



Inspire Policy Making with Territorial Evidence

TARGETED ANALYSIS //

Case study report

Exploration of multi-level governance around 12
European large lakes

Annex // April 2021

This Targeted Analysis is conducted within the framework of the ESPON 2020 Cooperation Programme, partly financed by the European Regional Development Fund.

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This delivery does not necessarily reflect the opinions of members of the ESPON 2020 Monitoring Committee.

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Disclaimer

This document is a interim report.

The information contained herein is subject to change and does not commit the ESPON EGTC and the countries participating in the ESPON 2020 Cooperation Programme.

The final version of the report will be published as soon as approved.

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Abbreviations

EEA	European Environmental Agency
EUSALP	EU Strategy for the Alpine Region
EUSBSR	EU Strategy for the Baltic Sea Region
GDP	Gross Domestic Product
GIS	Geographical Information System
GVA	Gross Value Added
IBK	International Lake Constance Conference
LBDCA	Lake Balaton Development Coordination Agency
NGO	Non-Governmental Organisation
NUTS	Nomenclature of Territorial Units for Statistics
R&D&I	Research & Development & Innovation
ROK-B	Spatial Development Commission Lake Constance
UNESCO	United Nations Educational, Scientific and Cultural Organization
WISE	Water Information System for Europe

1 Lake Balaton

1.1 Introduction

Lake Balaton is a freshwater lake in Hungary, the biggest lake in Central-Europe. The total surface of the tectonic origin lake is 600 km² (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 5181 km².

The Lake Balaton Resort Area (LBRA) is a local cooperation area around the lake, which consists of 180 settlements, of which 18 have city status. Since 2000, the LBRA has had independent spatial planning plan and with its own regulation. The Lake Balaton Development Council (LBDC) operates a local monitoring system for the LBRA.

The total territory of the LBRA has a permanent population of 271 271 inh. in 2017, (average population density 69,8 inh/km²). Between 2011 and 2017 the population increased in several settlements around the lake, as well as in the area North of Lake Balaton and in the catchment area of Veszprém and Keszthely. The migration balance of the area is positive based on dynamic migration of retirees. In parallel the young population in active age is declining and there has been a significant emigration among young people with higher education degree in recent years. The natural balance has been negative for decades in relation to the large-scale aging of the population. Within Hungary, the proportion of the elderly people is particularly high in the Lake Balaton area. According to the current demographic forecast, further population decline is expected until 2062. Around the lake there are three settlements which population is higher than 10.000 inhabitants (Keszthely, Balatonfüred, Siófok), the others are mainly smaller settlements, which temporary population has a strong fluctuation between the season and the off-season period. Larger cities (Veszprém (pop: 59.738), Nagykanizsa (pop: 47.349)) do not belong to the LBRA region and fall outside the area of coordinated territorial development (i.e outside the scope of the Lake Balaton Development law). Finally, lake Balaton is the most popular summer resort in Hungary, 70-80 thousand summer houses can be found around the lake. Due to this, during the summer the population of the lake shore settlements can be doubled, the number of tourists increase this figure further.

Lake Balaton being a popular tourism destination, accommodation services, hospitality and gastronomy are LBRA's core economic basis. 25% of enterprises operate in these sectors (national average less than 5%). However, not all settlement benefit from the tourism revenues. The income per capita is higher in the riparian area than in the background settlements. However, in the recent years, increase in income per capita is more dynamic in background settlements. The economic performance of the region recently improved: the economic indicators of enterprises have shown an upward trend since 2012, with the exception of the stagnation in 2013. Besides, there is also a significant territorial difference between the counties. The costal settlements of Veszprém county are in the most favourable situation for decades, here the economic growth of the background settlements is also more dynamic. The situation of the background settlements in Zala county is the least favourable around the lake. The structure of spatial inequality has been stable for decades.

The Lake Balaton and the LBRA overlap with multiple administrative regions: three NUTS 2 region (Central Transdanubia, Western Transdanubia, Southern Transdanubia), and three NUTS 3 region (Veszprém, Somogy, Zala county). This fragmentation appears in sectorial areas also, for example the area of Lake Balaton is divided between 3 water directorate (Central Transdanubian, Western Transdanubian, Southern Transdanubian). As mentioned before, there is a cross regional establishment (LBRA), which is responsible for territorial development and regulation. However, Balaton Touristic region does not completely cover LBRA.

Fragmentation is decisive both in the management of operational matters and in territorial development also. Despite the fact that the Lake Balaton Development Council (for LBRA) is responsible for territorial development, counties make their own territorial development plan, and the resources for regional development are allocated to the counties. Lake Balaton Development Council (LBDC - which is responsible for territorial development) has resources for smaller-scale projects only, thus it has minor impact on the management of territorial processes.

1.2 Synthesis of the lake-related multi-level governance framework

Around lake Balaton, five relevant lake-related issues were identified: Preservation and protection of the quality of water (1.2), Strategic measures for demographic attractiveness (4.1), Development and networking of the tourism industry (5.1), Protection and valorisation of cultural and natural heritage around the lake (6.1), Limiting urban-sprawl and soil-sealing (8.1).

Territorially integrated solutions are implemented on a number of topics through dedicated instruments. In the framework of the Lake Balaton Resort Area (LBRA), the Balaton Priority Area Development Programme fosters development of the region, including attractiveness measures, support to tourism, and landscape protection projects. The Regional Spatial plan for Balaton area (LBRA-SPP) provides a common framework to regulate building and minimize land use conflicts. The Balaton Uplands national Park supports the protection of the northern shore of the lake, while a dedicated river basin management plan supports water management.

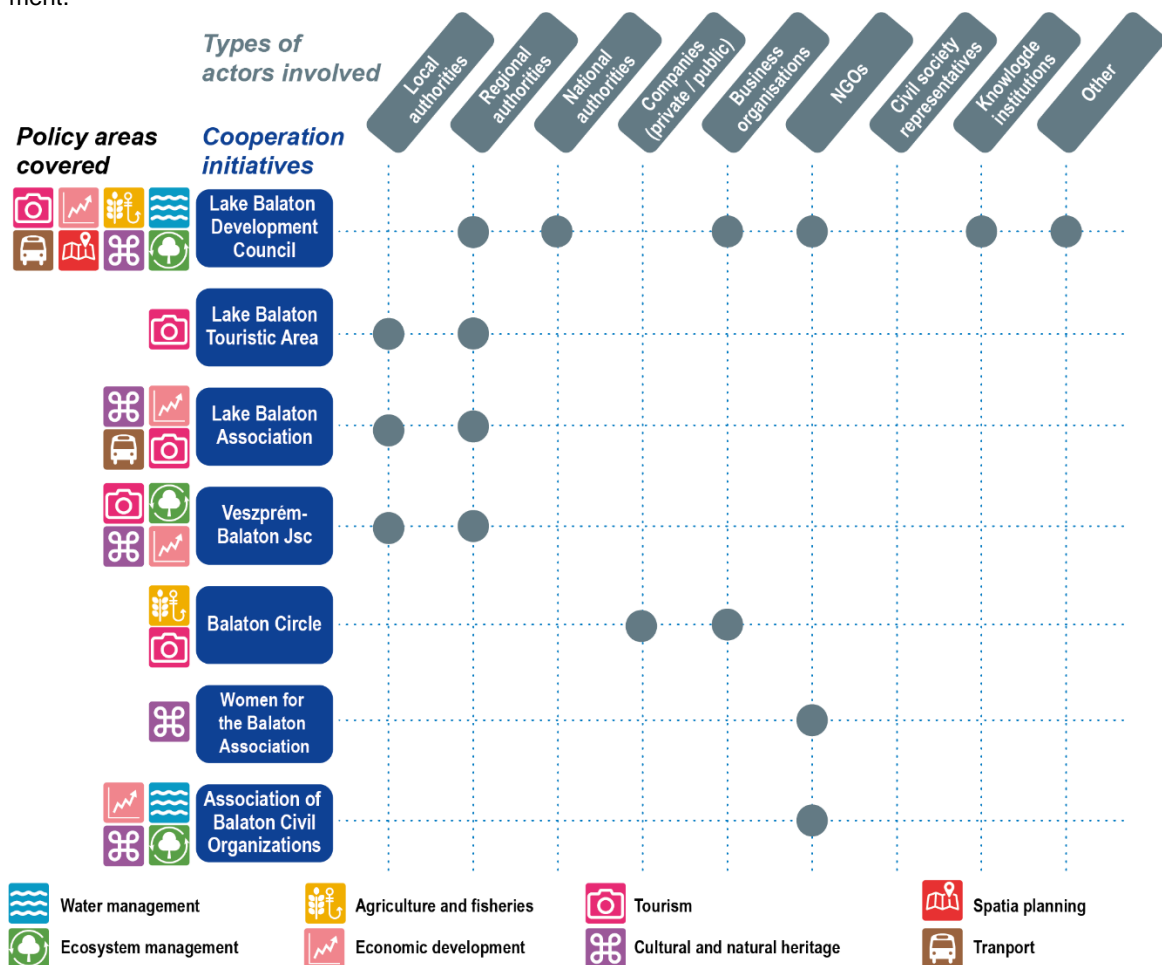


Figure 1-1 Main cooperation and institutional arrangements around Lake Balaton

Lake Balaton the cooperation landscape is one of the most developed among all large lake regions in Europe. Cooperation around the lake dates back to the early 20th century (e.g. Lake Balaton Association was founded in 1904). The multilevel governance framework is strongly relying on the involvement of local and regional authorities and on the NGO sector. Seven lake-related cooperation initiatives were identified around the lake.

- The major cooperation framework is the **Lake Balaton development Council (LBDC)**, a transversal body active in all lake-related policy areas. It elaborates and implements strategic planning documents, soft cooperation incentives, thematic programmes, and competitions. It allows for exchanges between local and regional organisations, NGOs and business interests.

- Besides, the Balaton region stands out for its dense landscape of NGOs and civil society organisations. Two Balaton NGOs alliances were identified in this regard: “Women for the Balaton Association” and “Association of Balaton Civil Organizations”.
- The selection of Veszprém as European Capital of Culture 2023 led to the foundation of a dedicated joint stock company dedicated to the organisation of the year-round series of events: Veszprém-Balaton Jsc. It involves local and regional authorities, as well as other micro-level organisations.

1.3 Lake-related issues

Preservation and protection of the quality of water (1.2)

Description of the issue

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 1950s which contributed to (among others) algae bloom. The eutrophication of the lake caused deterioration in water quality, which is one of the most important challenges for the forthcoming years.

The territory of built area is growing. The coastal strips are affected by increased environmental load due to the effect of tourism and the overuse of the riparian area. This has an effect on long-term water quality.

Besides, the water base area is vulnerable to the effects of climate change, cumulative water scarcity is the biggest danger. According to the scenarios, which examine the effects of climate change, after the 2030s (due to a drastic decrease in the incoming water's amount and the growing number of years of evaporation) the amount of water flowing through the lake will decline. This will influence hydrology of the lake.

Source: (Dombi, Könczölné Egerszegi, et al., 2020; Lake Balaton Resort Area Development Program III. Strategic Program 2021-2027 / Balaton Kiemelt Térség Fejlesztési Programja III. Kötet STRATÉGIAI PROGRAM 2021 - 2027, 2020; Oláh, 2013)

How it is tackled in the lake region

The quality of the lake is being monitored, analysed, and measured constantly, the monitoring system provides feedback mainly to allow for secured bathing activities. CER Balaton Limnological Institute provides analyses of the ecological, biological and water quality aspects of the lake.

From the beginning of the 1980s, significant investments have been made to improve water quality (construction of Kis-Balaton reservoir, removing phosphorus from treated sewage-water, reducing the use of agricultural chemical fertilizers, dredging and reduction of internal load).

Water quality started to improve from the second half of the 1990s and during the last 15 years the measured levels were below the hypertrophic limits. In 2019, there was an outstanding algal bloom in the western basin of the Lake. The reason behind is probably due to the long, extremely hot and dry weather, as well as the large amount of nutrients (P, N), that was delivered by flash floods.

Water quality management is well organized. The Central-Transdanubian Water Directorate is responsible for the water body of the Lake Balaton. Veszprém County Government Office is responsible for water quality. Lake Balaton has a water basin management plan.

Other aspects of environmental protection are more divided. The Balaton Upland National Park is responsible for environmental protection around the lake, but the three counties have their own environmental protection department and settlements also have specific responsibilities. Regulation of lake shore areas is in local settlement level (other organisations has the right to comment), a common lake shore regulation is now under preparation.

Source: (Dombi, Könczölné Egerszegi, et al., 2020; Lake Balaton Resort Area Development Program III. Strategic Program 2021-2027 / Balaton Kiemelt Térség Fejlesztési Programja III. Kötet STRATÉGIAI PROGRAM 2021 - 2027, 2020; Oláh, 2013)

Strategic measures for demographic attractiveness (4.1)

Description of the issue

The demographic tendency of the area is negative. In the territory of the Lake Balaton Resort Area (LBRA), the balance of births and deaths has been negative for decades, ageing of the population is determinant. The proportion of the elderly people is particularly high in the Lake Balaton area (compared to other regions of Hungary). In 2016 and 2017, the migration balance of the area was highly positive in terms of the resident population due to in-migration of elderly people.

The population-retaining power of the area is deteriorating, skilled young people are migrating out of the area. According to the demographic forecast (taking into account the current situation), further population decline is expected by 2062.

Due to the strong effect of tourism, the annual fluctuations in population is significant, which results in conflicts between the second-home owners and the local population and significantly weighs in on the utilization of public utility infrastructure.

Large-scale development funds were used in the lake region. But the Hungarian resource allocation system is rather centralized, thus the LBRA does not have its own resources which concentrated at the regional level.

Source: (Dombi, Könczölné Egerszegi, et al., 2020; Lake Balaton Resort Area Development Program III. Strategic Program 2021-2027 / Balaton Kiemelt Térség Fejlesztési Programja III. Kötet STRATÉGIAI PROGRAM 2021 - 2027, 2020; Oláh, 2013)

How it is tackled in the lake region

The ageing of the population is a general tendency which affects Hungary (and almost entire Europe). Countering ageing implies to make the lake region more attractive for young people. These negative effects are managed in two levels, there are national incentives and regional strategic steps.

In Hungary, pro-birth policies are implemented at national level through homemaking support, tax discount and preferential credit are available (not lake-specific approach).

The current Balaton Priority Area Development (BPADP) Program (2021-2027) (accepted by Lake Balaton Development Council) identifies this goal among its priorities. The development of regional population sustainability is a strategic priority. Main actions to be taken: housing, homemaking programs (rental housing program, supporting the development of new building plots, discounted sale of abandoned real estate, plots, houses), education and scholarships system, employment programs, career models, social upgrade, community development of and community spaces, strengthening of regional identity. Some economic priorities aim also to keep young people in the region.

Besides that, the above-mentioned programme also support improvement of infrastructure and service quality for the special needs of the ageing society, such as the development of health and elderly care services in view of developing a regional silver economy.

Previous strategies deal with the regional population sustainability, but until nowadays significant results and impacts have not been achieved. At national level, the demographic trends are also changing rather slowly.

Source: (Dombi, Könczölné Egerszegi, et al., 2020; Lake Balaton Resort Area Development Program III. Strategic Program 2021-2027 / Balaton Kiemelt Térség Fejlesztési Programja III. Kötet STRATÉGIAI PROGRAM 2021 - 2027, 2020; Oláh, 2013)

Development and networking of the tourism industry (5.1)

Description of the issue

The Lake Balaton is a popular bathing attraction. The Northern shore of the lake is an internationally recognized wine region, based on the historical tradition of local wine culture. The quality gastronomy and destination management is growing.

The Lake Balaton area is the second most visited tourist destination in Hungary after Budapest. The offer of touristic services is territorially concentrated in the riparian area as opposed to background cities. Social status of tourists from domestic origin is relatively low.

The Lake Balaton is a significant territory of Hungarian tourism. In 2018, 25% of domestic guest nights and 12.8% of foreign guest nights in Hungary were registered in LBRA, but the proportion of foreign guests has shown a steadily decreasing trend, from 2001 their rate has halved within the total number of guests.

Lake Balaton has weak position in the European touristic sector, the proportion of foreign guests has shown a steadily decreasing trend. The marketing of the lake area in the foreign markets is insufficient. The tourist image of Lake Balaton is missing.

The Hungarian touristic resource allocation system is rather centralized; thus, the regional economy is strongly exposed to national processes. The touristic sector is exposed to the seasonality.

Source: (Dombi, Könczölné Egerszegi, et al., 2020; Lake Balaton Resort Area Development Program III. Strategic Program 2021-2027 / Balaton Kiemelt Térség Fejlesztési Programja III. Kötet STRATÉGIAI PROGRAM 2021 - 2027, 2020; Oláh, 2013)

How it is tackled in the lake region

Tourism is the most important economic sector around the lake, the quality of tourism sector has been improved during the last two decades. Several stakeholders and actors are involved in the development aspects of tourism

around the lake. In the most popular month of 2020, the number of domestic guests fell by 12%, and the number of guest nights decreased by 18%, while the number of nights spent by foreign guests fell by 75% (compare to the same time of the previous years) due to the COVID-19 pandemic (Veres, 2020).

The BPADP, which is the official development strategy of the Lake Balaton Resort Area (accepted by Lake Balaton Development Council), designated tourism as a strategic goal. The aim is to increase tourism revenues, while allowing for a more balanced use of capacity throughout the year based on the coordinated development of tourism products and services. The programme highlights the need to take into account sustainability aspects of tourism development. Main actions to be taken are the renewal of the tourism management system of the region, attraction development, development of accommodation and services. In parallel, there is an effort to prolong the official season period in the summer, increasing the number and the importance of spring and autumn program offerings. So far the lack of complex tourist services narrows the tourist season.

From 2016 a new touristic region was created, the Lake Balaton Touristic area, which does not overlap the LBRA. Lake Balaton touristic area is a creation of the Hungarian tourism agency which is the national tourism governmental organisation.

Source: (Dombi, Könczölné Egerszegi, et al., 2020; Lake Balaton Resort Area Development Program III. Strategic Program 2021-2027 / Balaton Kiemelt Térség Fejlesztési Programja III. Kötet STRATÉGIAI PROGRAM 2021 - 2027, 2020; Oláh, 2013)

Protection and valorisation of cultural and natural heritage around the lake (6.1)

Description of the issue

Lake Balaton is the largest freshwater lake in Central Europe. Together with the Kis-Balaton area, they are part of Hungary's valued landscape. The natural and built environment has a unique character. Kis-Balaton area is protected by the Ramsar Convention, which provides international protection to the wetland.

The Balaton Uplands National Park is the main institutional actor of environmental protection. The conflicts between the protection of the landscape character and the importance of development (newly built environment) are current topics.

Main conflicts and challenges in the area are: the protection of natural areas, illegal constructions, the lack of natural shorelines and the accessibility of the shores, , and the loss of local character of the built environment.

Source: (Dombi, Könczölné Egerszegi, et al., 2020; Lake Balaton Resort Area Development Program III. Strategic Program 2021-2027 / Balaton Kiemelt Térség Fejlesztési Programja III. Kötet STRATÉGIAI PROGRAM 2021 - 2027, 2020; Oláh, 2013)

How it is tackled in the lake region

Around Balaton, landscape protection is the major concept guiding the protection of natural and cultural heritage. In Hungary, the protection of cultural and natural heritage is implemented at two levels. The national level is a provides a well-structured functioning system, while the local protection provides a more flexible implementation framework. Overall the Hungarian system of natural and cultural protection is underfunded. Therefore, the protection is formally granted, but preservation is not actually effective.

