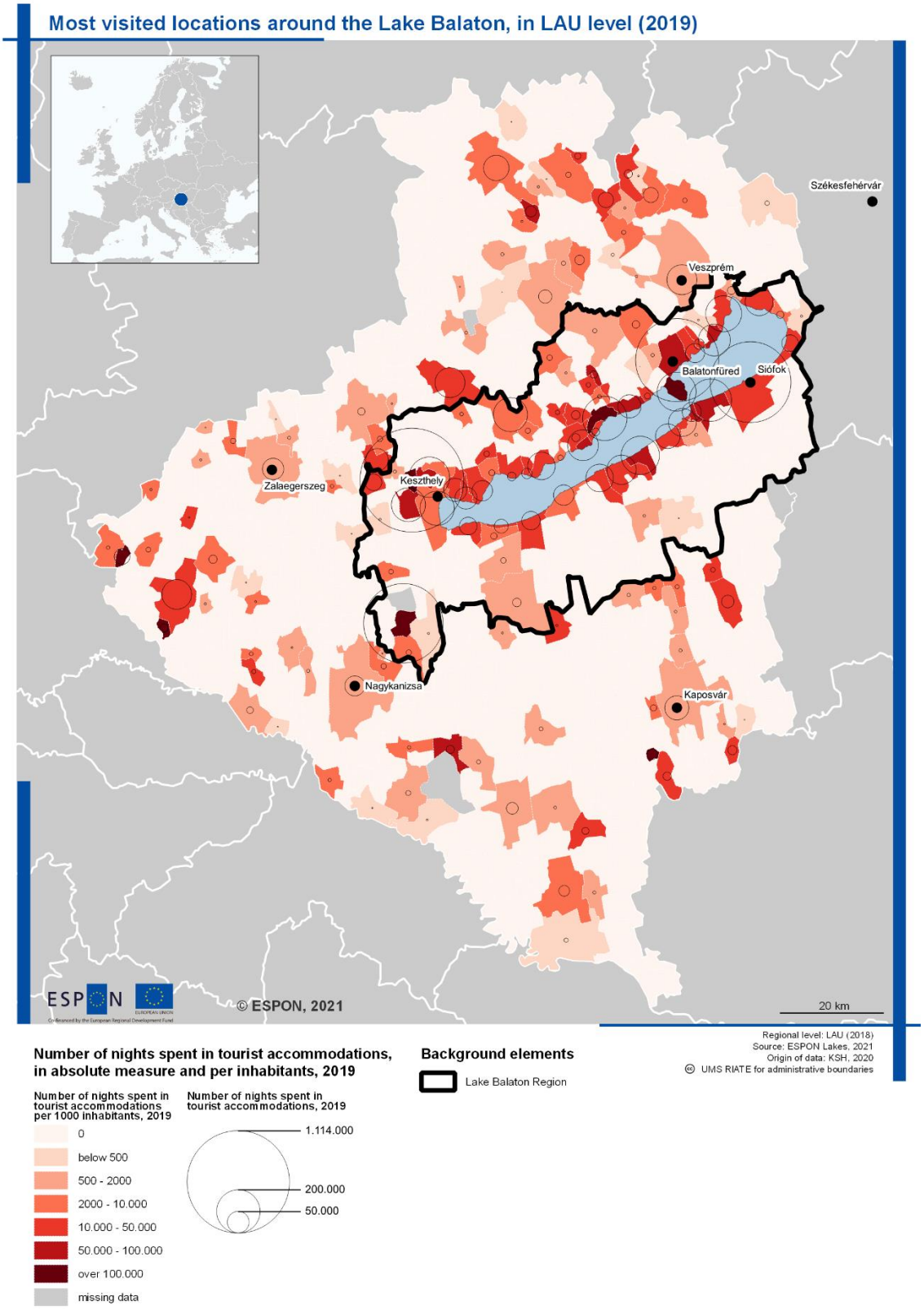
Seasonality is still a major problem for Hungarian tourism, especially for Lake Balaton. Although it is still not a four-season destination, our conclusion is that the season is gradually increasing in recent years. Service providers and tourism management are actively working on the prolongation of the season, but the effectiveness of the event offering, that is regarded as the most important element for reducing seasonality, is still questionable (Oláh, 2013).

Furthermore, the tourism is one of the most vulnerable sectors where the **economic impact of the COVID-19 pandemic** is strong. The decrease of accommodation bookings has a spill-over effect, the accommodation and catering sector generates barely 2% of the GVA, however tourism has a direct and indirect effect on the economy (it is one tenth of GDP) and even higher impact on the employment (12.5%) (Balás, Csite, et al., 2020). It is estimated that 400,000 jobs are at risk in relation to tourism. The negative effects of the Coronavirus are also seriously affecting other sectors such as the festival sector and arts (Főző, 2020).

Map 14 Tourism accommodations around the Lake Balaton



Map 15 Most visited locations around the Lake Balaton



2.5 Agriculture, fisheries and food production

Agriculture

As chapter 2.3 shows, agriculture has high importance in the economy of Lake Balaton Region. It gives the 11, 6 and 5% of the GDP of related counties, while the agroindustry also has a significant relevance in the region. It means that agriculture and related economic activities have relatively high share in economy compared to European average. In the last decade the agriculture and the food industry has been increasing employment, GVA and productivity in Hungary (Ministry of Agriculture and Hungarian Chamber of Agriculture, 2019).

Agricultural areas have a high share from the total area of the surroundings of Lake Balaton (based on 2018 data): in the 50 km buffer zone 60% of the total area is used for agriculture and 46% is arable land. These values are the same as the country level values (57% and 47%). The spatial pattern of agricultural areas is the following: in the eastern part of the zone the arable lands have outstanding share, while in the northern and southern part of the buffer zone the agricultural areas have a low share because the mountainous and hilly relief. However, in the close surrounding of the lake (in the 10 km buffer zone), the land cover is totally different: the share of arable land is below 33%, while the share of the vineyards is over 7% (national average: 0,8%) and fruit trees and berry plantations and other vegetated areas also have an above average share from land area (

Map 16). The change of the agricultural lands was moderate between 2012 and 2018: in the 50 km buffer zone the area of agricultural land decreased by 1742 hectares, which represent only the 0.11% of the total land area. The arable lands (516 ha) and the pastures (1066 ha) declined the most, while the area of the vineyards has been increased with 212 hectares.

The importance of agriculture can also be demonstrated by the **share of employment**. In Lake Balaton Region the share of the agriculture, forestry and fishing from employment was 3.5% in 2011 and it is increasing with the distance from the lake: it was over 10% in 37 settlements in Lake Balaton Region but only three of them are located in the lakeshore. Beside the lakeshore settlements, towns also had low share: mostly between 1 and 2,5%. The same spatial pattern is observable based on the Agricultural Census in 2010 there were 19 thousand **family farms** in the Lake Balaton Region. In these farms more than 38 thousand people worked in 2010: only 600 as a full-time farmer and 232 employees, while more than 37 thousand family members worked in family farms not as a full-time worker (Map 17). Another problem is the aging of the farmers and the lack of young age supply.

Significant challenge is the **structure of agriculture** which is dualistic in Hungary (Vágó and Páll, 2016) – and also in Lake Balaton Region. In 2010, in addition to the 19 thousand family farms, 350 large farms operated in the area, but these accounted for 80-90% of the agricultural employment and they farmed 57% of the cultivated areas. An average large farm had 252 ha land area in Lake Balaton Region in 2010, while the average family farm-size is only 3.5 ha. The arable lands (59%) and other areas – forests, grasslands etc. - are mostly cultivated by large farms, while the share of family farms in the area of orchards and vineyards is outstanding: 57% and 73%.

Vineyards and wineries play a very important role in the agriculture of the Lake Balaton Region. Hungarian wine has a very important role in the country's image (furthermore in cultural heritage and tourist supply), while wines around Lake Balaton are among the best. Five wine areas of Balaton Wine Region connect to the Lake Balaton Region: Badacsony, Balaton Uplands and Balatonfüred-Csopak areas are located in the northern side of the Lake Balaton Region, Balatonboglár area in the southern side, and Zala in the south-western part of the lake region. The biggest wineries produce mainly for the national (and partly the international) market, but the production related to hospitality is also very important (many guesthouses are connected to a winery or a cellar), as well as production for the local market and for own consumption. In the Lake Balaton Region, a total of about 7 thousand people are involved in viticulture (Hungarian Central Statistical Office, 2016).

The **horticulture** is also significant in Lake Balaton Region, and it is mostly connected to family farms. They produce mostly for their own consumption and for the local markets. In the Lake Balaton Region, there were 37 **markets** in 2014, 15 of them are farmers or bio markets. These markets are mainly located on the northern shore of the lake. They contribute to satisfy the needs of both the local population and holidaymakers and also play an important role in the livelihoods of agricultural producers. However, it is a

very vulnerable sector: products from farther areas and the presence of retail chains (and also the hypermarkets) are both a major challenge. (Oláh, 2013)

Other sectors and activities related to agriculture in the Lake Balaton Region also play an important role. The **food industry and wholesale** are particularly important on the southern side of the lake. The main centres of agro-economy in the region are the following:

- Balatonboglár: Halker Kft (the 4th biggest enterprise in the region) deals with meat products
- Keszthely: Z + D (5th biggest enterprise in the region) deals with beverage wholesale
- Siófok: there are several major enterprises operating here, which are related to soft drink production and wholesale

However, Kaposvár (seat of Somogy County) is located outside the Lake Balaton Region, but it is one of the main agro-industrial centres of Hungary: it has outstanding importance both in the food industry (meat, sugar) and in the grain wholesale. (Napló, 2019; Somogyi Hírlap, 2018; Zalai Hírlap, 2019).

The role of agriculture in the region is also shown by the fact that from 1797 (intermittently between 1849-1865) there was a higher level of agricultural training in Keszthely (Georgikon Campus) – it is the first **agricultural higher education institution** in Europe. (Dombi et al., 2020)

All in all, agriculture and related sectors are important values of the lake region, both in economy, society and culture. However, these sectors face many challenges: the aging of farmers, the dual agricultural structure (small and large producers), and the vulnerability of local supply chains. The polluting effects of chemicals and fertilizers on soil and water resources could be another challenge.

Fisheries

Although Lake Balaton is the biggest water body in Hungary, the fishing sector is not significant at all. The high-volume fishing began in the 19th century and it was connected to the transformation of the environment. Lake Balaton did not have a stable water level up until installing a sluice in the 1860s on the Sió river, the main outflow of the lake. In the following decades, as a result of an extended human activity, the ecosystem, and especially the fish fauna of the lake changed drastically. The nearby wetlands were cut off from the lake and mostly drained, the water was stocked with alien fish species, and later on, mainly agricultural chemicals contaminated the water (Specziár, 2010). During the 1950s, the fishing industry was at its peak, with 1300-1700 tons/year capacity. However, the aforementioned anthropogenic effects resulted in a mass fish extinction 1965, followed by smaller ones. The growing number of anglers also put pressure on the lake's ecosystem. Finally, in 2013 fishery was abolished on Lake Balaton (Cégünkről - Balatoni Halgazdálkodás, n.d.).

Although fishery was abolished in the main lake, the region still produces a significant amount of fish and processed products. There are fishing lakes, some in the former wetlands, and some in former manors. Some are state controlled (for example by the Balaton Fish Management), and some are private companies. According to online available company information, approximately 130 people are working in the fish farming sector in the Lake Balaton Region. The majority of them are employed by the Balaton Fish Management Non-Profit Ltd which was founded in 2009 (as a direct predecessor of the former fishing company). It is 100% state owned, and its activities are, among others, populating fish (breaded in own fisheries) into the lake according to the fish management plans approved by the authorities, angling management, issuing fishing licences, ecological management of the lake, augmentation of native fish species and running own fisheries (Cégünkről - Balatoni Halgazdálkodás, n.d.).

Furthermore, **recreational fishing** is still prevalent (65-70 thousand anglers visit to the lake every year) and, in addition to its obvious importance for tourism and recreation, it is a source of many conflicts, both environmental (interference with the ecosystem) and social (with locals and other tourists) (Oláh, 2013). Another conflict that still exists today, is between fishermen and bathers and local residents. According to the opinion of the latter, the eutrophication of the lake is intensified due to too much bait of anglers.