- Balaton Uplands National Park Directorate is the most important actor of the protection of natural environment around the lake. It focuses on the northern shore of the Lake Balaton.
- The LBRA has its own territorial development plan (2000. CXII. Act; 2018. CXXXIX. Act) of legal value, which provides protection regulation in view of preventing excessive construction and the fundamental transformation of the landscape character.
- At a local level protection of heritage is also promoted through soft tools. In 2013 the Balaton-Upland Architectural Guidebook was published, which aims to identify the main factors and features of the landscape character, help the creation of buildings that fit into the landscape and protect the built landscape environment. Its application is not mandatory, but this guide has been used in several places.
- The BPADP define climate protection, nature, landscape and biodiversity protection as a priority. Most relevant targets are the protection of natural environment, protected natural areas, preservation of landscape values, effective protection of natural and urban green spaces, landscape protection.

Source: (Dombi, Könczölné Egerszegi, et al., 2020; Lake Balaton Resort Area Development Program III. Strategic Program 2021-2027 / Balaton Kiemelt Térség Fejlesztési Programja III. Kötet STRATÉGIAI PROGRAM 2021 - 2027, 2020; Oláh, 2013)

Limiting urban-sprawl and soil-sealing (8.1)

Description of the issue

The shore of the lake is densely built. The built area of riparian settlements connects with each other in several places, creating a continuous built-in lane and restraining continuity of green corridors. The development push is strong, political decision is determinant in construction cases (pushing ecological aspects into the background).

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 public system, the unauthorized overload of the lake shores cannot be prevented.

This large-scale real estate development is the most significant on the Southern shore and in the Eastern parts of the Northern shore (which are easily accessible from Budapest).

The real estate prices are very high around the lake. Due to the COVID-19 pandemic the 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 downtown of Budapest. (Mester, 2020; Portfolio.hu, 2020)

Source: (Dombi, Könczölné Egerszegi, et al., 2020; Lake Balaton Resort Area Development Program III. Strategic Program 2021-2027 / Balaton Kiemelt Térség Fejlesztési Programja III. Kötet STRATÉGIAI PROGRAM 2021 - 2027, 2020; Oláh, 2013)

How it is tackled in the lake region

The system of the Hungarian spatial planning is a well-structured clear system. The Hungarian National Spatial Planning Plan (OTrT) defines the main land use units and major infrastructure elements, which are detailed in the county plans. Due to this, Lake Balaton is a designated priority area, the LBRA has an own regional spatial plan regulated by the law (LBRA-SPP). The direct building regulation is under ordinance of local municipalities, which complies with higher-level plans.

Counties and LBRA are involved in territorial planning. LBRA-SPP's main aim is to coordinate the land use processes for the balanced territorial development of the region. This spatial plan is also important in the protection of the quality of the landscape, the natural and urban environment. The growth of the built-up areas was influenced by the intensified tourism since the 1960s. Until 1968, the territorial thinking in Lake Balaton Region was determinant. During this decade the main touristic infrastructure of the lake was formed, the regional development was well managed. (Mészáros, 2017)

In 1968, the mandate of the lead management unit was terminated, and there was no authority, which could supervise the enforcement of the landscape protection and land use criteria of the regional plan was in force. This resulted in an intensive suburban sprawl and the intense construction fewer in peripheral areas of settlements. The following new regional plan was prepared in the 1980s with a triple aim: regulating construction, minimizing conflicts between usage, and rehabilitating the lake. The LBRA-SPP (prepared by the Lechner Knowledge Center the Prime Minister's Office, with the involvement of LBDC) determine the framework of the building regulation.

Municipalities prepare their own town planning documents, and the district offices (deconcentrated public office) are the building authorities (such as building permits). Local Municipalities have the possibility to give a point of view in cityscape issues.

The pressure of real estate developers has increased during the previous years. A lot of residential parks and hotels are built around the lake as close as possible to the shore. Since the building authority was moved from municipalities to the district offices, the capacity of settlements to develop their building policy is much more constrained.

1.4 Cooperation initiatives around the lake

Name of cooperation initiative

Lake Balaton Development Council (Balatoni Fejlesztési Tanács)

Historical background of the cooperation

The Council was founded in 1996. The establishment and functioning of the Council provided by the Act XXI of 1996 on Territorial Development and Spatial Planning. From 2000, the region has had an independent spatial planning plan and regulations (Act CXII of 2000 - Balaton Act).

Lake Balaton Development Council "has responsibility for all areas within the Lake Balaton Resort Area (LBRA), and Lake Balaton Development Coordination Agency (LBDC) "performs professional and operative duties promoting the development of the LBRA in relation to the activities of LBDC." (balatonregion.hu, 2021)

The main aim of the council is to provide a platform for dialogue and cooperation between organizations involved in the development of the region. The Council operates a regional monitoring system in order to analyse the economic, social, environmental processes of the region and provide feedback for spatial development.

The competence area of the Council extends to the Balaton Priority Area (region), the territorial delimitation is given by the Lake Balaton Resort Area (LBRA) (180 settlements of which 18 have city rank, shared by counties). (balatonregion.hu, 2021) Lake Balaton Development Coordination Agency performs duties and projects for the LBDC.		
Actions and achievements		
The Lake Balaton Development Council is active is a transversal body active in all lake-related policy areas. It elaborates and implement strategic planning documents, soft cooperation incentives, thematic programmes, competitions and grants on different topics.		
Involved partners		
Name	Status	
Office of the Prime Minister, representative of the Ministry responsible for strategic planning of regional development, Representative of the ministers responsible for the implementation of the sectoral operational programs (NFM, NGM, Emmi, FM), Ministry of Interior; representative of the Minister leading the Prime Minister's Office	Members	
Counties: chairmen of counties included in the LBRA, representatives of counties assemblies; county government offices	Members	
National agencies or institutions: Balaton Upland National Park, Hungarian Tourism Agency (MTÜ)	Members	
Counties Chambers of commerce and Industry, County Chamber of Agriculture; Balaton Regional Touristic Destination Management Association; Balaton Fish Management Non-Profit Ltd; Balaton Shipping Company	Members	
Regional water Directorate: Central-Transdanubia Environmental and Water Directorate	Members	
CER Balaton Limnological Institute (BLI);	Members	
Lake Balaton Development Coordination Agency	Members	
NGOs	Members	
Thematic scope		
Water management	X	M: major x: minor
Ecosystem management	X	
Food production	X	
Demography, labour market and attractivity	M	
Tourism	X	
Cultural and natural heritage	X	
Transport	X	
Spatial planning	M	

Name of cooperation initiative
<i>Lake Balaton Touristic Area (Balaton Kiemelt Turisztikai Fejlesztési térség)</i>
Historical background of the cooperation
In Hungary, the tourism sector is managed by the Hungarian Tourism Agency (MTÜ), which is a centralised state organisation. 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 enhance the performance of the regional tourism sector, 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 that, the coordination of accommodation improvement is also falling within the scope of MTÜ. (mtu.gov.hu; portfolio.hu, 2020) Currently, there are not enough experiences and results to assess the effectiveness and the mechanism of operation of the new touristic area.
Actions and achievements
Action and achievements are rather limited so far as the institutional arrangement is recent. A National Tourism Development Strategy 2030 has been prepared [Legal background (1861/2016. (XII. 27.))] The institution is meant to implement accommodation improvements integrated into the structure and to finance touristic development programmes (see: Kisfaludy Turistic Development Programme (kisfaludyprogram.hu))

Involved partners		
Name	Status	
Hungarian Tourism Agency	Governing body	
174 settlements involved in the touristic area	Target area for development	
Thematic scope		
Water management		M: major x: minor
Ecosystem management		
Food production		
Demography, labour market and attractivity		
Tourism	M	
Cultural and natural heritage		
Transport		
Spatial planning		

Name of cooperation initiative		
Lake Balaton Association (Balatoni Szövetség)		
Historical background of the cooperation		
<p>The association was founded in 1904, its main assignment was to make Lake Balaton more visible and support its development. It operated until the end of the Second World War, when the new political power abolished it in 1949. In 1989, the Lake Balaton Association was reorganized.</p> <p>The Association is a regional organization that works on the basis of local governments. Main activities are the advocacy and incentive of cooperation in the area of the Lake Balaton Resort Area. The association is the member of the LBDC. It supports the work of LBDC, liaise with the local governments, and is involved in planning process as an NGO.</p>		
Actions and achievements		
<p>The association initiates actions (mainly soft actions like preservation of cultural values, establishment of awards, support of wine culture) in issues affecting Lake Balaton and its surroundings, and actively participates in their preparation, elaboration and monitoring of their implementation. (balatoniszovetseg.hu).</p> <p>It is especially active in matter related to access to services of general interest for which it implemented several projects. It also provides incentives for cooperation and distinctions (awards and honours) to project holders.</p>		
Involved partners		
Name	Status	
Mayors of Balatonfenyves, Szigliget, Keszthely	Chairman and co-chairmen	
Mayors and representatives of county assemblies	Members of the board	
County and local government (82 members)	Members	
Thematic scope		
Water management		M: major x: minor
Ecosystem management		
Food production		
Demography, labour market and attractivity	M	
Tourism	x	
Cultural and natural heritage	x	
Transport	x	
Spatial planning		

Name of cooperation initiative		
Veszprém-Balaton Jsc (European Capital of Culture - A New European Cultural and Creative Region)		

Historical background of the cooperation		
<p>In 2018, Veszprém and the Balaton Region won the title of the European Capital of Culture (ECoC) programme for 2023. Veszprém and the region submitted a joint application, which was the beginning of a new collaboration. In 2020 the preparation works started. The territorial boundaries of the collaboration are undefined. The core area of the cultural development around Veszprém, the Bakony Hills and the Northern shore of Lake Balaton, the wider cooperation covers the entire area of the lake.</p> <p>The ECoC programme is considered as 'a tool which helps fill renewed urban spaces with vibrant life, forges tighter bonds between Bakony Hills or Lake Balaton settlements and the county seat, gradually moving the region out of the summer-only tourist destination category.'(veszprembalaton2023.hu)</p> <p>At the moment the programme is in the preparation phase, the work has just started and the development of regional cooperation is ongoing. The programme year will be in 2023, but during the previous year active preparation is taking place with several programs, events and actions.</p>		
Actions and achievements		
<p>Activities of the ECoC include a wide range of projects. The preparatory works have started. A comprehensive tendering system will be set up. Many programmes and development will be implemented, with the involvement of regional actors and stakeholders.</p>		
Involved partners		
Name	Status	
Veszprém-Balaton Jsc. ("owned by bigger regional as well as important micro-regional organisations along with the most significant local self-governments" (veszprembalaton2023.hu)	regional coordinator, planner, organiser and executor of project development.	
Thematic scope		
Water management		M: major x: minor
Ecosystem management	x	
Food production		
Demography, labour market and attractivity	M	
Tourism	x	
Cultural and natural heritage	M	
Transport		
Spatial planning		

Name of cooperation initiative		
Balaton Circle (Balatoni kör)		
Historical background of the cooperation		
<p>The Balaton Circle is an NGO, which 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 protecting of local gastronomy, wine production and cultural values 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.</p> <p>The target of the initiative is to promote the quality products, the gastronomy and the visit of the lake region outside the tourist season also. (balatoni-kor.hu, 2021)</p>		
Actions and achievements		
<p>Actions of the Balaton Circle includes the organizations of programmes and event regularly, the creation of a regional wine brand based on producer's cooperation, the creation and promotion of regional products, the promotion of good quality restaurants and bars in a joint publication</p>		
Involved partners		
Name	Status	
Local Gastronomy and winery representatives	Members	
Thematic scope		
Water management		M: major x: minor
Ecosystem management		
Food production	M	

Demography, labour market and attractiveness		
Tourism	M	
Cultural and natural heritage		
Transport		
Spatial planning		

Name of cooperation initiative		
Women for the Balaton Association (Nők a Balatonért Egyesület)		
Historical background of the cooperation		
The association was founded in 1995, which consists 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 soft programmes like information actions and programmes, build relationships in the Lake Balaton region and in the country, and participate in cross border actions (nabe.hu, 2021).		
Actions and achievements		
The main activity of the association focus on organizing programs and events such as awareness-raising campaigns, thematic events, implementation of awards such as the "House of Lake Balaton of the Year", environmental actions, and the association made an environmental board game about Lake Balaton also (nabe.hu, 2021)		
Involved partners		
Name	Status	
20 local groups around the lake and Budapest (720 individual members in total)	Members	
Thematic scope		
Water management		M: major x: minor
Ecosystem management		
Food production		
Demography, labour market and attractiveness		
Tourism		
Cultural and natural heritage	M	
Transport		
Spatial planning		

Name of cooperation initiative		
Association of Balaton Civil Organizations (Balatoni Civil Szervezetek Szövetsége)		
Historical background of the cooperation		
The Association of Balaton Civil Organizations unites different NGOs around the lake. The civic activity around Lake Balaton is also outstanding on a national level, there are a lot of active NGOs.		
The association has taken on a number of environmental and nature protection, cultural heritage protection, public order and tourism development project over the past 10 years and has taken an active role in fostering this topics. The association has 34 NGOs members. They continuously participate in the work of the LBDC 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). (balatonicivil.hu, 2021)		
Actions and achievements		
The association organize conferences and conciliation meetings among opposing parties in different cases like preservation and protection of the quality of water, waste collection, landscape protection and public order. The association in partnership with the LBDCA has been representing Lake Balaton in the international Living Lakes network since 2004, due to that the association presented Lake Balaton at several international conferences, workshops and participated in international projects. (balatonicivil.hu, 2021). The scope of the association is not primarily thematic but rather focused on providing a forum for regional NGOs.		
Involved partners		

Name		Status
34 NGOs		Members
Thematic scope		
Water management	x	M: major x: minor
Ecosystem management	x	
Food production		
Demography, labour market and attractivity	x	
Tourism		
Cultural and natural heritage	x	
Transport		
Spatial planning		

2 Lake Vänern

2.1 Introduction

Vänern is the largest lake of the European Union, and the third largest lake in Europe with an area of 5,650 km². Its river basin area covers an area of 46,800 km² (i.e. more than 10% of Sweden). It is drained into the Kattegat through Göta river, which is 93 km long and includes a dam, canal locks and a hydropower station. The combined river basin area of Vänern and Göta River is 50,230 km².

The Lake borders three provinces (i.e. historical regions (Västergötland, Dalsland and Värmland) and two counties (Västra Götaland and Värmland). Coordination and multi-level interplay is influenced by the fact that the border between Värmland and Västra Götaland regions runs through Lake Vänern:

- Värmland is an inland region, for which Vänern is a link to the outside world (through freight traffic), that could become more important in years to come. The functional and political centre of Värmland (Karlstad) is located on the lake.
- Västra Götaland is a coastal region, for which Vänern is more of an inner periphery and a possible extension of its maritime (blue growth) development strategy. The functional and political centre of Västra Götaland is located at the mouth of Göta river, about one hour by road from the lake. There are potential or effective conflicts of interest between Lake Vänern and Göteborg metropolitan area: potentially, interests regarding water level regulation may be different, as high water levels around Lake Vänern could be part of the solution to protect the Gothenburg region; effectively, the city of Gothenburg has chosen a solution for a new bridge over Göta river that does not take fully into account the needs of boats navigating to and from Lake Vänern.

Compared to Värmland, Västra Götaland population is 6 times larger (1,7 million inhabitants against 280,000 for Värmland), and GDP 8 times larger (around 80 billion EUR, against just over 10 billion EUR for Värmland).

Population is growing significantly around Karlstad (north of Lake) and Vänersborg (south of lake) and to a more limited extent around the smaller towns of Kristinehamn, Lidköping and Åmål. Otherwise, population is mostly stable. In terms of economic development, the Lake Region is moderately dynamic. There is a significant number of industrial plants in the Region, e.g. pulp and paper industry, food processing and mechanical engineering. There are also extensive agricultural areas, especially in the southern half of the region. Tourism potentials could be exploited more extensively.

Other important issues are water management, maritime freight transport and tourism development.

2.2 Synthesis of the lake-related multi-level governance framework

Around lake Vänern, four relevant lake-related issues were identified: regulation of the water level (1.1), regulation of water quality (1.2), development and networking of the tourism industry (5.1), Regulation of fish catches / support to lake-based fisheries (3.2).

A core issue in relation to the lake is the regulation of water levels, which affects a number of sectors around Lake Vänern (Eklund et al., 2018) : Agriculture: farmers wish to keep fields dry; Fisheries, as some species are dependent on natural variations of water levels; Ecosystem protection, as insufficient variations of water levels lead to bush encroachment and as floods can release pollutants into the lake water; Inland waterway traffic affected by low water levels; Electricity producers wish to use water reserves to optimise national production (e.g. to meet peak energy demand); Extensive housing areas around Lake Vänern are exposed to flooding. A major flood occurred between November 2000 and June 2001, with a peak on 11th January 2001.

Identified lake-related cooperation initiatives around lake Vänern were established to contribute to the resolution of a specific issue: the Väner Council network, focusing on regulation of the water level, the Väner Water Management Association, focusing on the implementation of riverbasin management (EU Water framework directive); the Väner Business Council, focusing on maritime freight transport. The only horizontal initiative so far is the Väner cooperation, an intermunicipal association that has so far focused on tourism development, branding of Lake Vänern, strengthening of dialogue between stakeholders and of lake identity.

Lake Vänern region stands out for the strong involvement of the two regions (Värmland and Västra Götaland) and riparian municipalities in a variety of cooperation formats and for its pragmatic approach to lake-related governance.

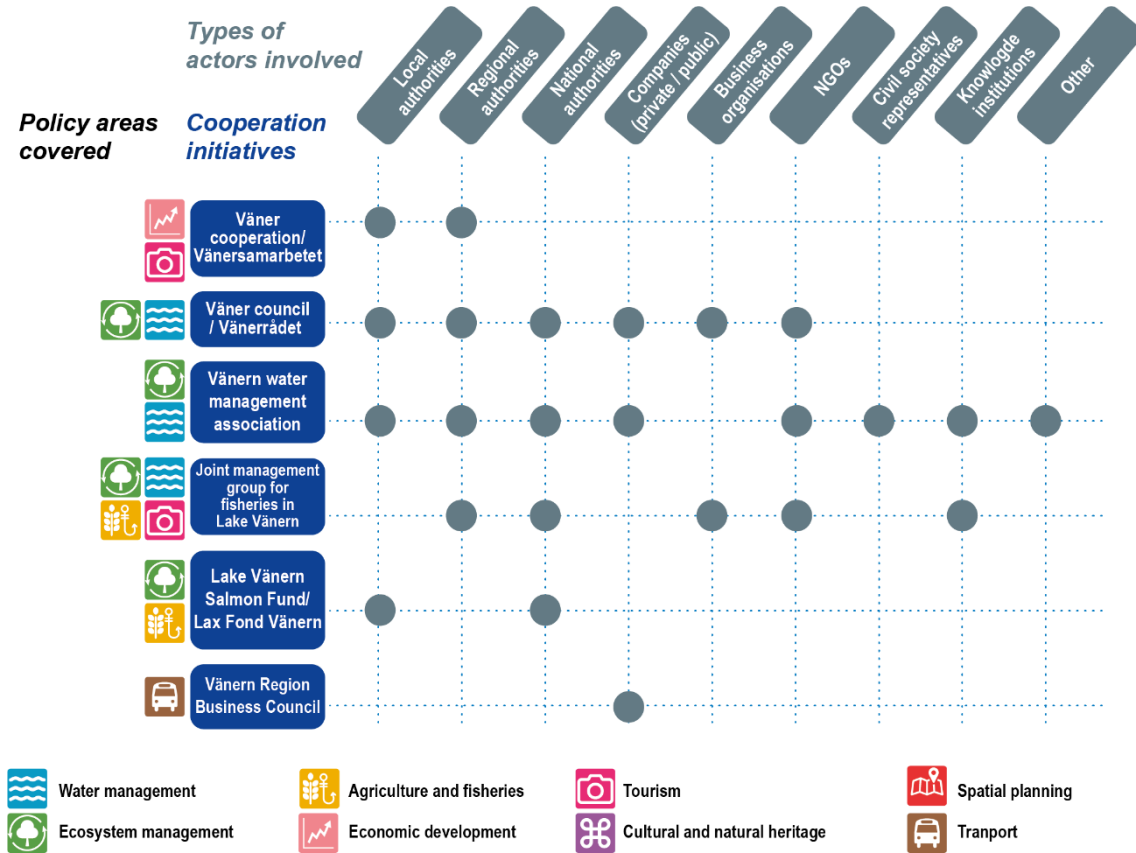


Figure 2-1 Main cooperation and institutional arrangements around Lake Vänern

2.3 Lake-related issues

Regulation of water level (1.1)

Description of the issue

Regulation of the water level of the lake. The regulation of the water level is a multi-dimensional, cross-sectoral and dynamic process. Water levels affect exposure to flooding, commercial navigation on the lake, agriculture, electricity production, wildlife protection.

Until 1937, water levels were not regulated. Water levels varied significantly and floods were frequent. However, the fauna and flora had adapted to these varying water levels. In 1937, principles for the regulation of water levels were adopted through judgment by a specialised jurisdiction (“Västerbygdens vattendomstol”). It implied that water levels would be comprised between two maximum and minimum thresholds. In practice, this proved difficult to implement¹. The major flood of 2000-2001 illustrated these limitations.

A number of sectors around Lake Vänern are affected by the regulation of water levels (Eklund et al., 2018) :

- Agriculture: farmers wish to keep fields dry
- Inland waterway traffic is affected by low water levels
- Electricity producers wish to use water reserves to optimise national production (e.g. to meet peak energy demand)

¹ https://www.riksdagen.se/sv/dokument-lagar/dokument/motion/om-andrad-reglering-av-vattenavrinningen-ur-vanern_G002121

- Extensive housing areas around Lake Vänern are exposed to flooding. A major flood occurred between November 2000 and June 2001, with a peak on 11th January 2001.

The regulation is based on foreseen precipitations. Climate change may affect the reliability of these provisions, or make it necessary to adapt measures in the face of unexpected rises or declines in water levels. The testing of a new regulation strategy in 2020 is an example of such adaptations².

How it is tackled in the lake region

The regulation of the water level is the main reason for which the Väner Council was established.

It is an informal network with no decision-making power.

Decisions on the regulation of the Water level are made by the County administrative boards of Västra Götaland and Värmland, jointly with the Vattenfall which operates the Vargön dam.

The wide range of participants in the Väner Council reflects the diversity of concerned stakeholders. While no universities or research institutions are participants in the Council, its action programme foresees scientific activities to acquire more knowledge.

The issue is approached through:

- Analyses of institutional, ecological, economic implications of a new regulation strategy
- Compilation, sharing and dissemination of evidence
- Public relation activities

Regulation of water quality

Description of the issue

Lake Vänern's water is considered of good quality, using it as drinking water and bathing in the Lake are not an issue. However, observers consider that future climate change increases the risk of contaminated drinking water. A warmer climate with rising water temperatures can lead to increased algal blooms and increased bacterial growth, which can impair both drinking and bathing water.

Drinking water sources in Lake Vänern must be protected. Of Lake Vänern's ten municipal water sources, three have water protection areas today. At another six, the municipalities have begun work. In working with the water management plan for Lake Vänern. The need to continue to focus on Lake Vänern's water quality is therefore raised. (Peilot et al., 2020)

How it is tackled in the lake region

The Vänern is targeted by a national programme for environmental monitoring that was initiated by a project run between 1999 and 2000 (Vänern water management association and Christensen, 2000). Three large lakes (Vänern, Vättern and Mälaren) were transferred from regional programmes to the national programme. Lake Vänern activities under this national programme are mainly funded by the Vänern water management association, Swedish Agency for Marine and Water Management and the county administrative boards of Värmland and Västra Götaland. In 2011, the budget was around 330,000 EUR, of which around 150,000 for monitoring of the Lake, 95,000 for monitoring of beaches and bays, 23,000 for monitoring of rivers and emissions from water treatment facilities running into the Lake (remaining for coordination, dissemination of results and evaluation) (Vänern water management association and Christensen, 2011). Data are hosted on the website of the Swedish University of Agricultural Sciences (SLU)³. Monitoring activities are carried out by the Vänern water management association and by the Swedish Agency for Marine and Water Management.⁴

A proposal for new guidelines for drinking water protection areas has been elaborated by the Swedish Agency for Marine and Water Management. They have not yet been finalised and adopted, but emphasize the need to consider risks and hazards. Drinking water provision plans are elaborated by the county administrative boards.

Vänern water management association ran a campaign on drinking water quality in 2016-2017. Two reports were produced:

² <https://www.lakevanern.se/nyheter/ny-tappningsstrategi-vanern-testas/>

³ <https://www.slu.se/institutioner/vatten-miljo/datavardskap/registersida/>

⁴ <http://extra.lansstyrelsen.se/vanern/Sv/undersokningar-resultat/Pages/index.aspx>

- How will the quality of Lake Vänern's water evolve? - Long-term trends in drinking water resources.
- Overall risk analysis for Lake Vänern as source of drinking water.

Development and networking of the tourism industry (5.1)

Description of the issue

Tourism around Lake Vänern is promoted by a number of different organisations: Guest harbour of Vänern (Gästhamnar i Vänern), Visit Värmland (association of public and private stakeholders), Dalsland Turism (owned by the six municipalities of the historical province of Dalsland), Tourism council of Western Sweden (Turistrådet Västsverige) (owned by Region Västra Götaland) and a number of local tourism development companies.

This multiplicity of actors is explained by the size of the lake and by the fact that it borders two administrative regions and three historical provinces.

The challenge is to bring these actors together, and to promote Vänern as one destination.

How it is tackled in the lake region

The "Lake Vänern Grand Tour" project is the central component of tourism-related cooperation. Its objective is to create a continuous, safe and clearly signposted cycle path around the Lake. The total length of the cycle path will be 629 km, subdivided in four parts. Local teams have been created in each of the 13 municipalities around the lake. The Swedish Transport Agency has been involved to check road safety for cyclists on the different roads. The objective of the proponents of the cycle path is to get it approved as a "national cycle path" by the Transport Agency. The application is formally submitted by the Väner Cooperation. Maintenance of the road sections used remains the responsibility of different operators/owners. The Väner Cooperation therefore needs to monitor this maintenance and report to the Transport Agency on a yearly basis.

The objective is to inaugurate the cycle path in 2021. The Väner cooperation will promote the path, targeting both national and international audiences.

The Vänern Lake is a component of the 390 km long inland waterway that connects Söderköping on the Baltic Sea to Gothenburg on the west coast. This waterway includes the Göta Canal (west of Vänern) and Trollhätte Canal (between Vänern and Göta river). It is foreseen to build new water locks along the canals, as the current ones are more than 100 years old. The objectives are to develop both freight and tourism⁵. From this perspective, Lake Vänern is a component of a wider functional area for tourism. The tourism centre of Mariestad on Lake Vänern cooperates with tourism offices of five other towns along the canal for promotion of Göta canal⁶.

Fishing tourism is another component of tourism development in Lake Vänern. It has been specifically addressed by the Lake Vänern FLAG, co-funded by the EMFF.

Regulation of fish catches / support to lake-based fisheries (3.2)

Description of the issue

Total catches by professional fishers have been relatively stable between 2001 and 2019, varying between 517 and 646 tons. However, catches of Salmon and Trout have decreased sharply:

Fish species etc.	2001	2006	2011	2012	2013	2014	2015	2016	2017	2018	2019
Salmon (Lax)	41	16	12	13	10	13	14	10	9	11	5
Trout (Öring)	13	5	2	4	4	5	4	4	2	2	3

Crayfish catches have tripled between 2011 (10t) and 2019 (31t). Vendace roe volumes vary from year to year. Fluctuations of the market price of this roe are much more important.

How it is tackled in the lake region

⁵ <https://www.trafikverket.se/nara-dig/Vastra-gotaland/vi-bygger-och-forbattrar/slussar-i-trollhatte-kanal/>

⁶ <https://www.gotakanal.se/sv/turistbyraer/>

In 2014, the county administrative boards of Västra Götaland and Värmland observed that numerous organisations and authorities were involved in fish-related issues, but that coordination between them was “far from optimal” (County administrative board for Västra Götaland, 2014). In recent years, the development of mainly salmon, trout and crayfish stocks and the changed regulation strategy of Lake Vänern's water levels has shown the lack of coordination and management of Lake Vänern fish stocks. The need for a fisheries management plan has also been highlighted by Lake Vänern water management association to allow fishing in Lake Vänern to develop in a long-term and sustainable way.

Furthermore, the dissemination of information to stakeholders and to the general public has been insufficient.

On the basis of these observations, the County administrative boards of Västra Götaland and Värmland have on their own initiative developed a plan for fisheries and the management of fish resources (County administrative board for Västra Götaland, 2014). This initiative has improved the dialogue between the county administrative boards, and constituted the starting point for “joint management” (“samförvaltning”) of fisheries and fish resources. The “Joint management” approach was initiated by the national government in June 2004. The national fishery authority tested it in six pilot areas, of which two were inland areas (Lake Vättern and river Vindelälven). “Joint management” implies that multiple authorities and stakeholders of a given fishing area are actively involved. A formal framework is elaborated for this governance arrangement by national authorities. They also contribute with capacity building measures, and ensure that local and regional actors have sufficient resources to carry out the missions assigned to them. European funds from the EMFF can be mobilised for this purpose (Swedish National Board of Fisheries, 2006). From 2013 the Lake Vänern Secretariat which coordinates the water management association also supervises the Joint Managing Group of Fisheries in charge of the regulation of fish resources was therefore enacted in 2013 as a coordinator of the Joint management group for Fisheries

A separate initiative to support salmon and trout resources in Lake Vänern has operated since 1988. The Vänern Lake Salmon Foundation was established by the County administrative boards and the 13 riparian municipalities. Its objectives are:

- to acquire and release high-quality salmon and trout smolt of Väner origin
- to fund long-term sustainable activities through fundraising and business activities
- to contribute to good access to breeding fish of Väner origin
- to contribute to the follow-up and development of the fisheries conservation activities in Lake Vänern

The Foundation has a capital of approximately 23 millions SEK (2,3 million EUR). The return on capital is mainly used to release smolt. Around 750,000 SEK (75,000 EUR) are spent every year on smolt release. The initiative is led by a board, of which the members are appointed by the county administrative boards of Västra Götaland and Värmland, the intermunicipal associations Skaraborg and Fyrbodol.

2.4 Cooperation initiatives around the lake

Name of cooperation initiative
<i>Väner cooperation (Vänersamarbetet)</i>
Historical background of the cooperation
So-called “economic association”, established to promote the interests of participating municipalities. It promotes sustainable development of the Väner region within the fields of integrated spatial development, economic development and communication. This includes the branding of the Väner region, and coordinated defense of its interests
The cooperation started as a project between 2008 and 2015. The Västra Götaland Region took the initiative to develop the Väner region as a maritime area. It joined forces with Värmland region and with the intermunicipal associations of Fyrbodol and Skaraborg. In 2009, the report “Vänern as a maritime area - evidence base for a development strategy” (Västra Götaland region et al., 2009), was prepared by mobilising 220 persons in 5 focus groups.
Actions and achievements
In the field of tourism development, the Väner cooperation has established the Lake Vänern Grand Tour. Lake Vänern Grand Tour project (2018-2021) seeks to promote the Väner region as an integrated tourism destination. This is done through online communication and signposting around the lake. The creation of a continuous cycling path is the backbone of the integrated plan. The tourism offer also includes paddling, boat trips and hiking. Measures are also taken to upgrade leisure boat harbours and enhance their visibility. The project is funded by

the Swedish Board of Agriculture, the regions of Värmland and Västra Götaland, riparian municipalities and the European agricultural fund for rural development (EAFRD).		
Väner cooperation also organises a yearly event, the Vänern week, with activities in all riparian municipalities, with focus on outdoors activities.		
Involved partners		
Name	Status	
13 municipalities of the lake	Members	
Regions: Värmland Region, Västra Götaland Region	Observers, funders	
Thematic scope		
Water management		M: major x: minor
Ecosystem management		
Food production		
Demography, labour market and attractivity	M	
Tourism	M	
Cultural and natural heritage		
Transport		
Spatial planning		

Name of cooperation initiative	
<i>Väner council / Vänerrådet</i>	
Historical background of the cooperation	
<p>The Väner council is a cooperation group, whose members have signed an agreement to promote cooperation and contribute to exchange of knowledge and experience. They also commit to assess the impact of their current or planned activities on the Väner lake, and to explore how their activities could contribute to a long-term sustainable regulation of the water in Vänern.</p> <p>The objective of the Väner council is to establish a secure water regulation strategy making it possible to preserve ecosystems as well as social and economic interests. This is a dynamic process, as many changes affect the lake: new measures to prevent landslides along Göta river, construction on new locks on Göta river, strengthening of the security of dams at Lilla Edet and Vargön along Göta river just south of the lake, protection against flooding in Gothenburg and dredging in the port of Gothenburg. In addition, climate change makes episodes with high and low water levels more frequent.</p> <p>The Väner Council includes a working group that develops an action plan, to be approved by the council. The first meeting of the Väner Council was organised on 25th April 2019. The Action Plan for 2019-2023 was approved. It includes actions in relation to water regulation, knowledge building, and communication and information.</p>	
Actions and achievements	
<p>In the field of water regulation, the network has open up a space for multi-stakeholder involvement and dialogue. In the related field of ecosystem protection, the Väner Council is taking part to an observation system of bush encroachment along the shoreline based on remote sensing data. The aim of the project is to develop tools making it possible to map changes. The project is funded by the Swedish Meteorological and Hydrological Institute and implemented in cooperation between the county governor offices, the Swedish Space Agency, the Väner Cooperation, Lindholmen Science Parc, RISE Research Institutes of Sweden, Väner Water Cooperation Federation, University of Karlstad and other. Lake Vänern is of two pilot areas, alongside with Lake Mälaren.</p>	
Involved partners	
Name	Status
Municipalities and cities: Ale, Kungälv, Lilla Edets, Trollhättan, Gothenburg, Vänersamarbetet	Signatories of agreement
Regions: Västra Götaland, Värmland	Signatories of agreement
Deconcentrated State: County Administrative Board of Västra Götaland, County Administrative Board Värmland	Signatories of agreement
National sectoral authorities: Swedish Maritime Administration, Swedish Civil Contingencies Agency (MSB), Swedish Environmental Protection Agency, Swedish Transport Administration, The Swedish Maritime Administration	Signatories of agreement

Water management associations: Göta älv water management association, Lake Vänern's water management association	Signatories of agreement	
Business organisations: Federation of Swedish Farmers (LRF), The Anglers, Swedish Landowners' Association, Vänerns Fiskareförbund, Väner region's Business Council	Signatories of agreement	
Private companies: Vattenfall (energy producer)	Signatories of agreement	
Tourist organisation: Visit Värmland	Signatories of agreement	
Thematic scope		
Water management	M	M: major x: minor
Ecosystem management	x	
Food production		
Demography, labour and market and attractiveness		
Tourism		
Cultural and natural heritage		
Transport		
Spatial planning		

Name of cooperation initiative	
<i>Vänern water management association / Vänerns vattenvårdsförbund</i>	
Historical background of the cooperation	
<p>Vänern water management association is a non-profit association whose members all in some way use, influence, exercise supervision or otherwise protect Vänern. The board consists of elected members. The association also has Chancellery ('Vänerkansliet') that is responsible for coordinating and disseminating information about Lake Vänern and answering questions about the association. It is hosted by the County Administrative Board of Västra Götaland (i.e. state representative in the region) and consists of 1 full-time employee.</p> <p>The Vänern Chancellery coordinates and informs about environmental issues for Lake Vänern and the Vänern Water Management Association. They procure and are responsible for conducting surveys and reporting on environmental monitoring in Lake Vänern.</p> <p>The office is the editor of the yearbook, a report that is published annually in connection with Lake Vänern. The report contains current reports and articles of a thematic nature that describe the environmental condition in Lake Vänern. They are also responsible for the electronic newsletter "Vänertelegrammet".</p>	
Actions and achievements	
<p>The association is primarily responsible for implementing EU water directive in the Väner water basin. In this perspective, it:</p> <ul style="list-style-type: none"> Collected opinions of Väner municipalities in response to the public consultation organised by the water authority for the Western Sea (i.e. the County administrative board for Västra Götaland) (https://www.vattenmyndigheterna.se/om-vattenmyndigheterna/vattendistrikt-i-sverige/vasterhavet.html) Implemented a project analysing effects of the new water regulation strategy of 2008 on lake ecosystems (http://extra.lansstyrelsen.se/vanern/Sv/detta-gor-vi/Pages/projekt.aspx) Set up the Water protection plan 2016-2021 (http://extra.lansstyrelsen.se/vanern/Sv/detta-gor-vi/Pages/vattenvardsplan_vanern.aspx) 	
Involved partners	
Name	Status
Municipalities and cities: Grums, Grästorps, Gullspångs, Götene, Hammarö, Karlstads, Kristinehamns, Lidköpings, Mariestads, Melleruds, Säffle, Vänersborgs, Åmåls	Members
Regions: Västra Götaland, Värmland	Members
Deconcentrated State agencies: Swedish Maritime Administration, Lake Vänern's maritime traffic area	Members
National sectoral authorities: Swedish armed forces	Members

Business organisations: Federation of Swedish Farmers in Western Sweden		Members
Private & public companies: Ahlmark Lines AB, Akzo Nobel Adhesives, BillerudKorsnäs AB, Fortum Generation AB, Götene Water and Heat Inc., Häggesleds Säteri (swine husbandry), Mellomgården, MetsäTissue AB Katrinefors Bruk (paper mill), Moelven Vänerply AB, Otterbäcken (producer of plywood), Nordic Paper Bäckhammars Bruk (paper mill), Nordic Paper Seffle AB (paper mill), Paroc Hällekis (producer of isolation and acoustic products), Spicer Nordiska Kardan AB (producer of vehicle parts – driveshafts), Stora Enso AB, Skoghalls Bruk (paper mill – producer of cartonboard), Vattenfall AB, Vänerhamn AB (Väner commercial harbours), Vänerens Laxodling AB (salmon breeding)		Members
Associations: Swedish Anglers Association / Sportfiskarna, Federation of Fishers of Väners (Vänerens Fiskareförbund)		Members
NGOs		Supporting members
Thematic scope		
Water management	M	M: major x: minor
Ecosystem management	M	
Food production		
Demography, labour market and attractivity		
Tourism		
Cultural and natural heritage		
Transport		
Spatial planning		

Name of cooperation initiative	
<i>Samförvaltning fiske i Väneren / Joint management group for fisheries in Lake Väneren</i>	
Historical background of the cooperation	
<p>Work on the management of fish resources began in 2009 with a feasibility study. During 2010-2013, project was implemented, coordinated by the County Administrative Board of Västra Götaland. Local anchoring and management have been important from the beginning. Two collaboration groups were formed early on, with members representing different interests and competencies. In 2012, these two groups were transformed into a permanent “Joint management group” with around 30 representatives. See Box on “Regulation of fish catches / support to lake-based fisheries” for details on the Joint management approach.</p> <p>Source: http://extra.lansstyrelsen.se/vanern/Sv/samforvaltning-av-fiskefragor/Pages/default.aspx</p>	
Actions and achievements	
Little is advertised on actions implemented by the joint management group. The action plan of the group includes actions in the field of regulation of fish catches, and the protection of biodiversity.	
Involved partners	
Name	Status
Water management association of Lake Väneren	Steering group member
Regions: Västra Götaland, Värmland	Steering group members
Association of fishers: Swedish association of sport fishers and protection of fish resources, Swedish association of fishing waters owners, Swedish central federation of lake fishers – Federation of Väneren lake fishers, Swedish association of fishing tourism entrepreneurs, Trollingsfisket	Steering group members
University: Swedish University of Agricultural Sciences, Karlstad University	Steering group members
National authorities (central and deconcentrated): Swedish Agency for Marine and Water Management, Värmland county administrative board, Västra Götaland county administrative board	Associated Steering group member
Thematic scope	
Water management	M M: major