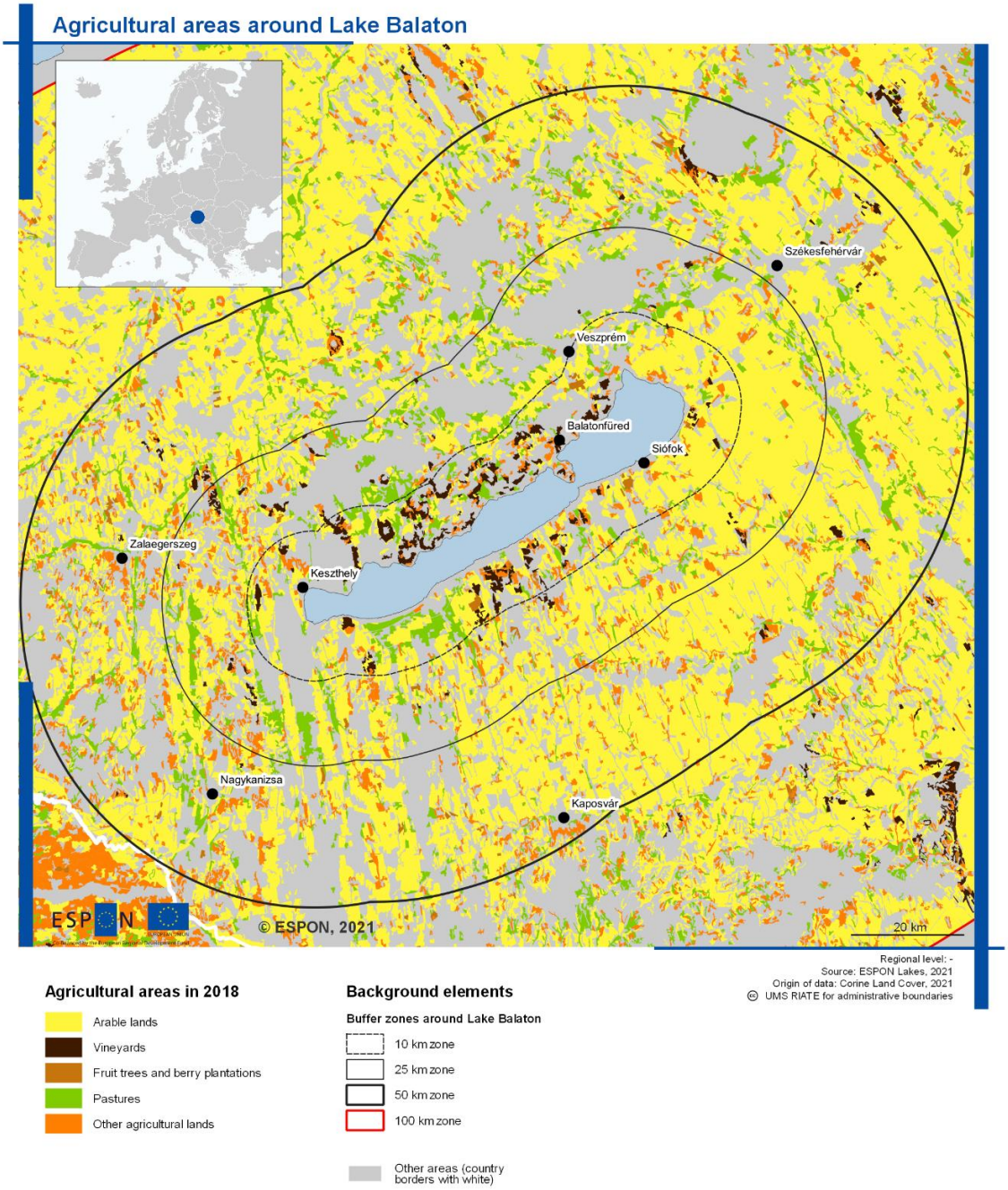
Even though there is no fishery anymore in Lake Balaton, as a result of fish farming and ecological management, a significant amount of fish is released from the lake and the surrounding ponds. However, in most cases, this **fish stock** is not sold to local markets and restaurants, but are used for the food industry. Although fish is available in many restaurants along the lakeshore, most of these are not from the lake (sea-

fish is particularly common in these restaurants). Further issue that the sport anglers are not allowed to sell fish to the restaurants.[4] For these reasons, linking fish farming and anglers with local markets and creating new commercial chains could be important.

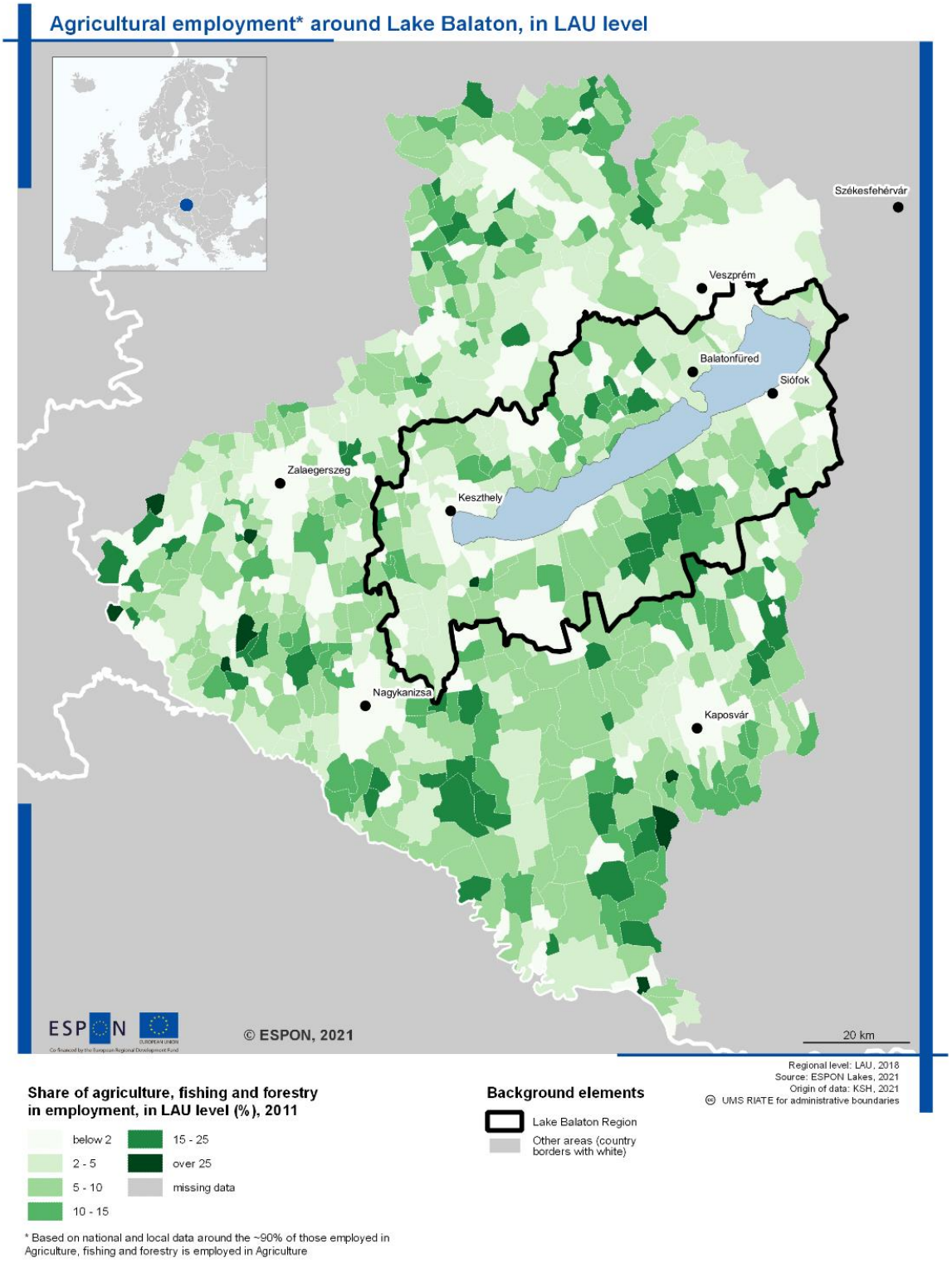
To conclude, the fishing sector is not important in the economy of the Lake Balaton anymore, but it still has some functions in ecological management of the lake. Furthermore, fish farming is still present, but fish from Lake Balaton and the surrounding ponds rarely reach local markets. Recreational fishing plays an important role but is also a source of conflict.

[4] See here: https://24.hu/fn/gazdasag/2017/08/06/miert-nem-lehet-balatoni-halat-kapni-a-balatonnal/ (Accessed: 2021. 06. 08.); https://www.agroinform.hu/allattenyesztes/vegre-igazi-balatoni-hal-kerulhet-a-vendeglatohelyek-asztalara-38094-001 (Accessed: 2021. 06. 08.)

Map 16 Agricultural areas around the Lake Balaton (2018)



Map 17 Agricultural employment around the Lake Balaton (2011)



2.6 Spatial planning and development of transport

Land use: urbanisation trends & green-space areas

The settlement system of the Balaton region has undergone several large-scale functional transformations. These mainly due to the change in the role of the region in the national (and international) division of labour: this area can be described as a predominantly rural region with leisure and tourism functions. The improvement of transportation played an above average role in the development and differentiation of the settlement system. Due to the geographical location of the region and the dominant function, the influential feature of Lake Balaton is the seasonality. The settlements have to provide living conditions to more residents during holiday season. There are plenty of private and community holiday buildings. Their communal supply, safety and maintenance are the source of many special problems. The most important of these are tax issues and conflicts of interest between visitors and local residents.

After 1990, the main direction of population migration was no longer from villages to cities, but from more populous cities to the surrounding villages and small towns (suburbanization), and to more distant areas (e.g.: Balaton Uplands) in the 2000s, which missed the urbanization (deurbanization) period earlier. The migration balance of the former micro-regions between 2000 and 2008 highlights two areas where the balance is positive: one is the strip surrounding the eastern basin of the lake (Balatonfüred, Balatonalmádi and Siófok), the other is Hévíz and Keszthely. With new legislation making it significantly easier for foreigners to purchase real estate, wider areas of Lake Balaton became popular among foreigners willing to buy property.

Built-up areas are concentrated around larger settlements and their agglomeration zones (see in Map 18). The settlements and their agglomeration zones are covered mostly by urban fabric areas. In the 10 km radius of the lake, southern areas have larger urban fabric than the norther part of Balaton, however urban fabric density is larger in the north. Industrial, commercial and transport units are also concentrated near cities and towns. There are 19 industrial parks in the 50 km buffer zone, some of them located in the lakeshore: in Balatonfűzfő, Keszthely, Siófok. A new industrial park is being developed in Balatonfüred in recent years. Mines, dump and construction sites are most common in the northern part of the lake within 50 km (e.g.: Ajka, Várpalota). Previously, there were underground mining areas in Hungary, the bauxite and manganese mines of the Transdanubian Mountains (Faller et al., 2001). Nowadays only a few active mines remain with a dominance of mineral mines, which provide stone, sand, gravel etc. mainly for construction purposes. The most basalt mountains are located in Balaton Uplands. In the upper, volcanic part of Badacsony, there were two quarries; currently basalt extraction is taking place only in Uzsa (Keszthely Mountains).

New built-up areas can be found close to Zalaegerszeg, Székesfehérvár and the eastern side of the lake. A parts service for high-performance agricultural and construction machinery, Axiál ltd. opened a new site as a greenfield investment (*Supply Chain Monitor*, n.d.). New greenfield investments are expected as well, Zalaco will continue to expand its capacities in Zalaegerszeg, their factory is being built in Iváncsa, Fejér County (*fmc.hu*, n.d.). As a result of the HUF 35 billion greenfield investment, Arconic-Köfém's wheel production capacity in Székesfehérvár will be expanded with a new 17,000 square meter production hall (www.neosoft.hu, n.d.) (Map 18).

Green urban areas (Map 19) stretch around the shoreline and the agglomeration of larger settlements (e.g.: Székesfehérvár). It means that while a large number of **green-space areas** are located in the 1-2 km buffer zone of the shoreline, they are mostly artificial areas thus the natural vegetation is very fragmented (almost totally missing) around the lake. Further from the lakeshore the area is rich in forests, the density is larger in the north, west and south areas of the region. Other vegetated areas can be found close to Veszprém, in the mountainous area of Bakony. The biggest inland wetland is the Kis-Balaton and there are smaller wetland areas in the south shore of the lake. Minor loss of green space areas can be found within 50 km: more loss of green space occurred near Nagykanizsa, and some minor areas in the north and close to Székesfehérvár.

Land-based transport (congestion, infrastructure projects)

The transport infrastructure of the region is expanding. The basic infrastructure of the various modes of transport is extensive, and significant improvements have been made since 2014. However, further development needs can be identified which could also help increase the region's economic potential values.

The transport system of Lake Balaton is basically a very special large-area system, many elements can be considered identical to the characteristics of multi-centre suburban transport systems that are not typical elsewhere in Hungary, but are known from foreign examples (Dombi et al., 2020). These features are currently not advanced enough, the poor development of transport systems and the uncoordinated operation are also fundamental problems. Today, this system is overwhelmingly based on car transport.

Three TEN-T Core Network Corridors pass through Hungary, number 3 and 10 affect the area via road and railway:

- 3. Mediterranean Corridor
- 4. Orient/East–Med Corridor
- 10. Strasbourg–Danube Corridor

Beside the roads and railways, EuroVelo 14 cycling corridor provides an easy access to Lake Balaton as well.

In terms of individual **car transport**, the number 7 primary road is the prime axis of the south shore, which has become an even stronger organizing element with the construction of the M7 motorway. Important elements of the road network in the south are the number 65, 67, and 68 secondary roads, their role is mainly to connect background areas to the shore. The most important axis is in northern lakeshore the number 71 main road, which is supplemented by number 72, 73, 82, 84, 75, and 76 secondary roads. Number 77 secondary road is also significant between Veszprém and Tapolca, which runs parallel to the northern shore of the lake and connects settlements further away from the shore. There is a lack of connecting roads between settlements farther from the shoreline, especially in northern Somogy region, although with the developments of recent years a progress has started. The average travel speed on the roads approaching Lake Balaton from the western, southern and northern borders is relatively low. The average driving speed has significantly decreased due to traffic jams, and especially in populated areas there are undesirable environmental effects (noise, air pollution). The condition of the pavements on the main roads is only adequate on certain sections, while for a considerable length their load-bearing capacity and the integrity of their surface do not meet the traffic requirements. The layout, cross-section and pavement condition of the sidewalks in many places do not correspond to the increased vehicle and bicycle traffic, especially during the summer tourist season. Drainage of roads is still inadequate in several places and the frequent flooding of roads with mud and water in the absence of water management in roadside areas is an additional problem.