Ecosystem management	X	x: minor
Food production	M	
Demography, labour market and attractivity		
Tourism	x	
Cultural and natural heritage		
Transport		
Spatial planning		

Name of cooperation initiative		
Lake Vänern Salmon Fund / Lax Fond Vänern		
Historical background of the cooperation		
<p>The initiative to support salmon and trout resources in Lake Vänern has operated since 1988. The Vänern Lake Salmon Fund was established by the County administrative boards and the 13 riparian municipalities. Its objectives are:</p> <ul style="list-style-type: none"> to acquire and release high-quality salmon and trout smolt of Väner origin to fund long-term sustainable activities through fundraising and business activities to contribute to good access to breeding fish of Väner origin to contribute to the follow-up and development of the fisheries conservation activities in Lake Vänern <p>The Fund has a capital of approximately 23 million SEK (2,3 million EUR). The return on capital is mainly used to release smolt. Around 750,000 SEK (75,000 EUR) are spent every year on smolt release. The initiative is lead by a board, of which the members are appointed by the county administrative boards of Västra Götaland and Värmland, the intermunicipal associations Skaraborg and Fyrbodalen.</p>		
Actions and achievements		
The Foundation main activity is the regular release of salmon and trout smolt.		
Involved partners		
Name	Status	
National authorities (deconcentrated): Värmland county administrative board; Västra Götaland county administrative board	Members	
Intermunicipal associations: Skaraborg, Fyrbodalen	Members	
Thematic scope		
Water management		M: major x: minor
Ecosystem management		
Food production	M	
Demography, labour market and attractivity		
Tourism		
Cultural and natural heritage		
Transport		
Spatial planning		

Name of cooperation initiative		
Vänern Region Business Council / Vänerregionens Näringslivsråd		
Historical background of the cooperation		
<p>Vänern Region Business Council (VNR) is a network for industries around Lake Vänern, established in 2003 after the conclusion of an "Agreement on Lake Vänern maritime traffic" in 2002. The association shall work for well-functioning logistics and transport to and from the region, with special regard to Vänersjöfarten and its collaboration with other modes of transport.</p>		

Vänern Region's Business Council monitors trends and protects the interests of its members in the fields of logistics and transport in the Väner region, with a strong focus on freight transport. It is a group of players in maritime transport and logistics, but also includes actors involved in other modes of transport, such as train operators and companies producing large volumes of goods to be transported such as Stora Enso, Lantmännen and BillerudKorsnäs.		
Actions and achievements		
The business council intervened in numerous public consultations.		
Involved partners		
Name	Status	
Companies: Erik Thun AB, Ahlmarks Lines AB, Stora Enso Skog AB, BillerudKorsnäs, Handelskammaren i Värmland, Valmet, Vänerhamn AB, Tågföretagen, Zinkgruvan, Sveriges Åkeriförening Värmland, Svenska Foder AB, Nordic Paper, Moelven, Lantmännen Reppe, Lantmännen Lantbruk, Vargön Alloys, OP Ship AB, Bror André AB	Members	
Thematic scope		
Water management		M: major x: minor
Ecosystem management		
Food production		
Demography, labour market and attractivity		
Tourism	M	
Cultural and natural heritage		
Transport		
Spatial planning		

3 Lake Constance

3.1 Introduction

Lake Constance is located at the border triangle between Austria, Switzerland and Germany. Liechtenstein as small state is also part of the region. Besides its cross-border character, the region is characterised by other strong natural elements such as the Rhine river, the Alpine mountains in the South and the middle mountain ranges in the North.

The settlement system is organised in a polycentric way with numerous medium-sized towns. Zurich, which is located in the South of the region, is the only bigger city. The larger urban morphological zones areas (continuously built-up areas, with a maximum spacing of 200m) are located in the Swiss part of the region (St. Gallen, Winterthur, and Zurich), complemented through the zone of Bregenz-Dornbirn. The Zurich metropolitan region in the South-Western part of the region clearly stands out with more than 1 mio. inhabitants.

Besides the Zurich metropolitan region, the St. Gallen area and the Rhine valley are densely populated. In the Southern and Southern-Eastern parts the population densities follow the valleys of the Alpine mountain range. Most of the lake-surrounding areas are densely populated, with the highest densities in some medium-sized towns (e.g. Friedrichshafen, Lindau, Bregenz, Rorschach, Konstanz/Kreuzlingen).

In the period between 2011 and 2017, the population increased in most parts of the region. Especially the Swiss parts are characterised by high growth rates. Only some municipalities in the most Northern part of the region lose population (see Figure XX in Annex).

The economy in the region is dynamic and highly innovative. The economic success is based on a series of export-oriented companies in the industrial sector. Following the overall trend, the service sector is getting more important: In Lake Constance region, services with regard to companies, banks and insurances, research, education and public administration are most developed. The Lake Constance region is economically dynamic, in particular with the corridor Friedrichshafen-Ravensburg, the Rhine valley on the Swiss and Austrian side and Liechtenstein, the regions around St. Gallen and Konstanz. Furthermore, tourism is an important factor (Scherer et al., 2016; Scherer and Gutjahr, 2012).

As already mentioned, the region includes parts of four countries with different administrative systems. From the 1960s onwards, environmental questions appeared on the political agenda of the region due to increases in shipping and boat traffic on the lake. A lack of clear institutional governance gave rise to informal bi- and multilateral cooperation formats, which ultimately became a success story. Summarising the situation in the Lake Constance region one can observe that the multiplicity and variety of cooperation formats is enormous; however, the predominantly soft character hampers the coordination of activities and implementation of specific measures (Chilla, 2020).

3.2 Synthesis of the lake-related multi-level governance framework

Around lake Constance, four relevant lake-related issues were identified: Regulation of the quality of lake water (1.2), Protection of lake-specific ecosystems (shorelines) (2.1), regional development (4.1, 4.2, 4.3), spatial planning as an integrated issue (8.1, 8.2).

Lake-related multi-level governance framework around lake Constance is characterised by a combination of a crossborder multisectoral cooperation formats (international commission for lake Constance) and a set of sectoral cooperation initiatives (International Water Protection Commission Lake Constance (IGBK), International Lake Constance Fishery Commission (IBKF), International Transport Commission for Lake Constance (ISKB)) aimed at tackling specific issues. The cooperation landscape is strongly relying on the involvement of regional authorities (Länder in Germany and Austria, Cantons in Switzerland). The federal character of all three riparian States allows for strong commitment from the regional level.

The cooperation landscape is affected by the specificity of lake and of the lake region. The cross-border character, including three countries (and the near Principality of Liechtenstein), is a particular precondition for all kinds of policy making, management and planning. The water body as such is a condominium, i.e. the national affiliation is object to a controversy. This even enlarges the challenges of political organisation. At

the same time, the region is one of the (worldwide) forerunners of cross-border cooperation in particular with regard to environmental issues.

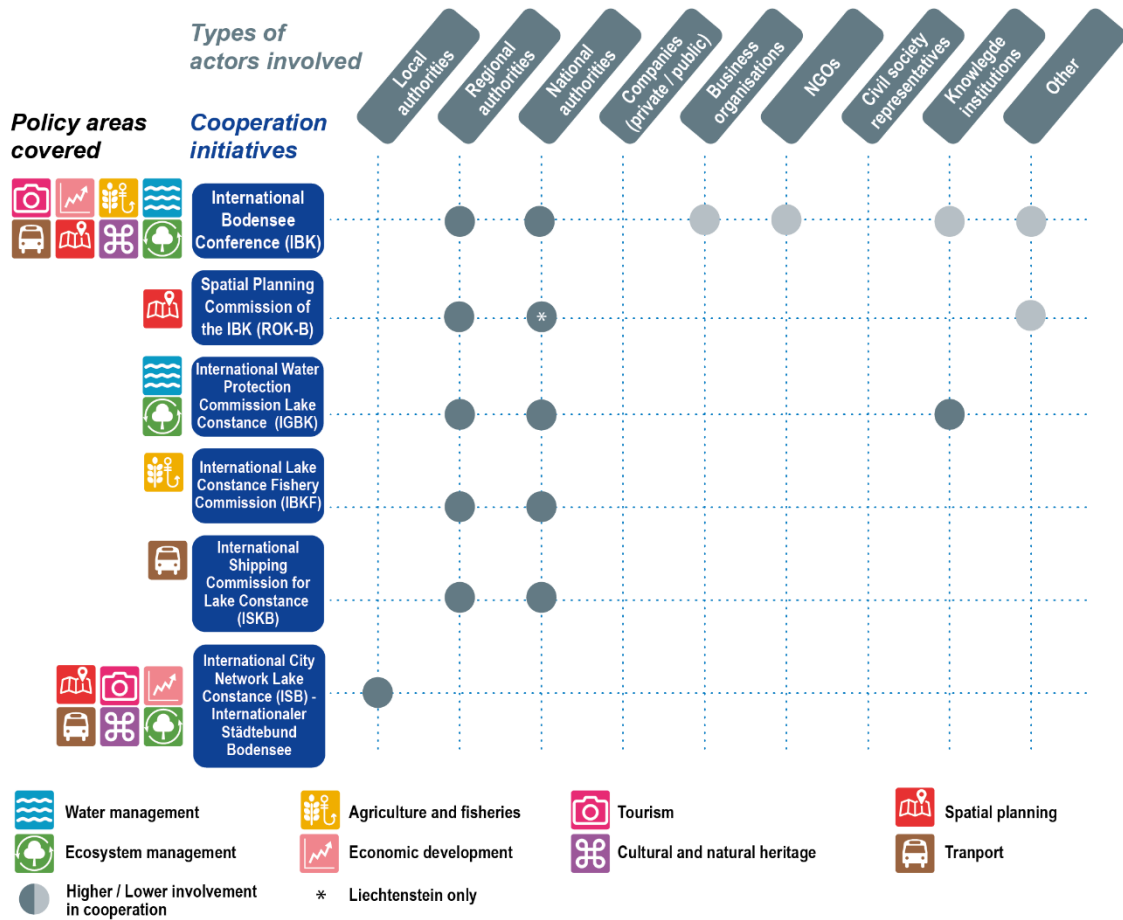


Figure 3-1 Main cooperation and institutional arrangements around Lake Constance

3.3 Lake-related issues

Regulation of the quality of lake water, limiting pollution (pollution from urban wastewater and agricultural sources) (1.2)

Description of the issue
<p>Questions of water management and quality are high on the agenda in a series of cooperation formats, including the Government Commission Alp Rhine (Int. Regierungskommission Alpenrhein IKRA) with regional representatives from AT, CH and LI or the international water protection commission (Gewässerschutzkommission für den Bodensee, IGKB) with representatives from AT, CH, DE and LI.</p> <p>Since 1959 the ‘International Water Protection Commission (‘Gewässerschutzkommission für den Bodensee, IGKB’) tackles the issue of water quality of Lake Constance as the lake supplies drinking water for around 5 mio. persons. This cooperation is based on an international agreement which was signed in 1960 (‘Übereinkommen über den Schutz des Bodensees gegen Verunreinigung’; 27. Oktober 1960). Besides the aim to maintain the drinking water quality, it targets the preservation of the ecosystem. In 1967 guidelines (‘Richtlinien’) were formulated which are constantly updated (IGKB, 2018, n.d.). Currently relevant issues are trace substances and the spread of an invasive shell (Quagga-Muschel) (LUBW, 2020).</p>
How it is tackled in the lake region
<p>Actions by IGBK</p> <ul style="list-style-type: none"> Monitoring of quality of lake water: continuous measuring results are presented as ‘green reports’ every two years, further research is part of the ‘blue reports’

- Guidelines ('Richtlinien') to limit water pollution and to preserve the ecosystem (IGKB, 2018)
- Coordinated damage absorption, e.g. to put up oil barriers in emergency cases
- Recommendations to nation states and other stakeholders
- Discussion of new usage of the lake before implementing it

IGBK has no mandate to implement measurements to limit the pollution of the lake. The recommendations and guidelines are supposed to be implemented by local, regional authorities or national authorities.

Protection of lake-specific ecosystems (shorelines) (2.1)

Description of the issue

With regard to lake-specific ecosystems, the preservation and renaturation of shorelines ('Uferandstreifen') are high on the agenda. Large parts of the shorelines are somehow modified and not anymore in a natural state. This leads to the disconnection of habitats on the shorelines (Rey et al., 2009).

The aim is to preserve shorelines that are still in a natural state and connected, and to renatuate modified parts. This aim is also formulated in the guidelines ('Richtlinien') of IGBK (IGKB, 2018) and is a topic which is part of a dialogue between the IGBK, IBK and ROK-B.

How it is tackled in the lake region

This issue is approached by different actors. Some exemplary actions are:

- Evaluation of status of shorelines, Guideline of renaturation (Rey et al., 2009) developed in the framework of IGBK
- Implementation of renaturation measures on parts of the shoreline by public authorities
- Projects towards strategies of renaturation, e.g. INTERREG project 'Renaturierung von Auenwäldern am Bodensee'

Strategic measures for demographic attractivity (4.1)

Business development policies targeting entrepreneurs and skilled labour force in the lake region (4.2)

Access to Services of General Interest in the lake region (4.3)

Description of the issue

For future development and to avoid a skills shortage, different actors within the region aim at presenting the Lake Constance region as attractive region with regard to economy, labour market, science and innovation. To maintain the economic strength regional innovation and knowledge transfer shall be fostered. This is seen as important to improve innovation capacities. The maintenance of services of general interest in a geographically balanced way causes high expenses. This leads in some parts of the region to the question which services could be maintained (IBK, 2018; Scherer et al., 2016).

How it is tackled in the lake region

The mentioned lake-related issues are part of the current Leitbild of Internationale Bodenseekonferenz (IBK). This Leitbild includes objectives for 2030 and strategic priorities for the period 2018-2022 (IBK, 2018). They are also part of a common declaration of IBK and International City Network (ISB) towards future-oriented and sustainable development of the Lake Constance region (ISB and IBK, 2019). A similar declaration has been signed between IBK and the International Conference of Parliamentarians (IPBK).

Exemplarily actions of IBK and other initiatives (IBK, 2019b) :

- Delegation trips to Brussels
- Wirtschaftskonzil 2014-2018 (Conference with stakeholders of economy, politics and civil society)
- Support of Nobel Laureate Meetings in Lindau (meeting of 30-40 nobel laureates with undergraduates once a year)
- Statistical platform: <https://www.statistik-bodensee.org/startseite.html>
- Prizes (10.000 CHF) for cultural initiatives
- Projects: Initiative towards digitalisation, Cooperation of universities (Internationale Bodenseehochschule IBH), Innovative Lake Constance region
- Financial support of the ThinkTank 'DenkRaum Bodensee'
- Labs of Internationale Bodenseehochschule (together with IBH and INTERREG programme)
- Working group towards cross-border cooperation with regard to disaster management
- Conference of emergency services

Spatial Planning as integrated issue (8.1 / 8.2)

Description of the issue

The mandates for spatial planning in the region are on regional and local level. In 2001, the Spatial Development Commission Lake Constance (Raumordnungskommission Bodensee, ROK-B) was created to complement the work of the International Lake Constance Conference (IBK). ROK-B created an arena to discuss future-oriented spatial planning options around the lake. It supported the development of a spatial monitoring as part of the Interreg project DACH+.

The region faces a high demand of land use which needs to be balanced. Metropolitan functions in the region are organised in a polycentric way and could be better connected. With regard to transport cross-border planning and the connection to the surrounding metropolitan regions are of importance for future development of the region.

How it is tackled in the lake region

Exemplary actions (IBK, 2019b) :

- Development of a joint vision of spatial development ('Zielbild Raum und Verkehr')
- Spatial monitoring (Dach+): <http://www.dachplus.org/>

3.4 Cooperation initiatives around the lake

The Lake Constance region is characterised by an enormous institutional thickness: pan-lake initiatives are accompanied by domestic and cross-border initiatives on different scales and on different perimeters. Before presenting selected examples of cooperation initiatives with a territorial focus and pan-lake, the following list gives an overview on the range of initiatives:

- Internationale Bodenseekonferenz IBK
- Raumordnungskommission Bodensee - (ROK-B) - Spatial Planning Commission of the Int. Lake Constance Conference
- Internationaler Städtebund Bodensee ISB - Int. City Network Lake Constance
- Internationale Parlamentarische Bodensee-Konferenz IPBK
- Interreg-Programm Alpenrhein-Bodensee-Hochrhein
- Internationaler Bodenseerat
- Internationale Bodenseehochschule IBH
- Lindauer Nobelpreisträgertagung
- DenkRaum Bodensee – Think Tank für die Bodenseeregion
- Vierländerregion Bodensee
- Internationale Bodensee Tourismus GmbH
- Netzwerk Arbeitsmarkt Bodensee
- Arbeitsgemeinschaft Bodensee-IHKs
- AK Handwerk und Gewerbe Bodensee
- Bodensee-Ticket
- Senioren-Plattform Bodensee
- Bodenseestiftung - Lake Constance Foundation

Name of cooperation initiative

Internationale Bodenseekonferenz IBK

Historical background of the cooperation

The intergovernmental platform was established in 1972. The early years' focus was environmental protection and water management. Founding members were Baden-Württemberg, Bavaria, Vorarlberg, St. Gallen, Schaffhausen, Thurgau.

The Conference's aim is cross-border cooperation between the governments of the countries and cantons in the Lake Constance region. In 1979 an annual conference of heads of government was introduced. In addition, the establishment of expert commissions and a permanent committee was detailed in a statute. The first two commissions founded were "Culture" and "Transport". In 1992 the "Economy", "Education, Science and Research" and "Public Relations" commissions followed. One year after, the IBK was extended to the cantons Appenzell Ausserrhoden und Appenzell Innerrhoden and the "Environmental Protection" commission was founded. In 1996, the "Health and Welfare" Commission was established. The last to become members of the IBK in 1998 were the Canton of Zurich and the Principality of Liechtenstein. In 2004 the commission was restructured and the ROK-B and IGKB were included as associated members.

In June 2008, a new mission statement was announced. It defines common development goals for the Lake Constance area and, comes with a catalogue of measures to act as a long-term guideline for cross-border cooperation in the IBK. The catalogue of measures was updated in 2013. In the following year, the IBK-Strategy "Climate Protection and Energy" was decided. In 2015, the IBK started a networking initiative across Lake Constance for digitization and innovation policy and began a strategy process in 2016 that also includes a review of the mission statement's implementation since 2008. Based on this, a new mission statement and the IBK-strategy 2018-2022 were established in 2018 (IBK, 2019a).

Actions and achievements

IBK scope of intervention has progressively extended in parallel with the deepening of territorial cooperation around the lake. The following review is based on addressed in the IBK's 'Strategy' 2018-2022.