One of the most important indicators of the development of road traffic conditions is the reduction of **availability times**. The availability times of the settlements with a central function, as well as the transport nodes, optimized according to the road and time dimension. The availability time of the capital from Balaton (aggregated on an average basis from the settlement-level data of the capital) increased overall in terms of both road and time-optimized data between 2008 and the data of the last year currently available, 2016. In the case of time optimization, the average length of the fastest journey to Budapest was 111 minutes in 2008 and 121.9 minutes in 2016. It can be assumed that this increase can be explained by the increase in car traffic and the adaptation of certain traffic and traffic safety measures. An increasing trend can be observed in the availability times of county seats in the time interval 2008-2016. However significant decrease can be identified compared to 2015, which presumably reflects the results of road developments that also appear in the statistics. As Map 9 shows, due to the M7 motorway, the southern part can be reached by a larger population. Furthermore, the delimiting role of the lake can be emphasized, which is decisive for all forms of transport.

Recent infrastructure work includes the reconstruction of **railway** 30 for a total of 31.2 km length of tracks from Lepsény-Szántód-Kőröshegy. The second phase took place between Szántód-Kőröshegy – and Balatonszentgyörgy stations in 2018. Kaposvár – Fonyód railway line development was completed in 2018. The main axes are Budapest - Balatonszentgyörgy- Nagykanizsa - Murakeresztúr (No. 30) and Budapest-Tapolca (No. 29) lines passenger, high-speed and high-speed trains. The rail transport conditions of Balaton show a significant difference on the south and north shore: the timetable of the southern areas is more passenger-friendly, while the service of the northern coast from the capital is only available with a transfer,

and only a few direct express trains run daily on the north shore. Because these challenges and the popularity of the rail transport its continuous development is especially needed.

The **cycle path** around Lake Balaton is 190 km. It almost surrounds the lake and in the last years the implementation of the final construction continued. One of the most significant changes in recent years is in assessing the importance of cycling traffic and cycling tourism and the pace of cycling development. Bicycle has not only become fashionable, but - partly as a result of technical progress - more and more comfortable and versatile, and has also become a more accepted means of everyday transport and not only for locals, but also among visitors of the lake. Despite the dynamic development this trend was not followed by the construction of a cycle path network. The causes were mainly administrative and funding problems.

A significant part of Cohesion Fund and ERDF is channelled for infrastructural development of different kinds. During the past programming periods (2007-2013; 2014-2020), **infrastructural developments** have mainly taken place in order to improve the external accessibility of Lake Balaton (Dombi et al., 2019). The next programming cycle (2021-27) should be aimed at improving internal availability conditions in addition to the further external availability interventions that are still needed. In the light of the identified needs and the developments implemented so far, the strategies try to respond to the development needs occurring locally at the municipal level, in both shoreline and background settlements, as well as to the remaining regional, infrastructure development and transport management needs. Planned projects will focus on:

- Available Lake Balaton! Program, which focus on an operating environment-friendly, flexible and efficient transport system in the Lake Balaton Region
- Combined modes of transport, tariff community, transport association
- Local traffic calming measures, micromobility solutions
- Improving the accessibility of background settlements (Dombi et al., 2020)

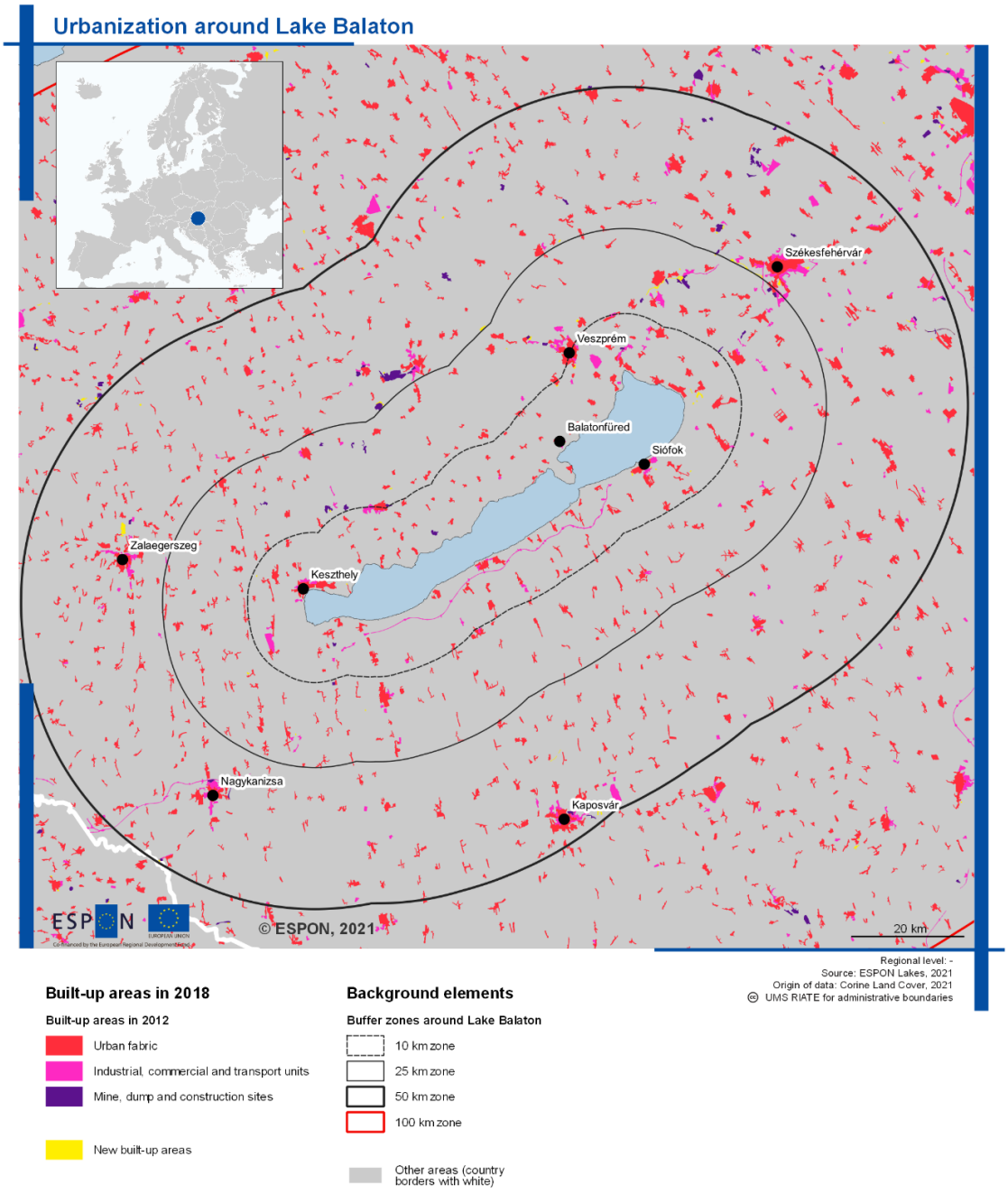
Lake-based transport

Passenger shipping could be the fastest mean of transport between the northern and southern shores of Lake Balaton. The ferry service between the harbours of Szántód and Tihany operates all year. It acts as a bridge that not only provides a tourist car crossing opportunity between the two shores, but also plays a role in the performance of daily transport tasks. However, it is also noteworthy that the ferry crossing option is almost completely excluded from the region's bus network.

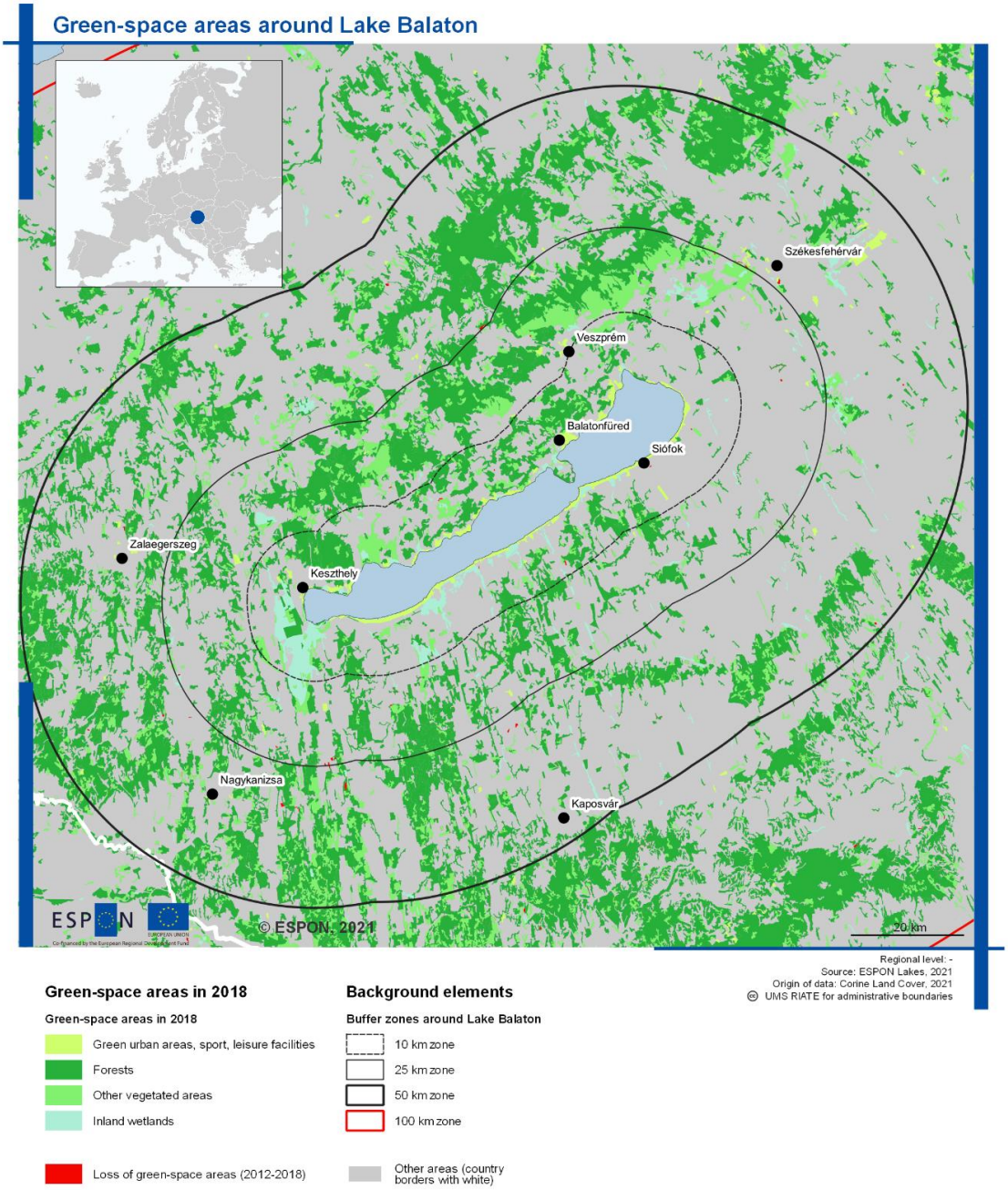
From 2010 there has been an increase in lake-based transport by the number of passengers. During 2016 the ferry had one million passengers. Since then, further slow growth has been observed and in 2018 the shipping company sold 1.274 million tickets. The pandemic caused by the Covid-19 virus had serious impact on tourism. Balatoni Hajózási Ltd (BAHART), which has been in a bad economic situation due to declining tourism, reorganized the institutional system. Several ferry and cruise ship lines had been cancelled in 2020, but many of them will be restarted in 2021. Several development projects are planned in the case of BAHART by 2030: production of new ships, new ferries planned to be available in the Tihany strait from 2022, and ferry ports reconstructions. New catamarans will also be available, which will run in the area of Balatonfüred, Keszthely and Siófok (Dombi et al., 2020).

All in all, shipping on Lake Balaton is not very significant, the Tihany-Szántód ferry is the only connection which operates during the whole year, the other navigation routes are used for tourist purposes. The lake is a major barrier between the northern and southern shores of the lake, which cause that the daily connection between the two sides is very weak.

Map 18 Built-up areas and urbanisation around the Lake Balaton (2018)



Map 19 Green-space areas around the Lake Balaton (2018)



3 Governance in the lake region

This chapter gives an overview about the most important actors and institutions around the Lake Balaton. These actors are working for the development of the Lake from different positions and with different interests.

3.1 Actors involved in lake-based governance

3.1.1 Main levels of governance in Hungary

The Hungarian government structure comprises three tiers: the central, the territorial (county) and the local level.

Local governments

All the 3155 settlements in Hungary have elected self-governments fulfilling central, as well as local administrative tasks, regardless the size of the settlement. The distribution of tasks between the two levels (central and local) was created in 1990 with the introduction of new local governmental act (Act LXV./1990). The current law (Act CLXXXIX./2011) on local governments distinguishes five settlement categories. All the settlements are obliged to perform all the tasks specified by law, which ensure the basic living conditions of the local population and the opportunities for direct access to the necessary public services. Additionally, major settlements also provide public services that extend to all or a large part of the county beyond its own territory. Besides, local governments are obliged to make spatial plans and (integrated) territorial development plans, time by time. Furthermore, local settlements (defined by different sectoral laws) create sectoral plans for the settlement (e.g., environmental programme).

Local governments, settlements are significant actors in the regional development of the Lake Balaton. The LBRA – as it was mentioned – consists of 180 settlements- Settlement development plans (and in the case of some settlements, Integrated Development Strategy, formerly known as Integrated Urban Development Strategy) are a medium-term spatial planning documents, which concentrates the development ideas of cities (and settlements) and their surrounding areas with a regional perspective. The strategies contribute to the synergistic development of the rural cities, to the establishment of mutually beneficial relations, and to actual cooperation. Therefore, during the planning, settlements place great emphasis on addressing local and regional actors, learning about their development ideas, and resolving any contradictions.

County governments

The county is one of the elements of the official territorial division (NUTS3 regions), to which territorial administrative functions are added. Although, elected county level self-government operating with a very narrow scope of tasks and competences, counties play a key role in relation to the management of the lake and related activities. (The reason is that counties have coordination role on inter-municipal issues (e.g., the coordination of regional development (György et al., 2018). The notion, the territorial scale and as a governing order, the county has existed in Hungary since the founding of the state.

Lake Balaton belongs to three different counties (NUTS 3 regions), namely Somogy, Zala and Veszprém counties (see Figure 1). It also means that the development and governance activities (e.g., intermunicipal coordination) are also affecting the lake from three parts.

In connection with the renewal of the system of regional development (Act XXI of 1996 on Regional Development and Spatial Planning), due to the amendment of the Act, the county assemblies may establish a regional development council by adopting the organizational and operational regulations in order to perform certain regional development tasks that extend county borders of the region.

In the performance of the public tasks included in the law, the county government coordinates the development ideas of the central government, local governments and economic organizations, within the framework of which it ensures the enforcement of the principle of partnership during planning and implementation.

Counties – from time to time (from EU planning period to EU planning period) – create development strategies, that affect the Lake Balaton as well. The regional development programmes of the counties consist two parts. The aim of the operational part of the programme is the efficient use of the available and obtainable resources for the development of the county. The basic goal of the strategic part of the programme, as a medium-term action plan, is to provide a framework for the operational part, thus providing a strategic basis for the Integrated Territorial Program (ITP 2021-27)[5] supporting the implementation of the territorial operational program, thus creating a logical connection of objectives.

Strategies of counties are also dealing with Balaton, especially with the tourism sector. Usually, these county strategies (the county development strategy and the ITP) aim to balance the tourism development between Lake Balaton and other parts of the county.

In the county development plans the spatial structure of the transportation is also mentioned. On one hand the challenge is the availability, on the other hand, the problem is the lockdown situation that is caused by the transport infrastructure (i.e., the poor development of transport systems and the uncoordinated operation – c.f. Chapter 2.6). The latter is problematic around the lake.

The development of county development programmes is based on a large consultative work that includes a large variety of territorial stakeholders. Stakeholders are usually taking part and represent interests – in order to influence the development – during the planning phase and the public debate/hearing. The minimum number of actors to be involved in the process of public debate is set by law, but this does not mean, of course, that professional consultations could not be held more widely (as experienced in county planning in the lake region). Besides the local governments (e.g., 258 in the case of Zala county), ministers, municipal advocacy organizations, neighbouring counties, affected regional development councils, affected county towns, chambers of commerce, agriculture, engineering, higher education institutions, non-governmental organizations, public service organizations, national parks, tourism organizations are also invited in these negotiations and usually take part to express their viewpoints.

Central government

The central government subsystem is divided into ministries and a number of agencies. Sectoral governance and planning are usually organised under an an independently operating and managed central budgetary body. Under these sectoral bodies the territorial subunits operate, which are responsible for the management and planning of each area. The territorial delineation in each sector varies from sector to sector.

Although, there are plenty of tasks allocated from central governmental level to local (or regional) level(s), a general feature of the Hungarian system is the underfunding. Both public services and regional development would require much more resources.

3.1.2 Actors and institutions for the Lake Balaton

This subchapter presents the main actors around the Lake Balaton.

Water management authorities

The Lake Balaton “water region” (including the inflow waters and the Kis-Balaton) belongs to three water management authorities: **Western-, South-, Middle Transdanubian Water Management Directorates**. They do the work in a coordinated way. Lake Balaton itself (within the Lake Balaton “water region”) belongs solely to the **Middle-Transdanubian Water Management Directorate**.

The territorial water directorate give an opinion on the spatial development concepts and programmes prepared for the counties (and for the LBRA), as well as on the settlement development plans. In the case of LBRA, the Middle-Transdanubian Water Authority performs this task as a stakeholder. The territorial water directorates cooperate with local governments and water companies in solving water management tasks (A területi vízügyi igazgatóság feladata - Közép-dunántúli Vízügyi Igazgatóság, n.d.)

[5] Part of the EU programming period

The **Hungarian Meteorological Service (HMS)** supports the water management authority, both via its observation network and its probability forecasts in short and long term as well. The HMS observation network around the lake provides forecast for local governments and for the bathers in season regarding the expected weather.

Balaton Uplands National Park Directorate (BUNPD) (established in 1997) is the most important actor in the protection of natural environment around the lake since Balaton Uplands (Northern shoreland of the Lake Balaton) is a protected area. What is worth to be emphasised here - from the viewpoint of governance – is that since 2002 the Lake Balaton Region (and the LBRA) belongs to only one national park directorate that ensures the possibility to manage the ecosystem in the Balaton Region in a unified way.

According to a government decree defining the tasks of the Ministry of Rural Development, **forest management, protection of forest assets,** primary wood industry production and related services, among others, are subject to sectoral management. The maintenance tasks of forestry areas are managed by state-owned territorial forestry companies. The forest management tasks of the Lake Balaton region belong to two forest management companies, **SEFAG** (southern part (side) of the Lake) and **Bakony Forest** (northern part (side) of the lake).

Other important actors of the lake, relating to natural heritage, are the scientific institutions – including the **local limnology institute**. The intensive scientific study of the Lake Balaton was started by the Balaton Committee of the Hungarian Geographical Society in 1891. Later, the Balaton Limnological Institute (BLI) (former Hungarian Biological Research Institute) was founded in 1926 by Kunó von Klebelsberg, Minister of Religion and Public Education, in Tihany. Since its opening in 1927 the **Balaton Limnological Institute** has been the citadel of Lake Balaton limnology and innovation research on water quality protection and natural fish farming in the lake. Besides the research, BLI maintains a monitoring system that provides continuous data for regional planners. Although BLI's main role is research, the institute is a permanent invited stakeholder of the regional development strategy making processes (*Balaton Limnological Institute*, n.d.).

Hungarian Tourism Agency (MTÜ)

In Hungary, the tourism sector is managed by the **Hungarian Tourism Agency (MTÜ)**, which is a centralised state organisation. It is responsible for the development and public administration of tourism in Hungary. Defining the tourism development strategy, supervising the utilization of EU funds and domestic budgetary sources dedicated for tourism development and managing the tourism brand of Hungary all belong to the Agency's scope of duties (mtu.gov.hu, 2021). From 2016 a new touristic region was created, the Lake Balaton Touristic region, which does not overlap with LBRA. The aim of this new region is to make the performance of tourism more efficient, to create well-marketable and well-defined destination. The territory of the touristic area includes 174 municipalities, the designation of the area is based on tourist attractions and traffic indicators. Besides, the coordination of accommodation improvement is also falling within the scope of MTÜ (mtu.gov.hu; portfolio.hu, 2020). The unified Balaton brand is under development by the MTÜ (Hungarian Tourism Agency). There is a significant amount of financial amount is dedicated for the project, a public discourse procedure has already taken place, but nothing has been seen or showed up about the project and the activities related to the project since then.

The word "Balaton" is used by several entities, for instance by a chocolate factory as well as a local television, but the conditions of use are not clarified, and efforts and negotiation attempts to do so have been on the agenda for many years.

There are economic entities operating under the ownership of the Agency (MTÜ). Some of them partly or entirely affect the life of Lake Balaton (Kisfaludy2030 Tourism Development Non-profit PLC.provides funds for accommodation development, (BTTF) Badacsony area Tourism Development Non-profit PLC is focusing on mountain Badacsony (an iconic mountain of the Lake); Helikon Castle Museum Public Non-profit Ltd. is responsible for the Museum at Keszthely, BAHART operates the shipping in Balaton; HÉVÍZ-BALATON AIRPORT Ltd. is responsible for Balaton Airport).

Lake Balaton Development Council

Based on the Act XXI of 1996 on Spatial Development and Spatial Planning pursuant to Section 15 (1) county assemblies may establish a regional development council to perform cross-border and county-boundary and priority area development tasks. There are required regional development councils by the law: these are the Budapest Agglomeration and the **Lake Balaton Development Council**.

The **Lake Balaton Development Coordination Agency (LBDCA)** is a non-profit organisation. It was established on 1 January 2000 by the Lake Balaton Development Council. The Agency performs professional and operative duties promoting the development of the LBRA in relation to the activities of LBDC. The basic activities of the Agency include the participation in the preparation and implementation of regional development programmes. Pursuant to the decision of the Council, the LBDCA performs tasks related to the programming process of the Lake Balaton region. In addition to the elaboration of development documents, the Agency continuously monitors and analyses the implementation of the Concept and the regional development plans, as well as studies the social-economic processes of the region. A priority task of the LBDCA is managing the application of development funds appropriated by the central budget based on the Council's decisions. The LBDCA participates in several international projects to promote the development of the area and make cooperation more effective (balatonregion.hu, 2021).

In the Lake Balaton region, the key actor is the Lake Balaton Development Council (LBDC). The aim of this institution is to determine the directions for development of the area and support the elaboration of development plans and projects in the Lake Balaton Resort Area (LBRA). It discusses and decides on specific lake related issues and also allocates small resources. It also operates satellite organisations (e.g., the Balaton Public Security Council), and initiates the establishment of such organisations. For the implementation of their programs, they may agree with the regional, county and micro-regional development councils and other participants in regional development programs on the financing of the programs and developments.

The composition of the Lake Balaton Development Council and the number of delegates with voting right are determined by the act on regional development in force.

Accordingly, the members with voting rights are the following:

- Representative of the minister responsible for strategic planning of regional development,
- Presidents of the General Assemblies of the 3 competent counties (3 members),
- Representatives the General Assemblies of the 3 competent counties (3 members),
- Representatives of the ministers responsible for the implementation of the sectoral operational programmes (Ministry of National Development, Ministry for National Economy, Ministry of Human Capacities and Ministry of Agriculture) (4 members),
- Representative of the Minister of Prime Minister's Office (balatonregion.hu, 2021).

As of February 2021, the presidency of the LBDC will be held not by one but by two co-chairs (who also have voting rights). In addition to the president elected since 2010, the government commissioner responsible for the complex development of the Northwest Hungary Economic Development Zone and the coordinating implementation of the European Capital of Culture 2023 Veszprém winning tender program joined the co-chair in 2021.

Beyond planning tasks, the LBDC also performs a vital role by stimulating regional developments, investments and projects through the allocation of funds and provision of grant programmes (although the recent amount of funding is limited (see below). Funding opportunities, provided by LBDC, contribute to achieve the objectives of the approved development programmes and to manage the emerging regional issues.

The supported areas are the following:

- Improving public security and water safety;
- Developing coastal and other community areas,
- Providing financial support for events;
- Waste treatment programme of small villages – supporting the installation of small-scale waste-water treatment equipment.

In the framework of the Lake Balaton Partnership Programme several initiatives have been started, the implementation of which is supported by the LBDCA.

Since 2001, LBDCA has been performing planned research in the fields of economics and social sciences to help to achieve the area's development objectives. This activity is carried out by a professional **Social Science Research Team** at Balatonfüred. Besides enhancing the sustainability of natural and environmental values, the tasks of the team include providing support for territorial policy by scientific tools in order to retain the region's population and to maintain and improve the unique sociological quality of the local society of the LBRA. In relation to that, several research projects have been completed.

NGOs

Density of NGOs is quite high in the Lake Region and have a long history. Lake Balaton is the most important place for NGO activities after Budapest. The following paragraphs shortly describe some of the most important ones.

Lake Balaton Association (Balatoni Szövetség) was founded in 1904, its main assignment was to introduce and prosper Lake Balaton. It operated until the end of the Second World War, when the new political power abolished it in 1949. In 1989, around the end of socialism in Hungary, the Lake Balaton Association was reorganized.

The main target of the Association is to get involved in all the topics related to Lake Balaton. The Association is a regional organization that works on the basis of local governments and its main activities are supporting and encouraging cooperation in the area of the Balaton Priority Resort Area. The Association initiates actions in issues affecting Lake Balaton and its surroundings, and actively participates in their preparation, elaboration and monitoring of their implementation (balatoniszovetseg.hu).

Balaton Circle (Balatoni kör) was founded in 2014 by the representatives of the quality winery and gastronomy in the region. Their aim is 'to realize an association based on value protection around the lake'. Their aim is to build on the local resources and the basis of local services that will make the region attractive and liveable in every season. The target of the initiative is to promote quality products, gastronomy and the visit of the lake region outside the tourist season also (balatoni-kor.hu, n.d.).

Women for the Balaton Association (Nők a Balatonért Egyesület) was founded in 1995 and consist of 20 local groups. This network is a major NGO around the lake, it is the member of the LBDC. Their aim is to protect the environmental, natural and cultural values of Lake Balaton and develop environmentally conscious behaviour. They mainly organise cooperative programmes such as information actions and programmes, build relationships in the Lake Balaton region and in the country, and participate in cross border actions (nabe.hu, 2021).

Association of Balaton Civil Organizations (Balatoni Civil Szervezetek Szövetsége) has taken on a number of environmental and nature protection, cultural heritage protection, public order and tourism development projects over the past 10 years and has taken an active role in representing these topics. The association has 34 NGOs members. They continuously participate in the work of the LBDA with the right of consultation. The association maintains a continuous relationship with the Lake Balaton Association (Balatoni Szövetség) and the Union of Lake Balaton Bath Associations (Balatoni Fürdőegyesületek Szövetsége).