- In the field of strategic measures for demographic attractivity, IBK aims at strengthening the perception of Lake Constance region as economic successful with attractive jobs and as region with attractive scientific institutions. This is seen as important to attract highly educated people. Cross-border coordination could be improved in this context. For instance, it implemented the following actions (IBK, 2019b): delegation trips to Brussels; Wirtschaftskonzil 2014-2018 (Conference with stakeholders of economy, politics and civil society); Support of Nobel Laureate Meetings in Lindau (meeting of 30-40 nobel laureates with undergraduates once a year); Statistical platform: <https://www.statistik-bodensee.org/startseite.html>; Prizes (10.000 CHF) for cultural initiatives.
- In the field of business development policie, IBK supports regional scientific and innovation systems as well as cluster initiatives. Exemplary actions include (IBK, 2019b): projects (Initiative towards digitalisation, Cooperation of universities (Internationale Bodenseehochschule IBH), Innovative Lake Constance region); Financial support of the ThinkTank 'DenkRaum Bodensee'; Labs of Internationale Bodenseehochschule (together with IBH and INTERREG programme).
- In the field of access to Services of General Interest in the lake region, IBK aims at improving the cross-border coordination of services to maintain the current level of services and make use of synergies. Exemplary actions include (IBK, 2019b): working group towards cross-border cooperation with regard to disaster management; organisation of a Conference of emergency services.
- In the field of management and development of transport, IBK aims at improving the conditions of all modes of transport. One step is to improve cross-border coordination. Exemplary actions include (IBK, 2019b): improvement of public transport (BODANRAIL project); Lobbying towards important transport projects
- In the field of Spatial planning, exemplary actions include: the development of a joint vision of spatial development ('Zielbild Raum und Verkehr'); Spatial monitoring (Dach+): <http://www.dachplus.org/>

Involved partners

Name	Status
Regions (Länder, Cantons, principality): Baden-Württemberg, Bavaria, Vorarlberg, Schaffhausen, Zürich, Thurgau, St. Gallen, Appenzell Ausserrhoden, Appenzell Innerrhoden	Member
Cooperation formats (ROK-B, IGKB)	Associated Member/Partnership
Cooperation formats (Internationale Parlamentarische Bodensee-Konferenz IPBK, Internationaler Städtebund-Bodensee ISB, Interreg-Programm Alpenrhein-Bodensee-Hochrhein, Internationaler Bodenseerat, Internationale Bodenseehochschule IBH, Lindauer Nobelpreisträgertagung, DenkRaum Bodensee – Think Tank für die Bodensee-region, Vierländerregion Bodensee, Internationale Bodensee Tourismus GmbH,	Partnership

Netzwerk Arbeitsmarkt Bodensee, Arbeitsgemeinschaft Bodensee-IHKs, AK Handwerk und Gewerbe Bodensee, Bodensee-Ticket, Senioren-Plattform Bodensee		
Thematic scope		
Water management	M	M: major x: minor
Ecosystem management	M	
Food production	M	
Demography, labour market and attractivity	M	
Tourism	M	
Cultural and natural heritage	M	
Transport	M	
Spatial planning	M	

Name of cooperation initiative		
<i>Raumordnungskommission Bodensee - (ROK-B) Spatial Planning Commission of the Int. Lake Constance Conference</i>		
Historical background of the cooperation		
<p>The Spatial Planning Commission was officially founded in the year 2000 and in 2004 ROK-B becomes an official associated member of the IBK. Although the two initiatives operate independently, they are closely connected to each other.</p> <p>The ROK-B's primary goal is to develop a common and limitless understanding of space. The leading topics are the internal and external development of the Lake Constance region, the improved exchange and harmonization of data bases, the cooperation between the urban centres and the topic of landscape areas or quiet zones. In addition, the overcoming of boundaries and the use of these boundaries as opportunities, as well as a common spatial concept (ROK Bodensee, 2009, 2011).</p> <p>The ROK-B is also involved in the implementation of the IBK Leitbild for the Lake Constance region with the development of the joint vision "Zielbild Raum und Verkehr". Together with the IBK "Transport" commission, ROK-B is developing a reference image to embed other projects. Furthermore, close coordination between IBK, ROK-B and IGKB is required for the development in the lake's sensitive shore area (IBK, n.d.).</p>		
Actions and achievements		
<p>ROK-Bodensee mainly intervene in spatial planning. It has developed the spatial monitoring tool (DACH+) http://www.dachplus.org/. It currently develops common objectives for the topics spatial development and transport ('Zielbild Raum und Verkehr'), jointly with IBK. These objectives are meant to integrate different sectoral perspectives.</p> <p>In the field of protection of lake-specific ecosystems (shorelines).</p>		
Involved partners		
Name	Status	
Regions (Land in Austria, Planning regions in Germany, Cantons) and principality: Regionaler Planungsverband Allgäu, Regionalverband Bodensee-Oberschwaben, Regionalverband Hochrhein-Bodensee, Regionalverband Schwarzwald-Baar-Heuberg, Vorarlberg, Appenzell Ausserrhoden, Appenzell Innerrhoden, Glarus, Graubünden, Schaffhausen, St. Gallen, Thurgau, Zürich and Liechtenstein.	Members	
IBK	Observer	
Thematic scope		
Water management		M: major x: minor
Ecosystem management	M	
Food production		
Demography, labour market and attractivity		
Tourism		

Cultural and natural heritage		
Transport		
Spatial planning	M	

Name of cooperation initiative		
<i>Internationaler Städtebund Bodensee ISB - Int. City Network Lake Constance</i>		
Historical background of the cooperation		
<p>26 cities and urbanised municipalities that are situated directly at the lake Constance, are part of the city network "Städtebund Bodensee". The city network was founded in 2009.</p> <p>Similar interests of municipalities shall be coordinated and jointly represented (also across national borders) by the Int. City Network Lake Constance. The most important tasks are the identification of common interests, their processing and the cross-border representation towards the political decision-makers in the three countries Germany, Austria and Switzerland. The International Lake Constance Region will grow closer together and a regional awareness beyond the national borders will be raised. Close cooperation in the areas of economy, ecology, tourism, transport, education and culture is essential (ISB, 2009).</p> <p>Since January 2019, there is a cooperation between the Int. City Network Lake Constance and the International Lake Constance Conference. The two initiatives work together for a sustainable and long-term development of the Lake Constance region. There is a continuous process of exchange and coordination. Common goals are jointly represented to higher political levels and external actors (ISB and IBK, 2019).</p>		
Actions and achievements		
<p>As stated in a joint ISB-IBK declaration towards future-oriented and sustainable development of the Lake Constance region (ISB and IBK, 2019) ISB promotes interests of cities around the lake through:</p> <ul style="list-style-type: none"> • Coordination of statements referring cross-border issues • Measures to improve the location marketing of the whole region • Involvement in working groups of both organisations • Mutual information and communication 		
Involved partners		
Name	Status	
26 cities (Arbon (CH), Bischofszell (CH), Bregenz (CH), Dornbirn (AT), Friedrichshafen (DE), Hagnau (DE), Hörbranz (AT), Konstanz (DE), Kreuzlingen (CH), Lindau (DE), Lochau (AT), Meckenbeuren (DE), Meersburg (DE), Neuhausen a. Rheinfall (CH), Pfullendorf (DE), Radolfzell (DE), Ravensburg (DE), Romanshorn (CH), Rorschach (CH), Schaffhausen (CH), Singen (DE), St. Gallen (CH), Stein a. Rhein (CH), Tettngang (DE), Überlingen (DE), Weingarten (DE))	Members	
IBK	Cooperation partner	
Thematic scope		
Water management		M: major x: minor
Ecosystem management	M	
Food production		
Demography, labour market and attractivity	M	
Tourism	M	
Cultural and natural heritage	M	
Transport	M	
Spatial planning		

4 Fertő-Neusiedlersee

4.1 Introduction

Fertő-Neusiedler See, lying on the Austrian-Hungarian border is a rather peculiar lake for multiple reasons: it is an extremely shallow soda lake (cca 1 m deep on average) with more than half of its surface covered by reed. Being shallow, the lake is known for its proneness to dry out periodically. Because of its unique features, Fertő-Neusiedler See is a natural habitat of high importance.

The lake area lies on the boundary between German-speaking and Hungarian-speaking lands. Being surrounded by wetlands and reeds, and having a consistently changing extent, Fertő-Neusiedler See has always been more of a natural border rather than the core of any kind of organic territorial unit.

Sopron (Hungary, cca. 60,000 inhabitants) is the largest city in the direct proximity of Fertő-Neusiedler See, but as a border town it has limited impact on the lake. In the 50-kilometre radius of Fertő-Neusiedler See, Vienna, the capital of Austria is the largest city by far with its 1.9 million inhabitants, general European importance, and strong ties to Fertő-Neusiedler See which is often advertised since the birth of modern Austria as “The See of the Viennese”. Other larger cities in the 50-kilometre area of Fertő-Neusiedler See are the Slovakian capital, Bratislava (cca. 440,000 inhabitants) and Szombathely (Hungary, cca. 80,000 inhabitants), though these two have only limited links to Fertő-Neusiedler See.

Within the 50-kilometre radius of Fertő-Neusiedler See there are four major hotspots of population increase, but none of those are associated with the lake itself. The first one is the Vienna agglomeration in Austria, which is a part of a steadily growing metropolitan area – its expansion in the direction of the lake is likely to be driven at least partially by the variety of leisure activities provided by the rich cultural and ecological environment. The second is Bratislava and its surroundings in Slovakia, forming one multipolar metropolitan region with Vienna. The agglomeration of Bratislava also includes municipalities in Hungary, around the city of Mosonmagyaróvár (the third hotspot). Finally, the city of Sopron and its surroundings grow as they benefit from their liminal situation of being in Hungary and in the immediate proximity of Vienna and therefore acting as an intermediary for labour market and services at the same time.

The Austrian – larger – part of the lake belongs to the state of Burgenland which is a NUTS2 level unit itself. The state has no larger cities, its capital, Eisenstadt is inhabited by 14,000 people. (The NUTS3 level in Austria carries little importance.) 15 Austrian municipalities have direct access to the lake, with a combined population of around 37,000 people, the most populous being Neusiedl on See. The only village which is located directly on the lakeshore is Podersdorf – besides that, Fertő-Neusiedler See is only accessible at recreational facilities that are embedded in the reed-zone which usually forms a wide barrier between the shoreline and the open water.

The Hungarian side of the lake belongs entirely to the NUTS3 level Győr-Moson-Sopron county. Its seat, Győr, lies 90 kilometres from Fertő-Neusiedler See and serves as a regional hub for the Hungarian part of the lake region as well as for the entire county (NUTS2 level does not play any important role in the Hungarian administrative hierarchy). As the Hungarian part of Fertő-Neusiedler See is overwhelmingly covered by reed there is little actual contact between the neighbouring municipalities and the lake itself, manifesting in only one beach and a few dockyards. The nine municipalities in question have altogether 73,000 inhabitants, but Sopron itself is the hometown of 62,000 people – and Sopron is not defined by Fertő-Neusiedler See, it is just one of its features. Since the lake is located on the edge of the city limits, it has very little actual contact with it.

The lake region does not form any kind of economical unit. The Austrian part is an important centre of tourism as the Neusiedlersee Region covers the half of all guest nights in the state of Burgenland. Other industries are also present around the lake – windmills, business and technological centres, or dentists – but those are either there because of the proximity of Vienna or the proximity of the border. Other than tourism, ecological agriculture and winemaking are the only two industries that are actively related to the Fertő-Neusiedler See lake region on their own right.

4.2 Synthesis of the lake-related multi-level governance framework

Around lake Fertő-Neusiedlersee, four relevant lake-related issues were identified: Regulation of the water level of the lake (1.1), Protection of lake-specific ecosystems (marchland, forests) (2.1), Branding of the lake as a tourism destination (5.2), Management of daily mobility (7.3).

Lake-related multi-level governance around Fertő-Neusiedlersee is a combination of conventional cross-border/international management tools and instruments: an international committee for water management, a cooperation of protected areas through international protection instruments (UNESCO world Heritage), an Interreg CBC programme. Tourism around the lake is quite imbalanced : well-developed on the Austrian side with accommodation and a diversified service offer and underdeveloped on the Hungarian side with limited access to the lake (in Fertőrákos only) and amenities that are over-shadowed by Sopron. Therefore cooperation initiatives or institutional arrangement are organised on each side of the border, through e.g. a business consortium providing a unified touristic offer on the Austrian side (the *Neusiedlersee card*) and through a top-down development framework implemented by a deconcentrated agency on the Hungarian side (Sopron-Fertő Touristic Area). Daily mobilities around the lake are affected by the integration of the region in the Vienna commuting zone. Cooperation involving railways companies support crossborder transport in the area.

Fertő-Neusiedlersee stands out for a relatively weak multi-level governance which can be related to the rather recent development of the cooperation in the area and the fact that the two riparian countries have different relations to the lake. The Austrian side is considered a leisure area and a water resource for agriculture, while the Hungarian side is primarily considered as a protected area with complex ecological processes to manage.

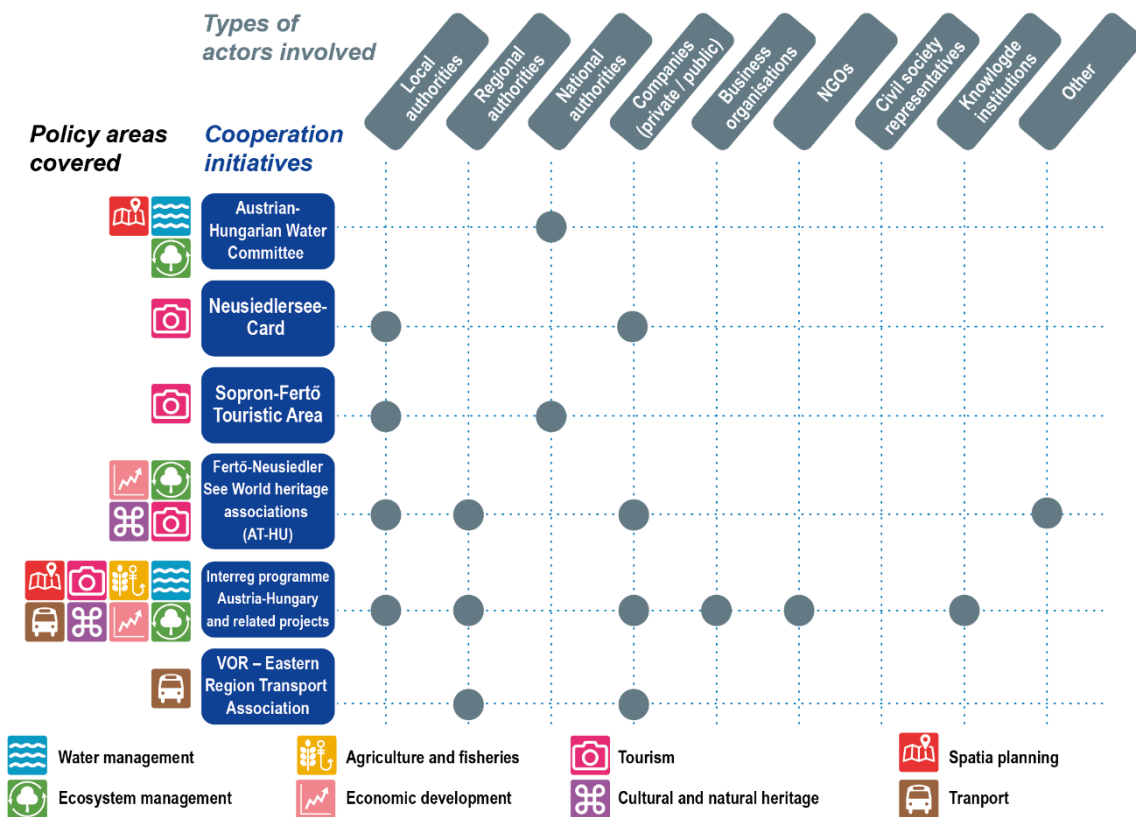


Figure 4-1 Main cooperation and institutional arrangements around Fertő-Neusiedlersee

4.3 Lake-related issues

Regulation of the water level of the lake (1.1)

Description of the issue

As the westernmost European example of a steppe lake, Fertő-Neusiedler See significantly differs in its attributes from most European lakes. It is extremely shallow compared to its extent (1 m and 320 km²) and therefore highly affected by even minor changes of climate and weather (Dinka et al., 2004). The introduction of a new sluice gate policy in the 1960s halted drastic changes of water level (Magyar-Osztrák Vízügyi Bizottság, 1998) but as the lake lacks any means of artificial water supply, draughts are still a threat. The last time when Fertő-Neusiedler dried out completely was in 1868 (ÉDUVIZIG, 1989, Wolfram et al., 2014).

How it is tackled in the lake region

The water level of Fertő-Neusiedler See can only be directly adjusted by the outflow at the Mekszikópuszta sluice gate (Hungary) which has its own management statute, created through the cooperation of Austrian and Hungarian water directorates within the framework of the Austrian-Hungarian Water Committee which was founded in 1956 and is dealing with all water management issues that occur between the two countries. Defining an optimal water level is a complex question as water management, leisure use, sailing, and flora and fauna all have different demands. Some of these demands also include the provision of large natural shifts in water level while other uses need as constant water level as possible. The current sluice gate management statute is considered to be overall suitable but continuous updates are desirable.

There is no known foreseeable action that addresses the question of inflow management as all known possibilities (e.g. the construction of a channel from the Danube that can provide water for Fertő-Neusiedler See during draughts) are considered to be too expensive as well as potentially adverse for the lake ecosystem (Wolfram et al., 2004, Kubu, 2006).

Protection of lake-specific ecosystems (marchland, forests) (2.1)

Description of the issue

Fertő-Neusiedler See is a relatively well protected water body as its unique features and rich flora and fauna already made it host a World Heritage site, two national parks, a biosphere reserve, a Ramsar Area wetland of international importance, and a Natura 2000 nature protection area. Most of these titles apply on areas both on the Austrian and the Hungarian side of the lake. A majority of Fertő-Neusiedler See – 180 km² out of a total of 320 km² – is covered by reed, especially in the South: the smaller, Hungarian part of the lake is almost completely covered as a result of the dominating currents that tend to bring sediment from North to South, creating a more suitable habitat for reed (Dinka et al., 2004). Two major ecological issues stand out: the preservation of soda lakes from over-exploitation of water and the management of the reed belt.

There are dozens of small soda lakes on the Northeast side of Fertő-Neusiedler See, more or less permanent ones and only occasionally occurring ones as well (Kirschner et al., 2007). Their number has been declining for a century, mostly because of the use of ground water for agricultural purposes (Krachler et al., 2000, Krachler et al., 2012). Those small soda lakes have a distinctive flora and fauna, therefore are an important factor in the region's biodiversity (Wolfram et al., 2014, Kohler et al., 1994). The preservation of these lakes require coordinated interventions.

The reed zone is a highly valuable cradle of biodiversity, and different parts of it require different approaches – some areas need to be preserved without any interaction, some need regular harvests, and some need to be regularly managed by burnings, in order to provide proper habitats (Wolfram et al., 2014, Zuna-Kratky et al., 2013). The reed zone also carries importance for tourism, and bears economic importance through harvesting and processing (Dvorak et al., 2008). The currents that bring sediment to the South of the lake and therefore stimulate the expansion of reed, may lead to succession, an issue which is also needed to be addressed (Túri, 1991).

How it is tackled in the lake region

The biodiversity of Fertő-Neusiedler See is quite well protected by the multiple layers of preservation efforts that are manifested in the two (Austrian and Hungarian) national parks, the status of being a World Heritage Site and a Ramsar wetland area and also the high coverage of Natura 2000 areas. Those all have proper legal definitions that provide a solid background for nature protection and preservation. It is also important that the national parks operate with a highly visible presence in the area, from information tables to park guards, and therefore are able to enforce the protection described. The only threats to the area's biodiversity are a few structural issues – most notably the protection of small soda lakes and finding proper solutions for reed management.

Regarding agricultural water use in relation with the soda lakes around Fertő-Neusiedler See, there is no current action which could be mentioned. A 2014 strategic study (Wolfram et al., 2014) suggests multiple possible interventions:

- creating and applying management plans for cultural landscapes of the national park;
- rehabilitation of the endorheic (outflowless) character of the soda lakes (e.g. closing down certain irrigation canals that take away water from them) – such intervention would mean that farmlands would become more vulnerable to inland inundation and therefore compensation mechanisms would be needed to be implemented;
- creating buffer areas around the soda lakes where water abstraction would be prohibited.