As it can be seen, many organizations are involved in the operation and development of the Lake Balaton. With the exception of ecosystem management, sectoral tasks are fragmented and there are territorial overlaps (e.g., in water management tasks and regional development). At the same time, organizations strive for cooperation. NGOs are important actors in local initiatives.

3.2 Governance of lake-related issues

This chapter presents the most significant and recent lake related issues.

Shallow water management at the Lake Balaton

The Middle-Transdanubian Water Directorate (MDTWD) performs the tasks specified in the legislation related to the protection against water damage (flood and inland water protection, water scarcity damage prevention and water quality damage prevention).

Within the framework of this, it carries out the development and maintenance of primary flood protection facilities, as well as the maintenance and development of protection equipment. MDTWD manages the water damage prevention activities of local governments and water companies, in this capacity - in case of ordered defence readiness - has the power of instruction in relation to the professional tasks of water damage prevention.

The water level of Lake Balaton was stable until the beginning of 2000s (water quantity measurement has been running since 1924). Incoming water was more than what had evaporated, hence the surplus was deflated. During the years of 2000s there were several years with lower level than planned, and it also had influence on the water quality (higher eutrophication). This resulted in several development experiments and a recent result is the continuous raising of water level by using and retaining the winter precipitation. The increased level also had impact on the development and consolidation of shore protection (that is debatable from the viewpoint of nature protection).

MDTWD, LBDC, mayors of major cities, BUNPD of the water have been thinking of the solutions since then. There were several possible solutions – including a building of new channels with incoming water that was finally rejected. Besides, two main arguments were on the stage: the easiest way is to do nothing, as this is a natural process, humans have to adapt to this situation. This solution would have been fraught with conflicts, as it would have primarily affected bath/summer tourism, which is important for the lake. Therefore, this "solution" was rejected by stakeholders.

The second option was the stock of water and parallel it with the increase of the level of the lake (with 10 centimetres). It also implies the development of a costal wall and the development and reconstruction of rainwater drainage. This solution, which has finally materialised, has brought about a number of hitherto neglected infrastructure problems. The sewage drainage of the settlements and the drainage of rainwater in the settlements were not adequate, so the settlements had to allocate new resources for this infrastructural investment, which took the money away from other development purposes.

(Additionally, the MDTWD coordinates the construction and development of defences, as well as carries out investment activities, performs water scarcity remediation in relation to state-owned water facilities, performs water quality remediation, including operational management of the activity and, if necessary and technically possible, its implementation.)

Another conflicting issue in water management is the dredging of lake bottom (mud). (The lake bottom mud can cause quality problems in the lower parts of the lake, especially in the western basin of the lake. The high level of mud is accompanied by a higher level of organic material which is good for fishes, hence good for sport fishing, causing a conflict between sport-fishing and bathing). The regular, maintenance dredging is carried out by the Middle-Water Management Directorate. Earlier, the dredged mud was deposited ashore. (There were three dedicated depositing areas.) Recently these depositing areas have been renewed – for further depositing purposes -, however, there is a strong resistance from the local population. The reason is – from the side of the local population – firstly the fact that deposition may be a disturbance to the landscape, and also the mooring of the ships carrying the mud may disturb the local population. Furthermore, after drying up, the mud should be transported (to agricultural areas for fertilization) by trucks, which might also cause disturbance. On the other hand, there is a need (from the local population) for regular dredging of the mud due to the good quality of water. Hence, a typical NIMBY (Not in my backyard) phenomenon can be seen here.

Governance of natural and cultural protection

The protection of cultural and natural heritage has two levels in Hungary. The national level is a better structured functioning system, while the local protection is more flexible. Local protection (designation and maintenance) belongs to the local governments (unless the heritage has a national importance). This affects the interior areas of the settlements. The exterior areas – especially the natural givens – belong to the ten national park directorates in Hungary. The primary objective of the Balaton Upland National Park Directorate is the comprehensive conservation and protection of natural assets and areas.

There are many unique built (and natural) values around the lake, but the main value of the region is the landscape, thus, the protection of that is the most relevant aspect. Besides protection it is also important to show the landscapes, living and non-living natural values for the tourists and educate people by maintaining and operating nature conservation demonstrations (https://www.bfnp.hu, n.d.).

Besides, BUNPD performs tasks related to the designation of areas as protected or Natura2000 areas, as well as the designation and establishment of sensitive natural areas, areas of high nature value, ecological network, as specified in separate legislation (Alapító okirat - Deed of fundation - Balaton Upland National Park DIrectorate, 2018).

The good natural condition and ecosystem can be seen as an **opportunity** (according to the analysis of the documents relating to the lake region), an attraction both for tourists and for people who want to live here. And it creates conflicts between the nature (the BUNDP) and the 'immigrants'. (These conflicts partly will be presented below).

Tourism

The soft, **ecotourism** – on Balaton Upperlands – is under the responsibility of BUNPD. The Directorate operates – in some case together with subcontractors – 16 eco-tourist sites, presenting the natural and cultural givens of the lake's surrounding. Besides, the BUNPD provides accommodation facilities to ecotourists as well. Environmental education is also an important mission of the Directorate.

Beyond that, there is a **fundamental contrast between environmental protection**, nature conservation and tourism, **as the aim of tourism** is to achieve the highest possible economic income and at the same time to attract as many visitors to the area as possible. While the municipalities develop the attractions, the MTÜ (Hungarian Tourism Agency) forces the development of the accommodations. At the same time, the national park directorate is interested in developing eco-tourism. LBDC is also voting in favour of (ecological based) tourism and has drawn up its 2021-27 regional development plan accordingly. At the same time, the increase in traffic has a detrimental effect on the environment and nature, whether we consider it as an example of air pollution, public service congestion, waste management or irresponsible human behaviour.

As it was mentioned above, the Lake Balaton area is the second most visited tourist destination in Hungary after Budapest. It reflects in the analysed documents as well, but not only because of its importance, but due to some discrepancies as well. The offer of touristic services is territorially concentrated, there is big difference between the potential of the riparian and the background cities. Type of touristic guests is not ideal; the solvency of tourists is relatively low.

The transformation of the Hungarian **tourism institutional system** in 2016 also affected the area of Lake Balaton. With the establishment of the Hungarian Tourism Agency, Balaton was integrated into this dominant authorized agency overseen by the Office of the Prime Minister. From BAHART – (Balaton Shipping Company)Lake Balaton Shipping) a block of shares worth HUF 1.424 billion was returned to the state, ownership rights over this organization has been transferred to Hungarian Tourism Agency (Dombi et al., 2020).

As it was mentioned beforehand, the seasonality is a defining problem of the Lake Balaton. Another challenge it causes is that it is a mass tourism that causes several conflicts between locals and tourists and local natural ecosystem and tourism. The growing tourism also attracts the need to expand tourist **accommodations** around the lake.

Accommodation developments are coordinated by the Hungarian Tourism Agency through the Kisfaludy 2030 Tourism Development Nonprofit Ltd. (Hungarian Tourism Agency, 2017) (The developments around Badacsony are coordinated by the Badacsony and Region Tourism Development Nonprofit Ltd., Helikon Castle Museum in Keszthely was also integrated by the agency – see also above).

The Kisfaludy Tourism Development Program is the largest government umbrella program ever to bring together Hungarian tourism developments, with the aim of making Hungary the tourist center of Central Europe by 2030. In addition to EU subsidies, the Kisfaludy Program also relies on significant domestic budget resources, so in addition to traditional intervention points (priority attraction development) it can also be applied in areas (e.g. accommodation development) for which EU funding is available in the 2014-2020 EU planning period. development source cannot be provided. The scheme aims to support the development of existing and operating commercial accommodation establishments, hotels and boarding houses within the category, investments with the expansion of capacity, and the creation of new commercial accommodation establishments. *kisfaludyprogram.hu*, 2021)

The planned improvement of **cycling** infrastructure can play an important role in the extension of tourism period. During spring and autumn, the lake region and its natural surroundings can attract cycling tourists (and it is also an opportunity to prolong the tourist season). Not only the cycling infrastructure around the lake that is aimed to develop. In the counties' and in cycling sectoral development plans there are newly built cycling routes planned from major cities in a 100 km zone (e.g., from Pécs, from Kaposvár, from seats of different counties). Furthermore, cycling path connection is planned between the capital (Budapest) and Lake Balaton (coordinated by ministerial commissioner responsible for cycling development in Hungary). Another important cycling road is planned which can join the "Three-river cycling" cross-border road, alongside the Drava river, UNESCO biosphere reserve since 2015, with the Balaton cycling circle. Both regions can make benefit from this connection. Besides the connection, contradiction can also be detected in the case of Somogy county. Both the north part (Lake Balaton) and the south part (Drava-river area) need financial resources for tourism development, while the middle part of the county is very much underdeveloped. Hence the financial resource allocation should be balanced by the county. For the north part, similar financial subsidies are coming from the (Veszprém) county. Besides infrastructural and energetic development, cycling road investments, port development, beach development or fishing-touristic development are financed.

The **marketing** of the lake area in the foreign markets is insufficient. A unified tourist image of Lake Balaton is missing. Settlements are usually building brands individually. In the past years both LBDC and other stakeholders (Tourism Destination Management organisation for lake Balaton) made several attempts to initiate a unified brand for the Lake, however, the MTÜ has received an EU supported project on this topic, that resulted in the change of roles (and conflicts) in branding between MTÜ and LBDC. MTÜ has higher power now in this topic. For the (international) marketing of the Lake, the event of European Capital of Culture in 2023 in Veszprém can contribute significantly. Although the city does not belong to the shoreline or to the Lake region (Balaton Highlighted Resort Area) directly, (but it belongs to the Balaton Tourist Region (the planning/programming territory of MTÜ), the document (of ECC 2023) considered the Lake Balaton area as a significant action 'arena' in the cultural programme implementation (c.f. Figure 8). This opportunity can help to extend the tourism season of the lake.

Figure 7 Cooperation levels in the Veszprém 2023 European Capital of Culture events

Source: (Baranyai et al., 2018) *page No. 6.*

A serious conflict of interests (competing for tourists and competing for development financial resources) between the north and south shores of the lake can be detected. In this respect, the establishment of the LBRA and the Hungarian Tourism Agency (MTÜ) was a good step, since as an independent body, MTÜ can treat equally the two parts in its accommodation development activities.

The new boating habits may also harm the lake ecosystem. Although the use of explosive engine is strictly regulated, electric boat mobility is increasing and can cause challenges. Due to the short season, tourism appears as a mass tourism, that also causes conflicts, especially in the case of party tourism.

Lake Balaton Development Council and Agency also have an important role in tourism. Besides the planning of regional development for the lake, that role includes soft and hard tourism development initiations and projects; currently, the organizations have a budget of 220 million HUF (in 2020) for project development. From this financial resource, 59 projects (small-scale settlement development, minor cultural events in the season) were supported. Supporting of events mainly implemented in the shoreline area were based on the suggestions of (the three) County Governments.

Lake Balaton Development Council and Agency believe that the promotion of new project ideas, the search for existing project initiatives and their development into applications are also important duties (balatonregion.hu, 2021).

The development of tourism destination management (TDM) at Lake Balaton also shows the multiplicity of actors and the mix of top-down and local level responsibility in tourism. In the middle of the 2000s – following western countries good examples – 19 tourism destination management (TDM) organisations have been established, at first on settlement levels. Later on, due to their cooperation, some TDM on micro-regional level have been established as well. (Today, there are in total 21 TDM organizations registered in Balaton. Bakony and Balaton Regional Tourism Nonprofit Ltd. connects Bakony and Lake Balaton, Somlószőlős-Zirc connects the north areas (from Sümeg to Várpalota), and Bakony and Balaton Regional Tourism Ltd. is

responsible for the southern areas (Tapolca-Balatonkenese). By the end of 2010, the Balaton TDM has been established, which covers the coordination of tourism initiations of the whole lake region. The current role of the Balaton region TDM is not strong enough (partly due to the lack of financing) (Dombi et al., 2020).

As it can be seen, around lake Balaton, there are several actors responsible for tourism, which resulted in a fragmented coordination (see Table 8).

Table 6 Typical responsibilities of the main actors at the Lake Balaton in tourism development

Name of the organisation	Responsible in tourism development
Hungarian Tourism Agency (MTÜ)	Accommodation development
	Operation of major attractions
	Operation of passenger shipping
TDM	Finance of investments, attractions
	Coordinate the tourism development on settlement or on micro-regional based
Settlements/local governments	Local infrastructural development, local attraction development
BUNPD	Ecotourism
LBDC	Supporting minor events around the lake
	In its development plan, try to create an integrated concept for tourism development
County governments	Infrastructural development (ports, beaches, cycling routes)
Ministerial Commissioner	Cycling Route investments and coordination

Urban sprawl and new residency

Both the shallow water, its good condition and the natural beauties can attract the older generation creating an opportunity for silver economy. The rich natural environment and the wetlands can be seen as targets for eco-based tourism - according to the development documents. The beautiful surroundings attract not only tourists, but also the Hungarian elite. More and more estates are being bought and invented from smaller plots around the lake. There belonging is manifested both in their investments and their temporary or permanent residence as well. They appreciate the region and the calm, nature-based environment. (On the other hand, it also poses a risk on the ecosystem, as more and more from the elite would like to invest in the region, and these investments are usually involved large occupancy.)

The growth of the built-in areas is the tradition of the region, which was influenced by the intensified tourism since the 1960s. Until the 1970s, territorial thinking was decisive determinant in the Lake Balaton Region, the main touristic infrastructure of the lake was formed during this decade, and the regional processes were controlled and managed (Mészáros, 2017).

Recently, the territory of built area is growing, and parallel with it, the vegetation cover is decreasing (see also the figure on vegetation cover and built-in areas above). The coastal strips are affected by increased environmental load due to the effect of tourism and the overuse of the riparian area. The shore of the lake is densely built-in, the built areas of riparian settlements are interconnected in several places, creating a continuous built-in lane. Many residential parks and hotels are being built around the lake, as close to the

shore as possible. Although the government is tightening land use regulation, it has little effect. This large-scale real estate development is most significant on the southern shore and in the eastern parts of the northern shore (which are easily accessible from Budapest) and at Keszthely (major city at the western shoreline). The construction atmosphere is strong, in construction cases the political decision is decisive (pushing professional aspects into the background). Real estate prices are very high around the lake. In 2020, prices on the shores of Lake Balaton are close to the ones located in downtown of Budapest (Mester, 2020; *Portfolio.hu*, 2020).

Coastal areas with high natural and landscape value are crowded. The spread of urban areas is determinant (summer houses and hotels are the most decisive). Due to the lack of an effective regulatory system, the unauthorized upload of the lake shore cannot be prevented. The **conflict between the protection of the landscape and the importance of development** (newly built environment) is a current topic. Further conflicts and challenges in the area, besides the protection of natural areas, are illegal constructions, the lack of natural shorelines and the accessibility of the shores, the increase of built areas, and the loss of local character of the built environment.

In spite of the fact that the settlements have the tool for the regulation of building process and the urban sprawl, **the pressure from the real estate developers is very strong** in the area. There are investors who are building apartments, regardless the regulation, sometimes cutting off the reeds. On the other hand, as it was mentioned, local governments have significant role in regulating spatial planning. There are differences among local governments. There are settlements where the built-in regulations are softer (taking into consideration the spatial planning regulation for the lake, especially for the shoreline), and there are local governments, who are stricter. However, sometimes there are huge conflicts. A recent one was at the south-eastern part of the lake (Balatonvilágos). An investor wanted to build a seven-story apartment building right next to the water, that was not allowed due to the local regulation. Finally, the central government – in a government order – referred to hotel development as an investment of major importance for the national economy, hence the local governments lost their right to do anything. The usually left 10-meter-wide shoreline is lost for public use. Due to the great indignation not only locally but countrywide, the central government withdraw the governing order on 22 March 2021 (Balatonvilágos – Orbán Viktor meghátrált, az úttörőtábor ügyében megjött a józan esze | Balatontipp, 2021).

3.3 Cross-sectoral and multi-level interplay

The need for managing the lake region integrated

Lake Balaton region has to face the following challenges:

- Lake Balaton region (LBRA) belongs to several overlapping administrative units;
- Fragmentation is decisive both in the management of operational matters and in territorial development;
- Territorial fragmentation appears in sectoral areas as well;
- There is overlap between sectoral tasks, multiple actors responsible for the same task (e.g. water monitoring)
- There are several types of financial resources available under different development plans, and different actors have them at their disposal.

LBDC is the actor that tries to bring together and coordinate different roles and actors, however, it lacks significant financial strength.

Lake Balaton and the LBRA overlap with multiple administrative regions. Although the lake is not located on any national border, the lake region is covered by three NUTS 2 regions (Central Transdanubia, Western Transdanubia, Southern Transdanubia), and three NUTS 3 regions (Veszprém, Somogy, Zala county). This fragmentation appears in sectorial areas as well, for example the area of Lake Balaton is divided between 3 water directorates (Central Transdanubian, Western Transdanubian, Southern Transdanubian), while forest

management is divided into two parts. Balaton-Upper National Park Directorate has the only actor with integrated role in sectoral, ecosystem management, since 2004, when the southern parts near the lake – Kis-Balaton area and the southern Ramsar and Nature 2000 areas – have been transferred from Danube-Drava National Park Directorate to BUNPD.

As mentioned before, there is a cross regional establishment, which is responsible for territorial development and regulation. Fragmentation is decisive both in the management of operational matters and in territorial development. The relation between LBRA and counties is one of ambivalent cooperation.

Despite the fact that the Lake Balaton Development Council is responsible for planning of territorial development (of the lake region), counties make their own territorial development plan, and the development resources are allocated to the counties. Lake Balaton Development Council has resources for smaller-scale developments only, thus it has minor impact on the management of territorial processes. (In 2020, it was only 220 million HUF, approx. 611k EUR). From 2021, the LBDC expects more resources as "decentralised" resource for the lake development.) On the other hand, in the past planning period (2014-2020) – based on the Territorial Operational Programmes – 20% of the counties' financial resources had to be dedicated to the development of Lake Balaton. In the case of Veszprém, due to the good applications, around 30% of the resources have been absorbed by the LBRA settlements.

As it was mentioned, since the beginning of 2000s, LBDC is the primary coordinator of the development of Lake Balaton. In practice, it performs the technical, practical and administrative tasks of establishing collaborations.

The 3 counties participate in this work on a parity basis. Each county is represented by two persons. From Somogy county, the vice-president is one of the representatives, who is from Siófok ("capital" of the Balaton). The mayor of Balatonföldvár (who is a member of the county assembly) participates in the council's meeting as well. In addition, a coordinator from (Somogy) county also participates and maintains continuous contact with the LBDC.

Coordination tasks of LBDC are focusing on three parts:

- Counties are responsible for territorial development, and it affects the Lake Balaton as well;
- On country level, Lake Balaton is recognised as a Highlighted area, hence centrally financed programmes provide development possibilities for the lake. (It meant uneven financing and development possibilities in the past, however, in the past five years, focus towards the lake has been increased);
- LBDC also cooperates with (180) local governments, collecting project ideas (for instance) for development purposes.

LBDC officially has a regular, bi-monthly meeting with its partners (see Table 3.1.1) , however, in reality, these meetings (that are online since the pandemic has started) are held on monthly based. Besides, LBDC regularly organises conferences concerning different development and sectoral topics. The LBDC organised a real interest representation, where NGOs, civil actors, central governmental representatives are invited and often participating. Hence, LBDC became the real central actor around the lake. Before 2000, there was no "Balaton development". Only settlements around the lake were developed (and had developments and development plans.) By now it has changed. Also, there is an initiative to promote lake Balaton (instead of the period when only settlements around the lake were promoted). Recently, as it was mentioned, the role of MTÜ is stronger than LBDC in region-marketing.

LBDC is monitoring continuously the economy and the tourism as well and reporting on request.

In regional development, the closest professional relationship is with Veszprém. Besides, every year, Zala County Government sends a detailed report on its developments and plans to the LBDC. Somogy does not have this kind of activity, the relationship should be slightly improved. But there is **no such thing as sitting down with the 3 counties to negotiate the planning documents**. **It would have been good** to bring one together, but there was no excessive receptivity to it.

Lechner (Science Centre[6]) has an important role to play in spatial planning (arrangement). Now a cooperation agreement between LBDC and Lechner is concretized (in March, 2021). The goal, for instance, is to include spatial planning indicators in addition to the existing indicators for regional planning monitoring. This professional relationship between the two organizations not only formalizes but also strengthens their relations in a real way.

Recently, then institution/position of the Chief Architect for Balaton has been emerged (again), and there is a discussion about it. As an interviewee expressed, it would help to integrate the settlements' development initiations and plans and treat them unified. It would be important and urgent especially on the shoreline.

Large-scale of development funds have been used in the lake region in the past few years, however, the Hungarian resource allocation system is rather centralised, thus the regional economy is strongly exposed to national and international processes. As an example, the tourism accommodation developments (financed by the MTÜ's resources under the umbrella of Kisfaludy Programme) have not been discussed with the LBDC (or other lake related organisation. On the other way round, the participation of the MTÜ at LBDC meetings was rare so far, however, finally, the MTÜ reflected on the recently planned development strategy for Lake Balaton (for 2021-27).

Besides the development activities, LBDC fulfils a mediator role as well. Previously, while professional fishing (fishery) was allowed (until 2015) on Lake Balaton, there were conflicts between professional and sport fishermen. During that time LBDC organised roundtable discussions between these actors. After the end of professional fishing, restaurants around the lake did not have the possibility to procure fishes from the lake. Together with the Balaton Association, the LBDC tried to resolve this situation as well, but the ministry has so far rejected the regional proposals for partly return professional fishing.

The coordination between different sectors are taking place at the meetings of LBDC, however, the barrier of decision-making is hampered by the fact that sectoral actors are usually under the management of sectoral ministries. Hence, the cooperation between those sectors is basically based on personal expertise cooperation.

Good practices in multilevel interplay

Multilevel interplay in water related issues

Beside the LBDC, Middle-Transdanubian Water Management Directorate (**MTWMD**) **has an important role in cross-sectoral dialogue** in the region. According to official procedure, there is no task related to water quality, it belongs to the (Veszprém county) government office. However, the MTWMD also analyses the water quality, including a water quality measurement by boat. Actually, the two measurements are connected, data are exchanged. MTWMD has also an agreement on data exchange with the Limnology Institute.

The maintenance of bank walls and reed management is also the responsibility of MTWMD. They also do reed certification every 5 years, but – concerning the interviewee of the MTWMD - 'it's not their job.' Besides, harvest of reeds is also belonging to the directorate. As a regular member of the LBDC's meeting, they are informing the participants of the meeting (about their achievement) regularly and there is a chance to meet with the economic actors of the lake. Also, they are informed about the new investments. Besides, the most important connection of the directorate is with the BUNPD. It is also a good personal and professional relationship. A similarly good connection was reported with the Balaton shipping actors. The Directorate has the most intensive connection with the Hungarian Meteorological Service and its observatory in Siófok.

Negotiations are now underway with Lechner on the costal rehabilitation of the waterfront strip. (Coastal rehabilitation plans identify whether development is allowed or not allowed.) Their goal is to keep as many wetlands as possible.

Due to the rising water level of Balaton, many infrastructural problems have occurred because of the long-standing waterfront problems. The increase of water level has costs, the coastal infrastructure needs to be developed (so that "Lake Balaton does not spill out"). At the same time, algal blooms can be traced back to

[6] Lechner is a governmental based think-tank with the focus of spatial planning.

the elevated water level (presumably, based on research data), which negatively affects tourism competitiveness (especially in the western basin).

Ecosystem management

As it was mentioned, ecosystem management is in one hand, BUNPD manages it around the lake. Its relationship with the other related institute (Limnology) is good, professional connections are based on good personal relations. The professional interests are the same.

Stakeholder mobilisation

Basically, **stakeholder mobilisation** follows the rules defined by laws. It usually means the preliminary public debate/participation of plans and programmes on all levels of spatial development. In sectoral development planning, representatives of the sectors concerned (following the official regulations) are invited. These processes are usually taking place online. Besides, personal expert discussions and public hearings (especially in local level) are also organised. Furthermore, representatives of newspapers are also invited for these meetings. Beside the compulsory channel of stakeholder mobilisation, the different "planners" have alternative strategies to involve relevant stakeholders more deeply in the development processes. Counties – before the planning stage – invite project ideas from local governments, civil organisations and micro-regional actors. In this process, 1000-2000 ideas can be collected during the preparation of a development plan for a planning period (e.g., 2014-2020, 2021-2027). Collection of project ideas is also an important task of LBDC both during the preparation of periodic strategy and after. Although, interest from settlements were not too high, around 20 settlements sent ideas out of 180 for the planning period of 2014-2020. On the other hand, sectoral actors were very active in it.

Beyond the compulsory tasks

Recently, there is internally motivated initiative by the LBDC. The southwestern part of the lake, farther from the shoreline (Kis-Balaton-Nagyberek-Marcali north) is socio-economically and culturally an inner periphery of the wider lake region. The Social Science Research Team (SSRT) of LBDC aimed to research and suggest new development ideas for catching-up this area with a cooperation of for-profit and non-profit research and social organisations. To do so, as a first step, the SSRT organises field work for university students in order to reveal the most challenging issues of the area.

An important aspect – which has been emphasised several times – is the role of NGOs and civil organisations. These non-governmental organizations in the area (e.g. the Association for Women for Lake Balaton) and grassroots communities are proactively involved in the development of the area and present their proposals to the LBDC as well.

Veszprém County Government initiated a professional forum. The County Regional Development Vocational Legion has been established by out of an individual initiative by the notary of the County Government. The members of this consultative body are the local University (of Pannonia), the city of Veszprém, the LBDC, the County Government Office, the Veszprém Chamber of Commerce and Industry, and the National Chamber of Agriculture. The Government Commissioner for the Development of Western Hungary is a permanent guest.

3.4 Main trends in adaptive capacity, resilience, learning

Large lakes and their regions may be exposed to external shocks of different kinds (e.g. meteorological events, economic crisis, governance reconfigurations). Such external shocks may disturb the socio-economic activities and the very foundation of well-being. Being prepared to react to these external shocks defines the resilience of the lake region. Climate change on the long term, and the COVID19 pandemic as a very short-term are destabilising the region. Both situations show the need for adequate monitoring and adaptive tools.