Such interventions would primarily affect the Austrian side of Fertő-Neusiedler See because on the Hungarian side arable land is usually farther away from the lake as reed and wetlands are concentrated on the South.

Reed management is not addressed currently in a unitary way, solutions vary widely, depending on state, ownership, location, harvest rights etc. Lack of knowledge is also a major obstacle in creating a comprehensive reed management framework as the reed ecosystem is highly intricate and little is known about the interaction between different conditions of wind, precipitation, age of the reed, water currents, the flora and the fauna of the reed, harvesting, burning etc. in detail (Csaplovics and Schmidt, 2011).

On one hand, further studies are needed to define a proper strategy of reed management for Fertő-Neusiedler See. On the other, intervention is a necessity since old, left-alone reed areas, especially in the Southern, Hungarian part, are likely to lead to a gradual succession of the lake. The most important action is, therefore, to create a strategy that can define the steps necessary to halt the expansion of the reed zone, and to provide an environment for healthy and sustainable reed growth, featuring all different settings that are essential for the biodiversity of the lake.

Branding of the lake as a tourism destination (5.2)

Description of the issue

The region surrounding the Fertő-Neusiedler See has never been a single administrative or cultural unit on its own as it historically gravitated to different towns (e.g. Vienna, Bratislava, Sopron, Győr etc.). This lack of unity was further strengthened by Fertő-Neusiedler See becoming a border lake, and then by the Iron Curtain (Békési, 2009). The isolation significantly eased ever since but the long-standing isolation as well as the linguistic, administrative, and cultural differences result in a lack of cooperation in most sectors – maybe the most visible of those is the region's tourism. (Grubits and Meth, 2011, Somfai, 2003).

The Austrian side is a popular destination on its own, mostly as a holiday venue for nearby Vienna ("The Sea of the Viennese" was a touristic slogan as early as the 1920s) but this popularity did not cross the border. Meanwhile, the Hungarian Fertő remained a mostly agricultural location especially as the parts remained within the borders were the ones where reed effectively isolated the lake from its surroundings. Fertő became, and still is, a destination overshadowed by the much more popular neighbouring city of Sopron (Békési, 2009).

How it is tackled in the lake region

Transborder tourism cooperation is rather moderate in the Fertő-Neusiedler See region. There are certain territorial alliances that are present, but the focus of those almost exclusively on the domestic level. The most important cooperation platform is the Neusiedler See Tourismus GmbH, the legal body behind the Neusiedlersee-Card, was founded by 44 Austrian municipalities around (and beyond) the lake, and even though it includes some services in Hungary in its offer, it is overwhelmingly Austria-based. On that level, Neusiedler See is successfully marketed and branded as a self-standing touristic destination – but this image does not cover the entirety of the lake.

On the Hungarian side no visible initiative can be seen to brand Fertő either to its full extent or only its Hungarian side as a touristic destination. In the recent years the freshly established Hungarian Tourism Agency (MTÜ), a government organization, has created a new, officially defined touristic destination called the Sopron-Fertő Area. It comprises all municipalities on the Hungarian side of Fertő-Neusiedler See, including the regional centre of Sopron, a popular destination on its own right, as well as some additional villages, 15 municipalities in total. Coordination of accommodation improvement is a main task of the MTÜ but otherwise so far little is known about the everyday operation of the Touristic Area, or its impacts. The fact that there is only one location in Hungary where the lake is accessible through its deep reed belt makes it rather likely that Fertő-Neusiedlersee will not be a main focal point of this new destination – but, again, detailed plans are yet to be made. Other than that there are numerous associations and cooperation that are centred around Sopron – a major city which lies next to the lake, or, more precisely, to its reed belt, but as those focus on the city on its own right, cannot be evaluated as Fertő-Neusiedler See-specific ones.

There are no governing bodies that would be focused on either one or both sides of Fertő-Neusiedler See. The closest thing to a lake-specific organisation, the Austrian-Hungarian Water Committee, an interstate body dominated by water directorate authorities of the two countries, nevertheless commissioned the only available comprehensive study of the lake (Wolfram et al., 2014) which covers not only water management but also numerous other topics, including tourism. This study suggests proper touristic cooperation with a unitary offer and marketing strategy, possibly based on extending the Neusiedlersee-Card.

Management of daily mobility (7.3)

Description of the issue

As Fertő-Neusiedler See has a history of a wildly varying water level, is adjacent to a wide swampland which used to be even wider before modernity it is not surprising that for a long time it has not been really possible to go around the lake. During the existence of the Iron Curtain, the entire region was strictly cut in half by an almost impenetrable border. Ever since, links between the Austrian and the Hungarian part are slowly recovering, especially as Hungary joined the Schengen area in 2007 and border controls became obsolete (Békési, 2009). As a result, mobility demands sharply rose especially as people on the Hungarian side started to work on the Austrian side in large numbers. By car and by bike the lake area is now easily permeable, but public transport did not really follow, even though the region is rich in transport solutions that are otherwise unusual in the two countries (Somfai, 2003). There no transborder bus service but multiple railway carriers are present on multiple lines.

How it is tackled in the lake region

As on the Hungarian side there is only one municipality that has any direct contact with Fertő-Neusiedlersee (all others being barred by the kilometres-deep reed belt), mobility of the lake region is more of a question of Austrian domestic connections and cross-border services. In the three easternmost countries of Austria, rail and bus service belong to one umbrella association (VOR – Eastern Region Transport Association) from the passengers' point of view. The VOR network includes Austrian railway lines around Fertő-Neusiedlersee, used mostly by suburban trains that often run across the border, to Hungary (Sopron or Fertőszéplak–Fertőd, but there is also one Austrian line which is accessible only through Hungary, more precisely through Sopron). The VOR offers a somewhat one-sided crossborder tariff solution as the railway station of Sopron is included in its system – therefore a trip from Sopron to Neusiedl am See (or any other municipality in the VOR) can be made with a regular VOR ticket. In any other cases, a trip from a Hungarian station to an Austrian station requires an international ticket. There are no trains that would continue farther into Hungary, and there is no transborder bus service at all in the region.

Another peculiarity of the region's public transportation is the rail carrier GYSEV/Raaberbahn. It is a company with roots in the late 19th century when it was customary that different rail lines were operated by different companies, though, after multiple waves of railway nationalizations this pattern became mostly obsolete in Hungary as well as in Austria. GYSEV/Raaberbahn became an exception because it was divided between the States of Austria and Hungary after WWI. It provides service mostly in Hungary, but also on two Austrian lines. GYSEV/Raaberbahn does not run trains that would continue for long after crossing the border either, and apart from having its on fleet colours and visual identity it is an integral part of the respective domestic service in Hungary and in Austria.

There are no any meaningful plans that would aim at strengthening cross-border public transportation in the region, though various studies and proposals are available from the past – including the Fertő-Neusiedler See Strategic Study (Wolfram et al., 2014) which proposes a seamless public transportation system with little regard to the state border but with unified fares, time table, passenger information etc.

4.4 Cooperation initiatives around the lake

Name of cooperation initiative

Austrian-Hungarian Water Committee

Historical background of the cooperation

Founded in 1956, the Committee is an intergovernmental body which provides a structured framework to discuss water management issues that affect both countries. It is not specified to Fertő-Neusiedler See but because of the lack of any dedicated organisation, it tends to put significant focus on all issues that have connection to the water level of the lake. The work of the Committee is based on the cooperation of the two Hungarian water directorates of the border area and the relevant office of the regional government of Burgenland. It holds regular sessions at least annually. Fertő-Neusiedler See is likely the most important task of the Committee as the two

countries are closely interdependent in its management, one of them is in control of the inflow and the other of the outflow. The depth of the cooperation – and therefore the duties of the Committee – significantly intensified after the fall of the Iron Curtain.

Actions and achievements

In the field of the regulation of water level (1.1), the Committee fosters intergovernmental agreements on the desirable water level of Fertő-Neusiedler See (and therefore the sluice gate policy) as all water directorate agencies that have responsibilities in the question are present in the Committee. There is no written/agreed mechanism on how to channel demands from other sectors (tourism, fishing, agriculture etc.), though, such points of view seem to appear in the processes, presumably through ad hoc cooperation and long-existing customs.

Besides, protecting the small soda lakes around Fertő-Neusiedler See and/or its unique reed belt is not a direct responsibility of the Water Committee but as a closely related topic it tends to appear in its studies and recommendations.

Involved partners

Name	Status
National authorities: Republic of Austria, Republic of Hungary	Party with right to nominate members and experts

Thematic scope

Water management	M	M: major x: minor
Ecosystem management	x	
Food production		
Demography, labour market and attractivity		
Tourism		
Cultural and natural heritage		
Transport		
Spatial planning	x	

Name of cooperation initiative

Neusiedlersee-Card

Historical background of the cooperation

The Neusiedlersee-Card is a discount card which provides various discounts and free services for its holders – but rather than being sold it is provided for guests at member accommodation providers. It was launched in 2000 by the Neusiedler See Tourismus GmbH, a company co-owned by 44 Austrian municipalities around (and beyond) the lake. Though advertised as an all-lake card, only Austrian accommodation providers are members and only Austrian services are included (with the exception of sightseeing tours in two Hungarian towns and Bratislava).

Actions and achievements

The Neusiedlersee-Card is a possible precursor of deeper regional cooperation in the field of tourism as it already offers a relatively comprehensive service. It also has the potential of cross-border expansion to the entirety of Fertő-Neusiedler See as minor precursors of such growth can already be seen.

Involved partners

Name	Status
Local and regional tourism associations (Tourism Association of Region Neusiedler See, Tourism Association of Eisenstadt-Leithaland, Tourism Association Frauenkirchen, Tourism Association Illmitz, Tourism Association Mörbisch am See, Tourism Association Neusiedl am See, Tourism Association Podersdorf am See, Tourism Association Freistadt Rust, Tourism Association St. Andrä am Zicksee)	Member

Thematic scope

Water management		M: major x: minor
Ecosystem management		
Food production		
Demography, labour market and attractivity		

Tourism	M	
Cultural and natural heritage		
Transport		
Spatial planning		

Name of cooperation initiative

Sopron-Fertő Touristic Area

Historical background of the cooperation

In Hungary, a centralised body is responsible for the stimulation and coordination of the tourism industry, the Hungarian Tourism Agency (MTÜ). From 2016 a new touristic region was created, and in 2020 the Sopron-Fertő area became an officially defined destination on its own right after seceding from the neighbouring Bük thermal bath and its surroundings. This subsequent area now comprises all municipalities on the Hungarian side of Fertő-Neusiedler See, including the regional centre of Sopron, a popular destination on its own right, as well as some additional villages in the proximity – 15 municipalities in total. Coordination of accommodation improvement is also a task of the MTÜ. So far little is known about the everyday operation of the Touristic Area, or its impacts.

Actions and achievements

Even though it is a new – and so far, purely domestic – institutional framework, the Touristic Area carries the possibility of taking part in creating a well-integrated local touristic sector around Fertő-Neusiedler See, forming strong cooperation with actors in Austria as well.

Involved partners

Name	Status
Hungarian Tourism Agency	Governing body
15 municipalities	Target area of development

Thematic scope

Water management		M: major x: minor
Ecosystem management		
Food production		
Demography, labour market and attractivity		
Tourism	M	
Cultural and natural heritage		
Transport		
Spatial planning		

Name of cooperation initiative

Hungarian Council of the World Heritage Fertő Area /

Neusiedler See World Heritage Association

Historical background of the cooperation

There are two World Heritage Associations of the Fertő-Neusiedler See area – one in Hungary and one in Austria – that together form the management forum of the heritage site. Their duties include the creation and the application of the World Heritage Site Management Plan, and cooperation with all state bodies and municipalities concerned. In order to achieve the latter, the associations include those bodies and municipalities within their assemblies. The associations were founded in 2003, as direct results of the creation of the World Heritage Site in 2001. Their main focus, the Management Plan, was created in 2003. No update of the Management Plan is available publicly, though it was set to be updated in every six years. The Plan has no legal importance, it is primarily a recommendation of regulations for states and municipalities to make.

An Interreg AT HU (see below) project was launched in January 2021 in order to create a unitary management body for World Heritage Site.

Actions and achievements

The World Heritage Site Management Plan addresses the issue of water level but does not go into details about implementation.

The World Heritage Site Management Plan defines the need for a reed management plan, though it does not go into great detail and it is contradicted in some details in the latter Fertő-Neusiedler See Strategic Study (Wolfram et al., 2014). It also mentions the protection of the surrounding soda lakes but only superficially.

The World Heritage Site Management Plan addresses tourism development in great detail, defining 18 different goals/actions in the topic. Out of those, seven can be considered as actively transnational initiatives, but only the task of a coherent cycling network seems to show significant evolution since the 2003 Management Plan.

The World Heritage Site Management Plan recognises the need of a transnational, seamless public transportation network around the lake, but this recognition has not led to any visible improvement ever since.

Involved partners

Name	Status
The 20 municipalities that lie in the core zone or the puffer zone of the World Heritage Site	members (AT)
State of Burgenland	member (AT)
Esterhazy Private Foundation	member (AT)
Burgenland Tourismus GmbH	member (AT)
GYSEV/Raaberbahn	member (AT)
St. Martin Thermal Bath, Frauenkirchen	supporting member (AT)
Members of the Hungarian association (list not public)	members (HU)

Thematic scope

Water management		M: major x: minor
Ecosystem management	M	
Food production		
Demography, labour market and attractivity	M	
Tourism	M	
Cultural and natural heritage	M	
Transport		
Spatial planning		

Name of cooperation initiative

Interreg programme Austria-Hungary and related projects

Historical background of the cooperation

Interreg is a standard project funding tool of the European Union which supports cooperation across borders through in various fields including environment, transport, or sustainable energy, amongst others. There are more than fifty cross-border cooperation in the EU (called Interreg A), and one of those is the Austria-Hungary Cooperation Programme, which originally started in 1995.

Many Interreg AT-HU projects had some impact on the Fertő-Neusiedler See region, some of them were and are directly aimed at the lake and its surroundings. Out of these, eight projects can be highlighted as ones that are linked to the lake-related issues defined in this case study:

- 1.Genesee, 2011-2015: a topographic survey of Fertő-Neusiedler See.
- 2.Grundlagenstudie NSB AG, 2009-2010: a preliminary study of development costs of the Neusiedler See Railway, the crossborder line on the Eastern side of the lake.
- 3.GreMo Pannonia, 2008-2012: a complex programme of cross-border mobility planning.
- 4.Fertő-Hanság Mobil, 2010-2014: development of operational safety of the Neusiedler See Railway and the expansion of cycling infrastructure on the Hungarian side of the region.
- 5.Reben. 2017-2020: a thorough study about the intricate details of the Fertő-Neusiedler See reed belt to understand its dynamics and clarify its impact on water quality.
- 6.Crossborder Rail, 2015-2020: refurbishment of the Neusiedler See Railway’s Hungarian section.
- 7.St. Margarethen–Fertőrákos, 2017-2020: refurbishment of the crossborder road between the municipalities.
- 8.Common Heritage, 2021-2022: creation of a new, trans-border cooperation for the management of the World Heritage Site.

Actions and achievements		
<p>In the field of the protection of lake-specific ecosystems (marchland, forests), project Genesee put a large emphasis on providing a deeper understanding of lake dynamics through its topographic mapping, and as such helping to find more suitable management ways for the reed belt. Project Reben actively focused on this reed belt: the water and substance exchange between the reed belt and the open lake surface, and the effects of those on water quality. Lack of knowledge has been a primary reason for the underregulation of reed use – Project Reben, ended in December 2020, might provide useful insights in this topic.</p> <p>In the field of branding of the lake as a tourism destination, projects GreMo Pannonia and Fertő-Hanság Mobil aimed at – among other things – providing a more solid and more attractive cycling around the lake, focusing primarily on recreational use, and therefore creating an infrastructure which generates and encourages cross-border tourism. The recently launched Common Heritage project might help the cross-border branding of the lake region by providing a unitary management body for the World Heritage Site instead of the current fragmented system.</p> <p>In the field of management of daily mobility, the development of Neusiedler See Railway – on the Eastern side of Fertő-Neusiedler See – was targeted by multiple Interreg projects including Grundlagenstudie SB AG, Fertő-Hanság Mobil, and Crossborder Rail, in order to provide a quicker and more attractive service for regional and commuter traffic, as an alternative for car use. The refurbishment of the St. Margarethen–Fertőrákos road which features the closest border crossing to Fertő-Neusiedler See available for cars intended to help regional cross-border traffic.</p>		
Involved partners		
Name	Status	
Regionalmanagement Burgenland GmbH	Austrian managing body of Interreg AT HU	
Széchenyi Programiroda NKft.	Hungarian managing body of Interreg AT HU	
Various project partners in different Interreg projects: local and regional authorities, professional organisations, NGOs, universities, private companies	project partners	
Thematic scope		
Water management	x	M: major x: minor
Ecosystem management	x	
Food production	x	
Demography, labour market and attractivity	x	
Tourism	x	
Cultural and natural heritage	x	
Transport	x	
Spatial planning	x	

Name of cooperation initiative
VOR – Eastern Region Transport Association
Historical background of the cooperation
<p>The Verkehrsverbund Ost-Region is an umbrella organization which provides relatively seamless public transportation in the Eastern parts of Austria, including the states of Lower Austria, Vienna and Burgenland, founded in 1984. It serves as an intermediary body between the financing states and the service providers. The VOR is not intended to be a transnational organization, with one exception: the railway station of Sopron (Hungary) is part of the VOR area, travels between Sopron and any Austrian municipalities of the VOR area are subjects of VOR tariffs instead of international ones. This situation is a direct result of the fact that one Austrian rail line (to Deutschkreuz) is only accessible via Sopron therefore suburban trains from Vienna to Deutschkreuz necessarily go through the station. Five different railway lines meet in Sopron and three of those are entering into Austria without passing any other stations. Therefore, VOR is not an actual transnational cooperation but, almost accidentally, helps the seamlessness of the region to a certain degree.</p> <p>It is worthy to mention, though, that there are is another VOR railway entry point to Hungary around Fertő-Neusiedlersee (the Neusiedler See Railway at Pamhagen), but on this line, VOR does not include any Hungarian stations. An odd reverse solution exists, though, as the Hungarian railway carrier GYSEV (the operator of the</p>

<p>Hungarian section of the line) offers tickets from the line's Hungarian end at Fertőszentmiklós to the first Austrian station at Pamhagen at a Hungarian domestic price. This solution is not part of any wider cooperation either. Neither the VOR, nor any Hungarian service providers do not offer any kind of trans-border bus service therefore the rail links mentioned above cover all trans-border public transportation around Fertő-Neusiedler See.</p>		
<p>Actions and achievements</p>		
<p>The VOR provides seamless mobility service for the Austrian part of the lake region. Other than that, it – almost accidentally – also provides international service for Austrian domestic rates for the rail station of Sopron, Hungary, making trans-border travel somewhat easier and more accessible.</p>		
<p>Involved partners</p>		
Name	Status	
VOR – East Region Transport Association	umbrella association for public transport in Lower Austria, Vienna and Burgenland	
ÖBB – Austrian State Railways	service provider on certain trans-border railway lines around Fertő-Neusiedler See	
GYSEV/Raaberbahn	service provider on certain trans-border railway lines around Fertő-Neusiedler See	
<p>Thematic scope</p>		
Water management		M: major x: minor
Ecosystem management		
Food production		
Demography, labour market and attractivity		
Tourism		
Cultural and natural heritage		
Transport	M	
Spatial planning		

5 Lake Peipus

5.1 Introduction

In Estonia, the Lake Peipus Region covers a large part of the territories of Ida-Viru, Jõgeva, Tartu, Põlva and Võru counties. At the same time, the cities located in the northernmost part of Ida-Viru County (Narva, Sillamäe, Kohtla-Järve, Jõhvi) can be considered to be weakly connected to the region. Eight municipalities can be considered as riparian.