Climate change

Lake Balaton is directly exposed to climate change. One of the crucial climate issues at lake Balaton is the water level which also affects the quantity. Due to the climate change, water is rarely frozen, hence

harvesting of reed is lags behind in some years, which has a negative effect on the reed, hence on the local ecosystem. That is why sustainability is important aspect of the development issues of the Lake Balaton.In agriculture sector (in lake region) – due to the uneven precipitation – have to face to flashflood, rainwater drainage problems and the challenge of irrigation at the same time. Climate change is also bringing with it the emergence of new harmful species that are also threatening wine grapes (that belong to the regional identity). Therefore, the adaptability and resilience of the actors around the lake need to be strengthened in order to successfully address the uncertainties of climate change. To do so:

- In the past years rainwater draining systems were developed (basically by the ITP programmes of the counties);
- County development strategies support renewable investments;
- Preference of low carbon transportation and electromobility are in territorial development strategies;
- Settlements developed their sewage systems (by now, all the houses in the settlements are connected to the sewage drainage and treatment system;
- The establishment of new storm storage basins is on the agenda in the development plans;
- LBDC, counties and major settlements created territorial climate strategies.

Regarding the effects of climate change, the Counties Climate Change Platform continuously examines the implementation of the countys' climate strategy, but the Hungarian system of higher education institutions is also able to provide professionally grounded proposals to the countys' economic actors.

Pandemic

The COVID 19 pandemic had and has some direct consequences on the lake region in relation to the residential dynamics triggered by lock down measures.

The real estate prices are very high around the lake. Due to the COVID-19 pandemic, domestic tourism has increased. In 2020 the real estate prices on the shores of Lake Balaton are close to the prices of real estates located in the downtown of Budapest. (Mester, 2020; *Portfolio.hu*, 2020).

A very strong new residential layer appeared, residents of Budapest moved into their cottages, becoming permanent residents of the lake. But the local system (health, infrastructure - of internet) was not prepared for this. If this remains permanent, it can trigger a favourable process (for restaurants for instance).

Besides, due to the COVID-19 pandemic the domestic tourism increased significantly during summer 2020.

Monitoring

In order to detect and analyse potential threats on ecosystems and transformation affecting the society, monitoring tools were set up to support adequate decision making. Such instruments were put in place both for monitoring environmental and socio-economic aspects of the lake region.

The Water Management Directorate operates and develops the hydrographic detection network, as part of which it carries out water body monitoring, collects and processes hydrographic data, performs the operational and development tasks of the VIZIR (Water Information System) territorial register and water management data collection system.

Besides the water quality and quantity monitoring operated by the Water Management Directorate, Limnology Institute operates two types of monitoring system. In connection with basic monitoring, the spatial-temporal dynamics of groups of organisms (e.g., algae, zooplankton, fish stock composition) and chemical components are monitored. On the other hand, topics of project-based monitoring vary and adapt to actual challenges. Recently, for example, a project is analysing the impact of urbanization on aquatic life. Another project investigates the effects of human-derived micropollutants (e.g., hormones, micropollutants) on wildlife.

Territorial monitoring

Initially, the Balaton regional monitoring activity typically served the goals of environmental and nature protection, environmental sustainability and, as a result, sustainable development. In 2002-2003, the need to extend the research of Lake Balaton to socio-economic aspects seemed to be a novel approach, despite the fact that sociographic, sociological and socio-geographical studies in Lake Balaton have a strong tradition and significant literature (see above). Around the turn of the millennium, the need for researchers and decision-makers to examine the sociological quality of the population of the Lake Balaton region explicitly appeared (Oláh, 2003). In order to get to know the sociological conditions of the region as widely as possible and to explore the deep social structure, several planned, thematically focused studies were conducted in the region in the early 2000s. After several sample projects in the second part of 2000s, based on a wide range of professional collaboration, Balaton Development Policy Monitoring and Evaluation System has been established. The purpose of this system is to get an accurate picture of how the developments in the Lake Balaton region contribute to the achievement of the region's own development goals.

The territorial monitoring analysis prepared for the LBRA, initiated by the LBDC, were initially only source maps, and only later did the topic of the analysis expand to the variable composition of the natural, environmental, economic and social indicators still used today. At the beginning, the basis of the monitoring system was 23 economic, 21 societal, 14 transport and 26 environmental indicators. Later on, 90 indicators have been defined that described the lake region. The comprehensive regional monitoring report according to the decision in force since May 2009 is prepared using the indicators adopted at that time at least once a year, and if necessary, more frequently. The range of indicators has changed several times since then due to the lack of data or changes in data structure, however the monitoring system is working and providing reports basically twice a year (Dombi et al., 2017).

4 Status quo in nutshell

Lake Balaton is a touristic attraction; due to its good water quality, this area is a popular summer bathing attraction. The shallow water, its good condition and the natural beauties can attract both new local residents and tourists as well. Although the tourism season is very short (2-3 months), the conflicts between tourists, local residents, and owners of cottages creates continuous challenges for the lake. Besides, due to the shallow water and the geographical situation, the lake is affected by climate change, over-evaporation, which is challenging water-, ecosystem-, regional development experts and local stakeholders to find a balanced solution between different interests.

The water quality of lake Balaton is good (see also Map 3); however, its ecosystem is quite vulnerable. Due to human activity, the nutrient load has started to grow since the middle of the 20th century, which contributed to (among others) algae growth. The eutrophication of the lake caused deterioration in water quality, which is one of the most important challenges for the forthcoming years.

The waterbody is vulnerable to the effects of climate change, cumulative water scarcity is the biggest danger. According to the scenarios showing the effects of climate change, after the 2030s, decreasing incoming water and increasing effects of evaporation will lead to a sharp decrease in water outflow from the lake. Effects of climate change are becoming more salient: before 2000 a water surplus from the lake was recorded every year; between 2000 and 2020, seven of the 20 years recorded a negative water balance (i.e. evaporation superior to water inflow).

The spatial structure of Lake Balaton area is determined by the duality of coastal and background settlements. The income indicators of the coastal area are higher for decades, but in background settlements the increase is more hectic and uneven. Besides, the lake has to face an aging population that has an effect on the labour market.

The increased demand for second homes and the extension of urbanised and built-up areas, especially at the shorelines, causes more and more spatial development conflicts.

Agriculture (wine grape and cereals) also plays a key role in the regional identity.

Due to the good condition of natural values, ecosystem management is an important governance issue. Taking into account governance MTWMD, BUNDP and BLI are the three main actors of ecosystem management. These three main sectoral actors are well organised. As it was mentioned, tourism plays important role in the life of Lake Balaton. However, the management of tourism is very fragmented.

The interests of tourism sector and the interests of real estate business create more and more conflicts. LBDC could be a mediator integrating and balancing the different interests. The organisation (and its satellite units) makes huge efforts to improve, coordinate and balance the interests. Beside the spatial planning efforts LBDC mediates between the different actors in several cases. However, there are actors who are ‘stronger’ and represent central governmental interests (i.e. MTÜ) and the cooperation with them is weak.

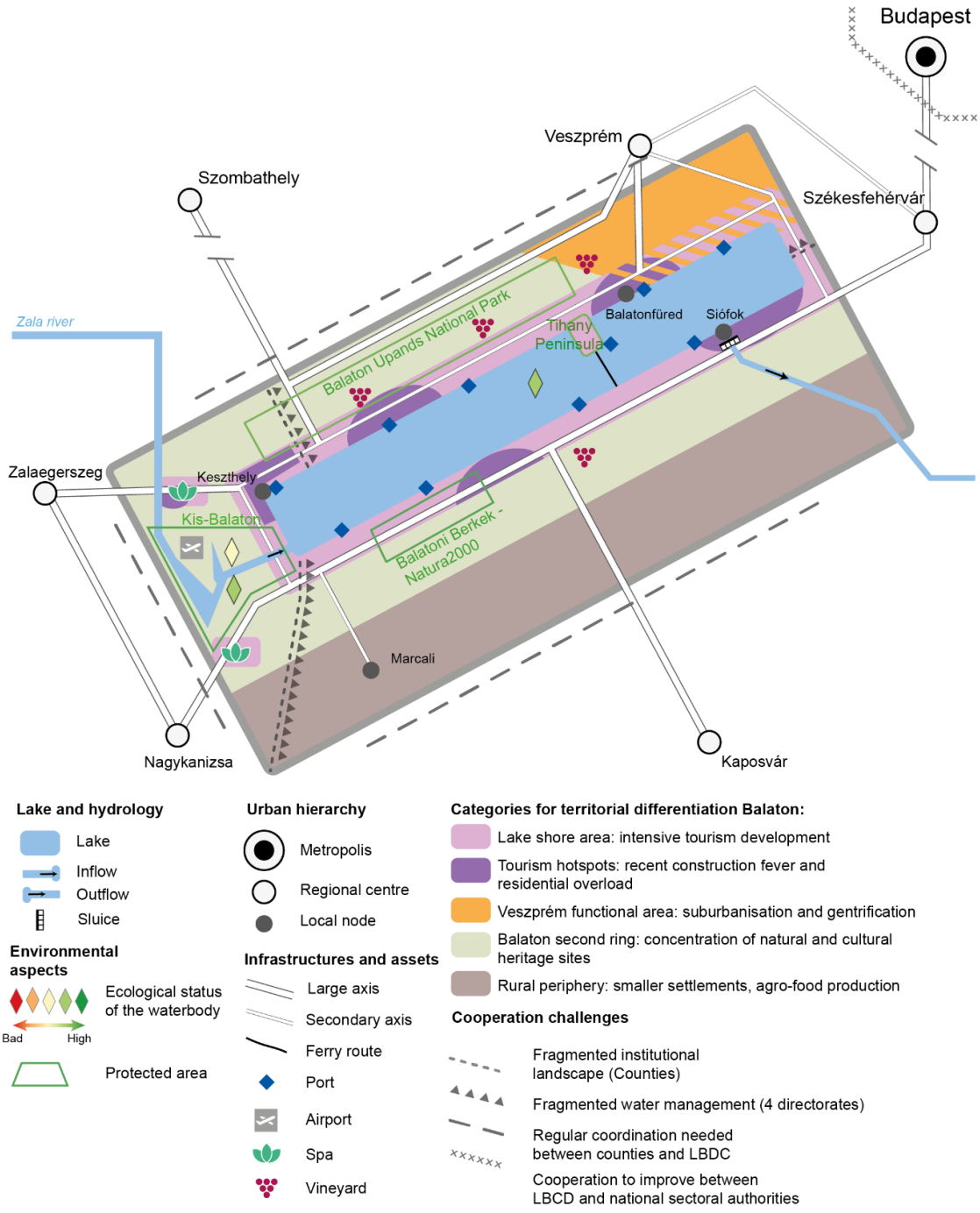
Based on the background document, regional and governance analyses in Task 2, and on the participatory process in Task 3, the following updated SWOT (see Table 7) summarises the strengths and weaknesses as well as opportunities and threats of the Lake Balaton.

Table 7: Updated SWOT analysis of the Lake Balaton region

	+	-
Internal Factors (Region)	**Strengths** - Richness of cultural and natural heritages - Good conditions for bathing, water sports and health tourism - Good access of the southern lakeshore by road and railway - The supply of tourist infrastructure is outstanding in the country - Increasing financial resources - Place-based development council and agency for the Lake since 2000 (LBDC)	**Weaknesses** - Climate vulnerability - Dense built-in structure in the shoreline - Seasonal tourism (2-3 months), hence extreme concentration of the tourism: overcrowding on the lakeshore and in spas (with high pressure on environment), while non-lakeshore areas are left out of tourism - Gaps in the rail infrastructure of the north shore - The cycle network is well developed on a network, but its quality needs to be improved - Different interests of different agents - Territorial overlaps in spatial development - Sectoral overlaps (e.g., in water quality measurement) - Uneven financial allocation - Uneven participation in the development processes - Low level financial resources of LBDC - Dominance of individual interests of settlements - Weak TDM (Tourism Destination Management) activity
External Factors (General Trends)	**Opportunities** - Wetland as a target for eco-based tourism - Silver economy - Veszprém European Capital of Culture in 2023 - Spatial and temporal distribution of tourism traffic - Improving international transportation network - Resilient water management General Trends - High interest and active networks of civil society - Increasing attention towards the Lake from the political elite and from the spatial planning - Residential trend since COVID-19 outburst can generate development of infrastructure and increase the demand hence might help 'to extend the season'	**Threats** - Vulnerable surface and underground water - Vulnerability of the tourism-based economy - Background settlements severely lagging behind without territorial policy interventions - Water level drop - Increasing interest from the elite and from the investors - High attraction of nature closeness, over-increase of residents - internal sectoral conflicts of tourism General Trends - Climate change - Decrease of resident population - Decrease of biodiversity - Overuse of resources

The following Mapshot (see Figure 8) represents the status quo, its diverse territorial patterns of different policy areas at the Balaton region. Shoreline areas are the main destination of intensive tourism: the seasonal tourist load (the population almost doubles during summertime) puts great pressure on the environment and public services of the area and many land use conflicts are based on that. The main tourist hotspots are also located mainly on the lakeshore, where a significant degree of construction fever can be observed in relation to tourism (hotels, marinas, etc.). These developments make the destinations even more attractive from a touristic point of view, but they further sharpen the contradictions between the environment and the economy. Spas (Hévíz, Zalakaros) are also important destinations for tourism and significant developments are still taking place there.

Figure 8: Mapshot of the Lake Balaton



Further away from the lakeshore, tourism has a lower, but still significant role. These areas are rich in natural and cultural values. Vineyards also play a significant role. These areas are less exposed to the negative effects of tourism and sustainable rural tourism could be developed here. In the southern edge of the Lake Balaton Region, the role of tourism is completely diminishing, and this area can be described as a rural inner periphery, with significant agriculture. This area is facing significant demographic problems (emigration, aging), but the agricultural character offers many (so far unused) opportunities for the development of the area. In contrast, in the northern corner of the region, Veszprém's attractiveness prevails (commuting, suburbanization, gentrification), while the eastern basin is strongly connected (residents of summer house and cottages) to larger centres: Budapest and the smaller but closer Székesfehérvár.

5 Participatory process: Towards integrated development

5.1 Description of the participatory process

As a preparatory phase of the participatory process, one semi-structured interview was made with the president of the Lake Balaton Development council, mayor of Balatonfüred. Furthermore, the HÉTFA Team was participating at the quarterly meeting of the Lake Balaton Development Council. The aim of the interview and the participatory observation process at the meeting was to collect more information and refine the results of regional and governance analyses, hence our knowledge about the state of integrated spatial planning and cross sectoral cooperation.

For the workshop, all the main affected stakeholders and those, who were interviewed, were invited. In the workshop, 22 participants represented the following organisations: Somogy county government; Eötvös Loránd University – Department of Regional Studies, Pannon University - Balaton Research Institute; different units of Lake Balaton Development Council and Agency; Women for Balaton Association; Hungarian Tourism Agency; Georgikon Campus and Kaposvár Campus of the Hungarian University of Agriculture and Life Sciences; ESPON Hungarian Contact Point; Lechner Knowledge Centre; Balaton Limnology Institute; representatives of Siófok and Balatonfüred municipalities; HÉTFA Research Institute.

The first round of the participatory process was an online meeting, held on the 26th of May 2021, from 10:00 am until 12:45 pm (CET). The aim of the meeting was twofold. Firstly, to present the results of Task 2, and secondly, to receive feedback and initiate discussion around some key aspects of integrated development. Firstly, a short introduction about the aim of the project and the main findings of the regional report on Lake Balaton was presented. At the end of the first part of the workshop, the Mapshot and the SWOT analyses were also presented asking feedback from participants. In the second part, 10 key themes were highlighted, those, which had emerged in the investigation in Task 2 and are related to the improvement of the integrated territorial development of the Lake Balaton region. By articulating these topics as (sometimes provocative) questions, participants were incitated to discuss them.

These 10 questions/topics were the followings:

- The regional development of Lake Balaton, coordinated by the Lake Balaton Development Council (LBDC), takes place at a high professional level. What limits the effectiveness of the implementation of regional development activities? How can it be made even more effective?
- Funding for spatial development appears to be uneven, both in time and space. Should this change and, if so, how?
- We found that, beside the integrative role of LBDC, cross-sectoral cooperation depends on informal, personal relationship. Is it a correct observation? Can other cooperation gaps be identified? If so, how would they be handled? What are the main decision-making issuesthat hinder regional development processes?
- The area of Lake Balaton is fragmented in the field of tourism development. How could fragmentation be addressed?
- In the Lake Balaton Resort Area (LBRA), developments and tourist traffic are directed to the narrow shoreline area around the lake, and within it to a few bathing sites. What are the obstacles to taking an effective step towards a more balanced territorial development?
- Water conservation activities in several cases create conflicts with lakeside holiday municipalities, making it partly difficult to maintain the lakebed. What hinders effective maintenance processes and cooperation?
- One can also observe fragmentation and overlaps related to water management. Three water organizations are responsible for the quality of the inflowing water, while water quality is monitored by two organizations. The research also revealed that communication between actors is good and ongoing at the same time. Is there a need to change this fragmentation and overlap? If so, how?

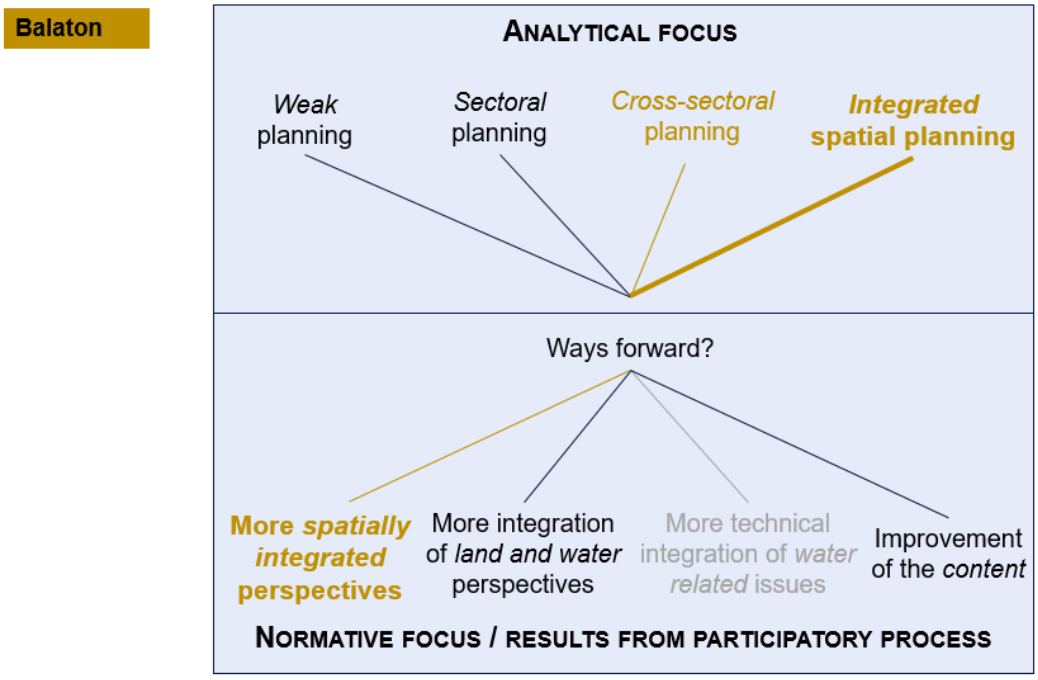
- The Lake Balaton region is more strongly affected by aging than Hungary. What are the obstacles to improving demographic trends?
- In connection with the integrated management of Lake Balaton, the development of a unified Lake Balaton brand has started. Is there a conflict in this regard that would prevent the development of a single brand in the medium to long term?
- What regional development opportunities do you see in the title of Veszprém's European Capital of Culture in 2023 and in the regional cooperation started in this?

For the second round, based on the workshop, a questionnaire was created for receiving feedback. The scope of this survey was twofold. Firstly, it serves as a debriefing for stakeholders to 'validate' the outcomes of the workshop. In this part, 9 messages and suggestions have been taken from the workshop. The aim of this compact part was to get feedback whether HÉTFA understood well the messages or is there anything else that might be important. Into the second part of the survey, the SWOT and the Mapshot were inserted, and beside, all the 10 questions that were posed in the workshop in order to get further information and allowed the possibility of further answers of the stakeholders involved (due to the productive discussion during the workshop, only 7 questions - out of the 10 - were discussed, that is why the questions were repeated).

5.2 Results of the participatory process

In the case of Lake Balaton region, both several elements of cross-sectoral planning and integrated spatial planning are there (see Figure 9), however, there are some discrepancies that hamper the proper implementation. Regarded to the cross-sectoral planning, sectoral procedures and perspectives are numerous in the region and they refer to each other to a certain extent, moreover, integration of sectoral aspects to the spatial development perspective is there. For example, water management issues are taken into consideration in the spatial plan of lake region, however, there are some sectoral overlapping and fragmentation as well, and the cooperation among sectoral actors is uneven (e.g. the involvement of HTA in regional planning is difficult).

Figure 9: Dominant recent processes and possible future ways at Lake Balaton



Regarding to the multi-level governance aspect in sectoral planning, during the preparational phase of participatory observation process (at the quarterly meeting of LBDC), the one can be realised that most of the presentations were about sectoral investments and plans from central (governmental) sectoral actors (e.g., rail-network development, motorway development, cycling-network development; the use of RRF (Recovery and Resilience Facility) in Hungary; the main priorities of major operational programmes of the EU planning period of 2021-2027). The gap of the role of LBDC was twofold. On one hand, these sectoral plans are managed by central (governmental) actors and LBDC did not have prioritised role during the public hearing/open debate phase of the planning procedure. They could act as a 'simple' stakeholder, not a prioritised one who are responsible for spatial planning around Lake Balaton. What could be seen here is the one-way communication and centralised decision-making manner of governance between the central (governmental) sectoral actors and the regional actor (of LBDC).

Furthermore, allocation of financial resources is also implemented on one-way (centralised) direction. Decentralised resource allocation - which can be used by the regional actor of LBDC for instance - is missing. Decentralised resources only available for counties and spending of these is only based on counties Territorial Operation Programmes (2021-27). The situation for municipalities is the same, the spending of decentralised resources (from central government) does not allow too big room for manoeuvre. Although, municipalities have own income sources (from local taxes), its territorial distribution is uneven, different from settlement to settlement, and in the past years the centralisation of these local taxes has increased. Besides, the Lake Balaton region basically has no revenues of its own, even for development purpose (Addition to the centralisation tendency, it also worth to mention that the creation of Balaton brand is also under responsibility of a central governmental actor (namely HTA)).

Regarding the integrated spatial planning we faced that the cooperation among actors on medium-tier (regional level) is proper and comprehensive and coordinated by LBDC. Horizontal dimension, crossing administrative borders are addressed in a systematic way (via regular meetings, with mutual participatory process in spatial and sectoral planning with medium-tier actors), however, there is a significant gap in vertical dimension (as it was mentioned above).

The gaps were also emphasised by several medium-tier actors. The most stressed issue - during the participatory process - was the improvement of the more spatially integrated perspective. LBDC has a real and important integrative role, however, in few case, sectoral relationships are based on informal, personal relationship and management is mostly sluggish.

During the investigation of Task 2, it appeared that a possible solution to these issues could be to establish a regional self-government centred on lake Balaton that could be endowed with specific competences and own financial resources. In practice, this would mean to establish Balaton region as a county. ,. This idea was raised during the participatory process and the feedback was mixed. Around half of the stakeholders agreed, and the other half disagreed that this concept would be justified nowadays. Some stakeholders are afraid of that this example would set a precedent to other cross-county border regional cooperation and development councils, thus, the current county system – which is based on 1000 years-old tradition - would be undermined. Hence - in some stakeholders' opinion - there is no need for a new territorial self-government, but there is a need for strengthened regional coordination. Concerning other opinions, the creation of a new legal entity would help the county governments. The reason is that Lake Balaton (and its surrounding) have different challenges - from the point of view of spatial development - than otherparts of related counties. Separating the part of Lake Balaton from the counties would help spatial planning in such a way that it would be easier to deal with the rest of the county in county planning, as there would be fewer divergent challenges.

Towards a more spatially integrated planning - concerning some stakeholders - there is a need for a less uneven sectoral development. It would be nice to channel the agricultural potential around the lake into the catering. Also, the agricultural funding was inadequate in the past - concerning a key stakeholder's opinion. Another relating issue was that there is no fish from Balaton at the restaurants - due to the cease of fishery in 2013.

Both the findings of inventory (Task 2) and participatory (Task 3) phases emphasised to firmly articulate the position of the chief architect of Lake Balaton, to endow her/him with wide-ranging rights (to make it really work). The chief architect, on the one hand, could coordinate the establishment of uniform building and spatial structure plans and regulations in the 180 municipalities of LBRA, and on the other hand, would help to preserve the architectural heritage of Lake Balaton.

Another socio-spatial integrational perspective appeared in the participatory phase, that referes to the territorial difference of the shoreline and background municipalities of the Lake Balaton Region (LBRA). A significant proportion of the background municipalities are disadvantaged, and spatial development should focus more on these areas. However - due to the stakeholders' opinion - this development should not focus on tourism but rather on local economic development. Although, the Lake Balaton Development Programme includes this aim, there is no financial resource allocated for that. This fact again raises the problem that, although there is continuous spatial planning for Lake Balaton Region, there are no resources directly allocated to this(these) plan(s).

Due to the fragmented and multiplayer management of water, the more technical integration of water related issue also appeared, however, it was not highlighted. Once we indicate this issue in the participatory process, some of the stakeholders agreed, however, as the coordination between the different actors are proper, stakeholders did not emphasise it as a critical issue.

5.3 Possible development paths and tools

The inventory and participatory processes have produced possible development solutions that can improve the spatially integrative development with different tools. The need for strengthening legal and administrative competences of LBDC – through e.g. the role of the chief architect for the Lake - is a key message. Besides, the strengthening of the competence, the administrative and decision-making role of the lake region has created a fundamental debate among stakeholders.

From legal point of view, there is a need for stricter regulation to prevent the construction of new buildings on the shoreline. A legislation that would unify water management (both regulation and wastewater treatment, for both the lake and inflows) could also point towards a more integrative governance.

There are also financial related suggestions that can improve the integration. The involvement of LBDC and other regional actors into EU fund planning as intermediate body, could beone solution. The establishment of an Integrated Territorial Investment (ITI) or of a Territorial Strategy (as mentioned in the Article 29 of the Common Provision Regulation on ESIF) could be another. In general, the lack of knowledge and capacities with regards to EU funds expressed by regional actors could be addressed by an adequate documentation on funding possibilities offered by the EU cohesion policy to lake regions.

Several soft instruments can also serve the integrative approach of the Lake. An ongoing one is the creation of Balaton Brand. Besides, the strengthening of tourism destination management (TDM) organisation for lake Balaton can enforce the branding attempt. Another soft instrument can be a more direct involvement of local actors, stakeholders, population into the planned key economic investments and tourist accommodation and attraction development in order to avoid further conflicts during the implementation phase. Besides, the creation of inventory of Balaton research organisation could further support integrated research efforts in the the Lake region.

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