Seven of them (excl. Setomaa) have set up a common development strategy. Their total population was 46.4 thousand (2018). However, if we do not take into account certain parts of Tartu and Kastre rural municipalities, situated quite far from the lake, then the population is about 32 thousand. The population is sparse with the density between 3.4-10.4 inh. /km² in the majority of the municipalities (see Mapping annex). The largest settlements are the towns of Mustvee (1.2 thous. inh.) and Räpina (2.1 thous. inh.). The population is shrinking and aging. Its number has increased only in Tartu municipality surrounding Tartu City. Elsewhere it has decreased by 6-17% in 2009-2018. The demographic labour pressure index of municipalities is 0.39-0.58 (2019). The population is bilingual, the share of the Russian-speaking population is important especially in Peipsiääre, Mustvee and Alutaguse rural municipalities (Peipsi development strategy (2019-2030), 2017).

The share of primary sector employment (mostly in agriculture), is rather high in most Estonian Lake Region counties. In Jõgeva and Põlva counties it is the highest in Estonia - 13% and 15% correspondingly, in Võru county 8%. A large part of the employment of the residents of the riparian municipalities is related to county centres and other larger cities. Only 37-50% of the employees work within their own municipality. Many of them work in Tartu. The average gross income of wage earners of almost all the riparian municipalities (excl. Tartu municipality) is among the lowest in Estonia.

In Russia, three districts (raions) of the Pskov Oblast - Gdovsky, Pechorsky, Pskovsky - lie in the Lake Region. 13 local municipalities of these districts with a total of 38.6 thous. inh. (2020) are directly riparian to the lake. 10 km from the lake, lies the City of Pskov with a growing population (210 thous. inh. in 2020). That must be taken into account as well. Other larger cities are Gdov (3.5 thous. inh.) and Pechory (9.8 thous. inh.). The population of the riparian districts in Russia is rather sparse. The densities of the three districts were 3.7, 10.7 and 17.4 inh. /km² (2015). At the same time, the Pechorsky and Pskovsky districts still have the densest population of the entire oblast. At the local government level, the population is growing in the City of Pskov and in the immediate vicinity of the city, elsewhere the population is declining.

There is little data on the economic structure of rural municipalities and districts on the Russian side. However, the situation seems to be similar to the Estonian coast in many ways. The average wage in the rural areas of the Pskov Oblast is the lowest in the north-west of Russia - 41% of the Russian average (2014). Employment rate in the rural areas is 1.5-2 times lower than the regional average. Half of the rural population works outside of the settlement where they live (Strategy for sustainable development of rural areas of the Pskov region until 2030, 2017).

Fishing and tourism are the main peculiarities of the economy of the Lake Region.

In Estonia, Lake Peipus is one of the main fishing areas. 84 companies with 259 professional fishermen operated there in 2019. 2.6 thous. tons of fish were caught on the Estonian side and 3.8 thous. tons on the Russian side this year (Estonia-Russia Fisheries Commission, 2020). On the Estonian side, 12 companies that hold fishing rights processed fish in 2015. The majority of fish industry workers are women (Peipsi development strategy (2019-2030), 2017). The catch quotas for Lake Peipus are established through the Fisheries Commission of Estonia and Russia.

Lake Peipus has a great tourism potential. On the Estonian side, the Lake Region includes very varied cultural spaces, historical settlements, street markets and fair traditions. There are several nature reserves. On the northern coast, there is a more than 30 km long sandy beach. There are several providers of active leisure services in the region, especially those related to water and fishing tourism - sailing, boat trips, fishing trips, winter fishing, etc. and accommodation service providers. There are 85 accommodation establishments. At the same time, the tourism potential of coastal villages is largely untapped. On the Russian side, there are two important tourism regions: Pskovsky-Pechorsky on the south-east shore of the lake, and Lake Peipus (Chudsky) on the eastern shore. The first of the two is the most important tourism region in the oblast

- currently specialised in historical-cultural, religious and recreational tourism. The annual number of visitors of accommodation establishments was about 300 thous. in that region (2013-2015). The Peipus region is presently specialised in summer cottage tourism. The annual number of visitors with accommodation was about 20 thous. (2013-2015).

The development of the lakeside regions of Estonia and Russia is separated from each other. There is no shipping line or boat traffic across the lake. On the Russian side, the border zone is established where a permit is needed for entering. On the Estonian side, there is free access to the lake, but the border guard must be notified of sailing beyond 1 km from the shore.

5.2 Synthesis of the lake-related multi-level governance framework

Around lake Peipus, four relevant lake-related issues were identified: Business development policies targeting entrepreneurs in the lake region (4.2), Development and networking of the tourism industry (5.1), Regulation of fish catches and support to lake-based fisheries (3.2), Protection of lake-specific ecosystems (2.1).

Lake-related cooperation initiatives around lake Peipus are mainly international Estonia-Russia cooperation frameworks in the field of water management, environmental protection and fish-stock management on the one hand, and cooperation formats involving riparian actors from the Estonian side only and aiming at placed-based regional development on the other hand. The Estonia-Russia CBC programme provides specific funding streams that are mobilised for lake-related projects. The cooperation landscape is affected by the international border that divide the lake in two parts.

Prominent actors for the lake-related cooperation are national authorities (from EE and RU) organising international cooperation across the lake, and local NGO active in the field of territorial development, and that provide support for setting up projects.

Lake Peipus region stands out for its peculiar mix of international agreements/cooperation and local involvement of small-scale actors (NGO, fisheries, local businesses).

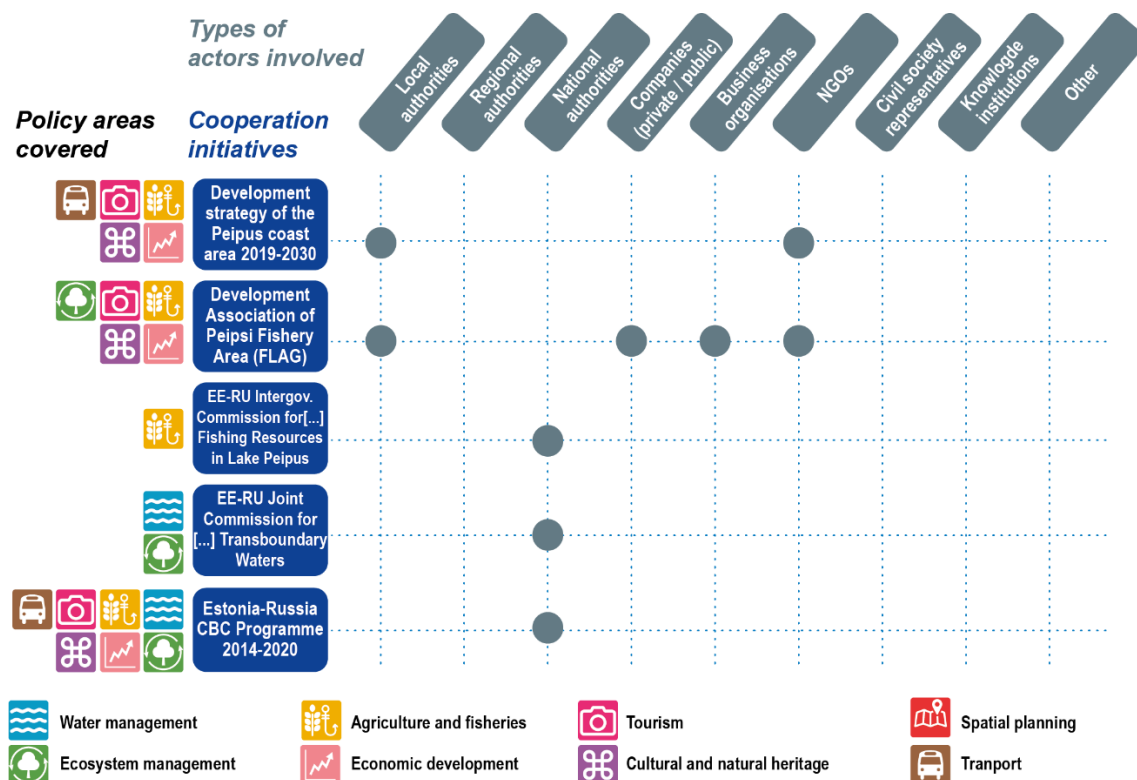


Figure 5-1 Main cooperation and institutional arrangements around Lake Peipsi

5.3 Lake related issues

Business development policies targeting entrepreneurs in the lake region (4.2)

Description of the issue
<p>Both on the Estonian and Russian side of the lake the population is sparse, ageing and diminishing. Population is growing only in and near large cities – Tartu and Pskov. There is a deficiency of jobs in local municipalities, the income level of the population is low. On the Estonian side, enterprises located in the riparian municipalities provide mostly jobs in agriculture (especially onion and other vegetable growing) and fishing. These are traditional activities here. There are only a few industrial or service companies with 50 or more employees. In the riparian municipalities, the future of local economy is mostly linked to the development of tourism on the basis of small businesses.</p>
How it is tackled in the lake region
<p>The business development policies of Estonia and Russia are separated.</p> <p>In Estonia, every municipality has its own development plan. But two regional development programs funded by the state - Peipsiveere⁷ and Setomaa⁸, are in operation. Both programs aim to help maintain the viability of the local community by developing entrepreneurship, human capital and regional marketing. The programs seek to increase the attractiveness and diverse use of Lake Peipus by applying the cultural and natural peculiarity of the Lake Region as a specific development potential. The programs co-finance projects in this direction initiated by local governments and NGOs.</p> <p>Co-operation of municipalities with fisheries' entrepreneurs occurs also through the Lake Peipsi Fisheries Local Action Group (FLAG) managed by the Peipsi Fisheries Area Developers' Council (PKAK).⁹ The FLAG's strategy focuses on the development of fisheries, but also contributes to the promotion of social well-being and cultural heritage through the development of coastal tourism infrastructure and marketing of the Lake Region (Strategy of the Peipsi fishing area 2015-2023, 2015).</p> <p>Since 2019, there is also a common development strategy of the riparian municipalities of Peipus (Peipsi development strategy (2019-2030), 2017) . The strategy is defined as intersectoral but is mainly tourism-oriented.</p> <p>Estonian-Russian common issues can be addressed through the Estonia-Russia Cross-Border Cooperation Programme 2014-2020.</p>

Development and networking of the tourism industry (5.1)

Description of the issue
<p>The development of the lakeside regions of Estonia and Russia is separated from each other. However, it is planned to increase tourism on both sides.</p> <p>On the Estonian side, the Lake Region includes very varied cultural spaces, historical settlements, street markets and fair traditions. There are several nature reserves. At the same time, the tourism potential of coastal villages is largely untapped. Until now, Lake Peipus has been marketed to both domestic and foreign tourists. On the Russian side, there are two important tourism regions: Pskovsky-Pechorsky on the south-east shore of the lake, and Lake Peipus (Chudsky) on the eastern shore. The first of the two is currently specialised in historical-cultural, religious, and recreational tourism. The Peipus region is presently specialised in summer cottage tourism.</p>
How it is tackled in the lake region
<p>Information about the Russian policy is scarce. However, in Russia it has been planned to enhance the visiting of both tourism regions. The specialisation of the regions should be increased: in the Pskovsky-Pechorsky by developing city tourism and sport-related tourism; in the Lake Peipus region by recreational and ecological tourism (Strategy for sustainable development of rural areas of the Pskov region until 2030, 2017).</p>

⁷ *Peipsiveere programm* (2020). Available at: [RT I, 29.02.2020, 3](#) (accessed 21 January 2021).

⁸ *Setomaa programm* (2020). Available at: [RT I, 29.02.2020, 2](#) (accessed 21 January 2021).

⁹ *MTÜ Peipsi Kalanduspiirkonna Arendajate Kogu*. Available at: <https://www.pkak.ee/> (accessed 21 January 2021).

On the Estonian side co-operation networking in the tourism field has been led by the NGO Peipsimaa Turism since 2011. The main objective of the NGO has been to coordinate the development of tourism in the Peipsi region, to market the region and its tourism products and to build the image of the region. The NGO has also coordinated the creation of a joint strategy (Peipsi development strategy (2019-2030), 2017) that includes local governments', LEADER groups and other activities in business, infrastructure and public service development. The strategy has two foci: Lake Peipus as an authentic place to visit (a year-round tourist destination with an international impact) and the lake region as a pleasant home. It is planned that the NGO prepares annual action plans and supports in finding financing opportunities. It is hoped that the local governments help to ensure the co-financing of projects.

Regulation of fish catches and support to lake-based fisheries (3.2)

Description of the issue

In Estonia, Lake Peipus is one of the main fishing areas. 84 companies with 259 professional fishermen operated on the lake in 2019. A remarkable number of jobs in fish processing also depend on fish catches. 2.6 thous. t of fish was caught on the Estonian side and 3.8 thous. t on the Russian side this year. Lake Peipus provides 99% of Estonian inland waterbodies' catch, and about 20% of total fish caught from inland waters and coastal sea. The quoting of catches is inevitable to preserve the sustainability of fisheries.

The fisheries sector is supported by the European Maritime and Fisheries Fund through the Lake Peipsi Fisheries Local Action Group (FLAG).

How it is tackled in the lake region

An intergovernmental commission of Estonia and Russia for the conservation and exploitation of fishing resources in Lake Peipus (Lakes Peipsi, Lämmi and Pihkva) has been established on the basis of the co-operation agreement concluded in 1994¹⁰. Negotiations of the commission take place every year with scientists reporting on the state of the fish stock and making recommendations for its management. Additionally, the representatives of the environmental supervisors of both countries also give an overview of the work done and make proposals for improving the work. The fishing quotas are also agreed during the negotiations.

The Lake Peipsi FLAG supports the fishery by operating in six directions of action:

- valorisation or marketing of fishery or aquaculture products,
- diversification of economic activities,
- renewal of fishing ports,
- creation or restoration of spawning grounds, introduction of fish species into water bodies,
- promoting social well-being and cultural heritage, including fisheries and maritime heritage, strengthening the role of fishing communities in local development,
- co-operation activities of the initiative group.

Protection of lake-specific ecosystems (2.1)

Description of the issue

About 30 rivers and streams discharge into Lake Peipus. The largest rivers are the Emajõgi and the Velikaya. The lake drains into the Gulf of Finland via river Narva. In the Peipus Lake basin, water abstraction has decreased. Also, the inflow of wastewater and especially the inflow of untreated wastewater has significantly decreased in 2005-2019. Reduction of pollutant emissions is continuing. In 2019, indicators of organic pollution in the rivers of the Peipus basin met water quality class "good" or "very good" according to the Estonian classification. At the same time, the general assessment of the ecological status of Lake Peipus was "bad", which can be explained by the very low water levels and above-average temperatures during the growing season. So, the status of underwater ecosystems of the shallow lake is challenged by climate change and low water levels (Estonian-Russian Joint Commission for the Protection and Sustainable Use of Transboundary Waters, 2020).

¹⁰ Peipsi, Lämmi- ja Pihkva järve Eesti-Vene kalapüügikomisjon. More information at: <https://www.envir.ee/et/eesmargid-tegevused/kalandus/peipsi-lammi-ja-pihkva-jarve-est-vene-kalapuugikomisjon> (accessed 21 January 2021).

How it is tackled in the lake region

In 1997, an Estonian-Russian Joint Commission for the Protection and Sustainable Use of Transboundary Waters was established on the basis of intergovernmental cooperation agreement.

The commission develops transboundary co-operation between the governments, organizes the exchange of environmental monitoring data and the harmonization of measurement methods between the parties, expands the opportunities for co-operation between scientific and public organizations on both sides and supports public debate on transboundary waters.

The commission meets once a year. The main cooperation takes place at specialist level in commission working groups. There are two working groups:

1. Working Group on Integrated Water Resources Management.
2. Working Group on Monitoring, Evaluation and Applied Research.

The working groups normally meet once a year.¹¹

¹¹ *Estonian-Russian Joint Commission for the Protection and Sustainable Use of Border Waters*. More information at: <https://www.envir.ee/et/eesmargid-tegevused/vesi/piiriveekogude-kaitse-ja-saastliku-kasutamise-eesi-vene-uhiskomisjon> (accessed 21 January 2021).

5.4 Cooperation initiatives around the lake

Name of cooperation initiative		
Development strategy of the Peipus coast area 2019-2030. (Peipsimaa arengustrateegia)		
Historical background of the cooperation		
The common development strategy of the Estonian riparian municipalities of Peipus has been set up by the municipalities. The strategy process has been co-ordinated by the NGO Peipsimaa Turism. This organisation has lead local tourism network co-operation since 2011.		
Actions and achievements		
In 2011-2020, the NGO Peipsimaa Turism has implemented more than 35 projects. These have mostly been joint marketing and reputation building projects in Lake Peipus Region. In implementing the development strategy (Peipsi development strategy (2019-2030), 2017), the municipalities act independently. The NGO helps them to find sources of financing if necessary, and itself it implements predominantly cross-regional marketing and information projects.		
Involved partners		
Name	Status	
Alutaguse, Mustvee, Peipsiääre, Tartu, Luunja, Kastre, Räpina (7 municipalities)	Involved/networking municipalities	
NGO Peipsimaa Turism	Coordinator of project work	
Thematic scope		
Water management		M: major x: minor
Ecosystem management		
Food production	x	
Demography, labour market and attractivity	x	
Tourism	M	
Cultural and natural heritage	x	
Transport	x	
Spatial planning		

Name of cooperation initiative		
NGO Development Association of Peipsi Fishery Area (Lake Peipsi Fisheries Action Group (FLAG))		
Historical background of the cooperation		
The FLAG was formed in 2008. The main objective of FLAG is the sustainable development of the fisheries area through design and implementing a local development strategy. FLAGs select and provide funding to local projects. They are financed through the European maritime and fisheries fund (EMFF).		
Actions and achievements		
The FLAG has implemented projects in the fields of business development, the support to lake based fisheries and tourism development. In particular has directly contributed to: the reconstruction of fishing ports (more than 15), the acquisition and implementing of dredging equipment, the purchase of fish processing equipment, the diversification of fishermen's employment, the development of direct sales from producer to consumer, development of fish marketing, the development of water rescue capacity.		
Involved partners		
Name	Status	
Alutaguse, Jõgeva, Mustvee, Peipsiääre, Tartu, Luunja, Kastre, Räpina, Setomaa (9 municipalities)	Members	

17 self-employed fishermen		Members
31 fishery companies		Members
11 other companies		Members
20 NGOs and persons		Members
Thematic scope		
Water management		M: major x: minor
Ecosystem management	x	
Food production	M	
Demography, labour and market and attractivity	M	
Tourism	M	
Cultural and natural heritage	x	
Transport		
Spatial planning		

Name of cooperation initiative		
<i>The Intergovernmental Commission of Estonia and Russia for the Conservation and Exploitation of Fishing Resources in Lake Peipus (Lakes Peipsi, Lämmi- and Pihkva)</i>		
Historical background of the cooperation		
The Commission has been established on the basis of a co-operation agreement concluded in 1994.		
Actions and achievements		
Negotiations of the commission take place every year, during which scientists report on the state of the fish stock and make recommendations for its management. Additionally, the representatives of the environmental supervisors of both countries also give an overview of the work done and make proposals for improving the work. The fishing quotas are also agreed upon during the negotiations.		
Involved partners		
Name	Status	
The Commission consists of a representative appointed by each Party and an alternate; the necessary number of experts and advisers may be involved in the work of the Commission.	Members	
Thematic scope		
Water management		M: major x: minor
Ecosystem management		
Food production	M	
Demography, labour and market and attractivity		
Tourism		
Cultural and natural heritage		
Transport		
Spatial planning		

Name of cooperation initiative		
<i>Estonian-Russian Joint Commission for the Protection and Sustainable Use of Transboundary Waters</i>		
Historical background of the cooperation		
The Commission was established on the basis of intergovernmental cooperation agreement in 1997.		
Actions and achievements		

<p>The Commission develops transboundary co-operation between the governments, organizes the exchange of environmental monitoring data and the harmonization of measurement methods between the parties, expands the opportunities for co-operation between scientific and public organizations on both sides and supports public debate on transboundary waters. The Commission meets once a year. The main cooperation takes place at specialist level in commission working groups. There are two working groups:</p> <ol style="list-style-type: none"> 1. Working Group on Integrated Water Resources Management. 2. Working Group on Monitoring, Evaluation and Applied Research. 		
Involved partners		
Name		Status
<p>The Commission is formed on the basis of the principle of parity of the parties and considering that the Commission would represent the agencies and activities dealing with or related to the issue of transboundary waters - water management, external services, border control, energy.</p>		
Thematic scope		
Water management	x	M: major x: minor
Ecosystem management	M	
Food production		
Demography, labour market and attractivity		
Tourism		
Cultural and natural heritage		
Transport		
Spatial planning		

Name of cooperation initiative		
<i>Estonia-Russia CBC Programme 2014-2020</i>		
Historical background of the cooperation		
<p>The Estonia Russia cooperation programme (2015) was approved by the Governments of the Republic of Estonia and the Russian Federation in June 2015, following by approval of the European Commission in December 2015. Agreement on financing and implementation of Cross-Border Cooperation Programme “Estonia-Russia” 2014-2020 was signed in December 2016 between the European Commission, Government of the Russian Federation and the Republic of Estonia. On 12 November 2018 the Federal law on ratifying the Financing Agreement was signed by the President of the Russian Federation.</p> <p>The Programme area covers three NUTS 3 regions of Estonia - Kirde-Eesti, Lõuna-Eesti and Kesk-Eesti. In Russia, it covers St. Petersburg, Leningrad region and Pskov regions.</p>		
Actions and achievements		
<p>The programme supports projects in different fields, in particular:</p> <ul style="list-style-type: none"> • the regulation of the quality of lake water • the protection of eco-systems, including several projects for building wastewater treatment facilities, water stations, • tourism development, including Development of small harbours, places for yacht landing, recreation areas etc. • business development policies, including marketing of local products/services, improving accessibility in remote areas, improving competitiveness of rural SME's by teaching innovative eco-technologies etc. 		
Involved partners		
Name		Status
Republic of Estonia, Russian Federation, European Commission		Financers
Ministry of Finance of the Republic of Estonia		Managing Authority of the Programme.
Thematic scope		
Water management	M	M: major

Ecosystem management	M	x: minor
Food production	M	
Demography, labour market and attractivity	M	
Tourism	M	
Cultural and natural heritage	x	
Transport	x	
Spatial planning		

6 Lake Päijänne

6.1 Introduction

Lake Päijänne is the largest lake, with a surface of 1080 km², in the Kymijoki River basin, situated in three administrative regions as of 1st January 2021. Northern Päijänne is part of Central Finland, located in the heart of the Finnish Lakeland at the northern end of the second Salpausselkä terminal moraine, while Päijät-Häme in the south connects with the capital region Uusimaa. As of 1st January 2021, one of the riparian municipalities (Kuhmoinen) became part of Pirkanmaa region in the west. Taking into consideration the large Kymijoki River basin water catchment area of 37 107 km², Lake Päijänne does not form a separate entity for governance. Northern and southern Päijänne are developed separately with institutionalised forms of cooperation on environmental matters and on non-regular basis on other issues. An initiative on joining the UNESCO's World Network of Biosphere Reserves was put forward in the early 2000s with the aim of developing more coordinated cooperation between the two regions. (Uusitalo et al., 2008) This initiative was however recently abandoned and the two regions have, subsequently, moved forward with their own initiatives.

Historically, forests and the forestry industry have defined the Lake Päijänne area culturally, economically and environmentally since the late 19th century and this continues to be the case today. Lake Päijänne and the Kymijoki River Basin provided an important waterway for the transportation of wood and forest products. Industrialisation led to a deterioration of the water quality in Lake Päijänne and in the surrounding lakes and rivers which continued until 1982. Once environmental standards and measures for wastewater treatment were introduced, the state of the lake quickly recovered and the ecological situation has remained good or excellent throughout this millennium in most parts of the lake. Lake Päijänne services the drinking water requirements of over one million people in the capital region via a 120 km-long underground tunnel completed in 1982, raising further interest in terms of water quality issues. (Uusitalo et al., 2008)

Lake Päijänne is surrounded by sparsely populated areas with the city of Jyväskylä directly riparian to the lake as the principal town of Central Finland in the north. The city of Lahti, the principal town of Päijät-Häme is also situated in close connection to the lake in southern Päijänne. (Population density map 2011). The population is markedly declining and ageing in the municipalities not directly connected to the cities of Jyväskylä or Lahti due to low birth rates and migration to the cities. The share of retirees on average in the sparsely populated riparian municipalities reached 39 % in 2018. The populations of Jyväskylä and Lahti and of their neighbouring municipalities are growing. The difficult employment climate however continues to concern both the cities and the sparsely populated areas. In 2018, the unemployment rate was 12.4 % in the riparian municipalities which is around 3 % worse than the national average. The number of jobs in the area returned to the level of 2011 only in 2018, while youth unemployment remains a serious issue. The situation in Lahti, not included in the calculations, is even worse, constituting a significant drag on the economic development of the area more generally. (Official Statistics of Finland (OSF): Employment, 2021)

declining sectors of industry in terms of employment, especially on the forestry industry, and the high share of primary production around Lake Päijänne. The forestry industry is currently undergoing a structural change with the closure of several mills in recent years. This has had a significant effect on the local economy despite some new investments in modern large-scale wood-processing plants in northern Päijänne. Lake Päijänne is a popular destination for summer-use, second home housing as it is located only a short distance from more densely populated areas, such as the capital region and Pirkanmaa. The large increase in people staying in the area especially during the summer generates a significant boost to the local economy while also increasing cultural activity. There are three national parks (Leivonmäki, Isojärvi, Päijänne) as well as other protected areas and several landscapes defined as nationally valuable in the area. Central Finland and Päijät-Häme sees a large potential in tourism and in the wellbeing sector especially connected to nature and cultural heritage, although the share of tourism as an economic activity currently remains rather modest in the area. (See eg. (Uusitalo et al., 2008), (Keski-Suomen maakuntaohjelma 2018–2021, 2017), (Maakuntastrategia ja Päijät-Häme -ohjelma 2018-2021, 2017) and Official Statistics of Finland (OSF): Employment, 2021)

6.2 Synthesis of the lake-related multi-level governance framework

Around lake Päijänne, six relevant lake-related issues were identified: regulation of water level (1.1), regulation of the quality of lake water, limiting water pollution (1.2), regulation of fish catches / support for lake-based fisheries (3.2), strategic measures for demographic attractiveness (4.1), development and networking of the tourism industry (5.1), protection and valorisation of cultural and natural heritage (6.1)

Lake-related multi-level governance around lake Päijänne stands out for the extensive involvement of local stakeholders in different institutional arrangements (municipalities, private interests, NGOs), on the basis of bottom-up processes and for the central role given to ELY centres (Centre for Economic Development, Transport and the Environment – regionalised State institutions) both on water management issues and on the protection of natural and cultural heritage.

The cooperation landscape is affected by a relative north-south fragmentation of the lake respectively between the two regions of Central Finland and Päijät-Häme and between the jurisdiction of the two ELY centres. With regards to the limitation of water pollution and the protection of ecosystems, the River Basin management plan established for the Kymijoki river – Gulf of Finland provides a consistent single management framework.

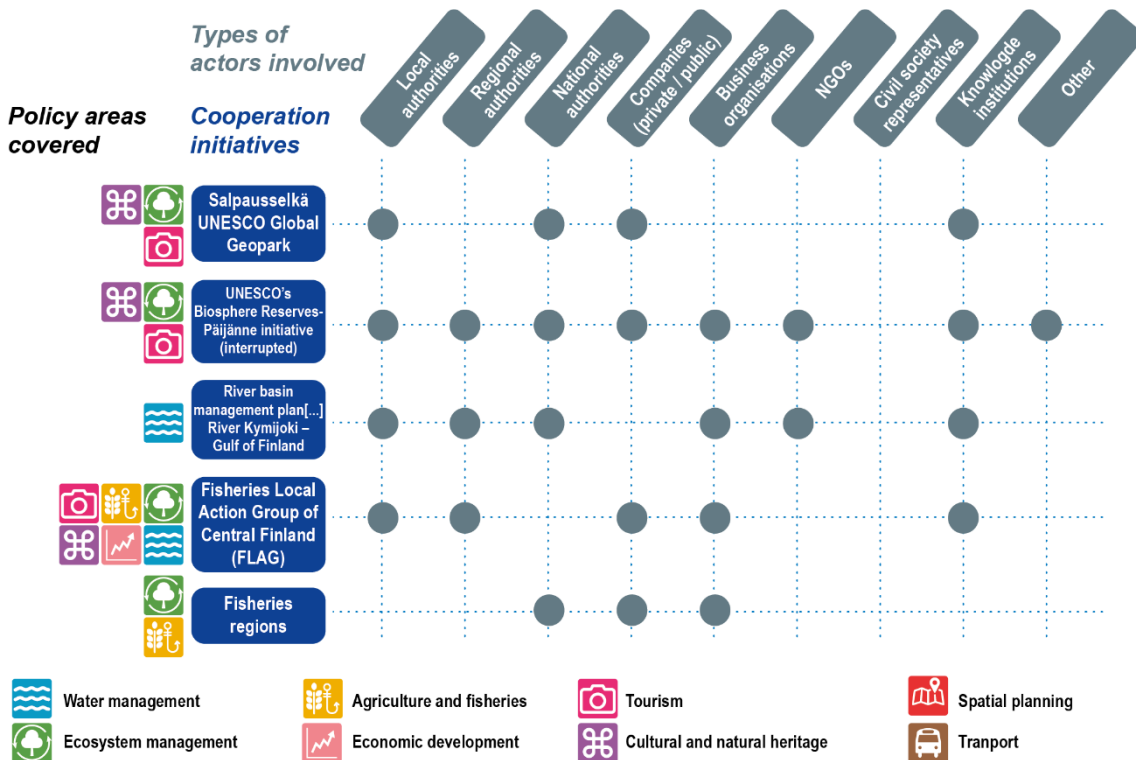


Figure 6-1 Main cooperation and institutional arrangements around Lake Päijänne

6.3 Lake-related issues

Regulation of water level (1.1)

Description of the issue

The water level of Lake Päijänne has been regulated since 1964 for hydropower production purposes and to moderate floods in the area. The regulation was found to have severe environmental consequences and the extent of the regulation was reduced in 2002. The environmental impacts of watercourse regulation include increase in aquatic plants, loss of biodiversity and decrease in fish populations. (Mäntykoski et al., 2020)

Currently, the hydrology-morphology state is assessed to be excellent or good in Lake Päijänne. Water levels in the Päijänne Lake area follow natural levels where levels are below average in times of low precipitation and above average with high precipitation in the watershed area. Only around 30 % of the water stream from Päijänne Lake to downstream Ruotsalainen Lake is regulated, but it allows for moderation of the extremes in terms of water levels. (Mäntykoski et al., 2020) As in the other watersheds in Finnish Lakeland, current water regulation practices

regarding Lake Päijänne are in need of adaptation due to the changing climate where large seasonal changes will most likely occur in a situation where snow accumulation and melt do not follow past historical trends (Veijalainen et al., 2010).

How it is tackled in the lake region

The Southeast Finland Centre for Economic Development, Transport and the Environment (ELY Centre) located in the downstream region manages the water level of Lake Päijänne, but it must negotiate with Central Finland and Häme ELY Centres on the matter. Each of the ELY Centres are responsible for monitoring the regulation in their regions. Regarding vegetation and bird populations in Lake Päijänne area, the ELY Centres have made an agreement that the Southeast Finland ELY Centre will be responsible for monitoring the situation.

The water regulation practices are based on the environmental rules and regulations. The negative impacts of the dams on fisheries are compensated by collecting annual appropriations from the hydropower installations. These funds are managed by the respective ELY Centres. Since the hydrology-morphology state is currently excellent or good in Lake Päijänne, there is relatively little conflict among different stakeholders on the water regulation practices.

Water pollution (1.2)

Description of the issue

Bioeconomy is a cornerstone of the economically and demographically declining Lake Päijänne area. The forestry industry in the region is undergoing a structural change with the closure of several mills in recent years, while investments have been made or are in pipeline for modern large-scale wood-processing plants. Intensification of the forestry industry however raises a number of concerns over future water quality because of the likely increasing nutrient and sediment loads due to the accelerating demand for wood in the area and also from those mills now with increased production capacity (Marttila et al., 2020). The forestry industry is estimated to cause the second highest nutrient load after agriculture which remains the main source of pollution. Other major sources of pollution consist of rural housing not connected to sewerage networks, while point sources of urban and industrial discharges also play a role here. Currently, water quality has remained good in Lake Päijänne. In addition to land management practices, climate change poses threats in respect of eutrophication, brownification and biodiversity loss in the coming years due to increased nutrient run-off and rising water temperatures. (See eg. (Mäntykoski et al., 2020)

How it is tackled in the lake region

In Finland, there is a long-standing legislative base for water management, which together with well-established enforcement procedures guarantee high standards of water protection. The legislative base for water protection includes the Environmental Protection Act (527/2014) and the Water Act (587/2011), while the Act on the Organisation of River Basin Management and the Marine Strategy (1299/2004), the Decree on River Basin districts (1303/2004) and the Decree on Hazardous and Harmful Substance on Aquatic Environment (1022/2006) implement the EU Water Framework Directive. Centres for Economic Development, Transport and the Environment (ELY Centres) monitor the level of pollution, while the Finnish River Basin management plan for the Kymijoki river – Gulf of Finland, including Lake Päijänne, is a joint effort including all of the respective ELY Centres and joint working groups involving representatives of the main national and local authorities, organisations, landowners and business interests responsible for the use, protection and state of water bodies in the area. The River Basin management planning process follows a bottom-up approach, where the management plan is drafted and streamlined based on the regional programmes on water management for Central Finland and Häme. The regional programmes specify targets and actions for water management.

Regulation of fish catches / support for lake-based fisheries (3.2)

Description of the issue

Lake Päijänne is an important area for commercial fisheries and a popular destination for recreational fishing which is promoted as a crucial part of the region's tourism attractiveness. However, domestic wild fish resources are currently underused, and concerns remain over the potential decrease in commercial fisheries in the near future due to ageing among many of the professional fishermen. There are 29 fishermen in Southern and Central Päijänne and 13 fishermen in Northern Päijänne registered active in commercial fisheries. There is no accurate data available on how many of these are full-time professional fishermen. (Keskinen et al., 2019) However, the number of professional fishermen does not describe well the economic and social importance of fisheries, as small-scale commercial fisheries are allowed under the recreational permits for fishing, supported by tax exemption from VAT up to 10 000 €. In addition, fishing is an important ecosystem service for permanent and temporary residents providing food and recreational activities. Around half of the total fish catches is made as recreational

fishing in average in Finland according to the estimations provided by the Natural Resources Institute Finland (Luke) (*Natural Resources Institute Finland, 2021*)

How it is tackled in the lake region

In Finland, there is a stable legislative base for managing fish resources, which is effectively enforced as a joint effort engaging national, regional and local actors. Fishing in Lake Päijänne is managed by two fisheries regions, Southern and Central Päijänne fisheries region and Northern Päijänne fisheries region. As laid down in the Fishing Act (379/2015), the responsibilities of fisheries regions include planning the management of fish resources, enforcing the management plan approved by the respective Centres for Economic Development, Transport and the Environment (ELY Centres) and monitoring impacts, while a body of joint owners or owners of water decide on the use and management of fish resources in accordance with the plan. The management plans are strategic in nature and valid for a period of 10 years.

As laid down in the Fishing Act (379/2015) fishing in Finland is subject to fees for any individual aged between 18-64 years when the fishing gear in use is any other than a fishing rod. These fees are collected by the national governmental agency Metsähallitus and local joint owners of water. In addition, annual appropriations are collected from hydropower installations and point sources of urban and industrial discharges to compensate the negative impacts of these activities to fisheries. These funds form annual appropriations for promoting fisheries, which are managed nationally and regionally. Part of these funds are directed as regional aid through the ELY Centres as special aid for regional projects promoting the fishing industry and general aid for the activities of fishing districts. The long-standing funding mechanism of annual appropriations for promoting fisheries provides a stable base for cooperation between the two fisheries regions as well as other local bodies and supports maintaining a solid data base for sustainable fisheries covering Lake Päijänne as an integrated area¹².

The Fisheries Local Action Group of Central Finland financed under the European Maritime and Fisheries Fund supports and promotes the fishing industry and fishing tourism in the area. The FLAG Central Finland operates in most parts of the Kymijoki River Basin, including Lake Päijänne. The strategy of the FLAG for Central Finland is prepared by local action groups active in the region together with the local fishing industry, owners of water, local educational establishments and other organisations active in development activities. The strategy lays down three strategic objectives: 1) development of expertise, quality and innovations; 2) development of infrastructure and operating environment; 3) development of new products and markets. The strategy is implemented using funding from various national and EU funding sources available to support fisheries. (Sisä-Suomen kalatalousryhmä, 2015) During the funding period of 2014-2020 projects are financed in the areas of value chain development, development of new methods and equipment, matchmaking of old and new potential fishermen combined with training and promotion of currently underused fish species¹³.

Strategic measures for demographic attractivity (4.1)

Description of the issue

Small rural municipalities riparian to Lake Päijänne are suffering from ageing and a declining population with high unemployment. Unemployment is also high in the principal towns Jyväskylä and Lahti in Central Finland and Päijät-Häme regions, though population is growing in these cities. (Official Statistics of Finland (OSF): Employment, 2021)

How it is tackled in the lake region

The strategies to tackle this situation focus mainly on measures to increase employment perspectives by supporting tourism and wellbeing service creation in both regions, while bioeconomy, digitalisation, education and science are also important for Central Finland and circular economy and design for Päijät-Häme. The Päijät-Häme Regional Development Strategy and Plan for 2018–2021 explicitly includes as a target increasing the attractiveness of the region for demographic reasons by enhancing service design in relation to tourism and wellbeing services, marketing the region, providing attractive housing options, transportation and other services. The preparation process of the regional strategies and programmes involves wide range of regional and local actors. The regional strategies and programmes provide opportunities for public funding in Lake Päijänne as in other parts of the

¹² You may find more information on the regional cooperation activities on the [Southern and Central Päijänne fisheries region](#) website.

¹³ You may find more information on the [FLAG Central Finland](#) website.

regions. The measures are not specifically targeted to promote integrated territorial development in Lake Päijänne. (Maakuntastrategia ja Päijät-Häme -ohjelma 2018-2021, 2017), (Keski-Suomen maakuntaohjelma 2018–2021, 2017)

Tourism development - Recreational mobility (5.1)

Description of the issue

As a part of the Kymijoki River Basin, Lake Päijänne is an historically important waterway for transportation. Today the waterway is important for recreational mobility and the region's tourism attractiveness.

How it is tackled in the lake region

The re-opening of the former wood cutting Kimola canal for water transportation in summer 2020 extended the waterway from Kouvola to Pielavesi, a distance of around 400 km for recreational travelling. There are three canals build around Lake Päijänne, Keitele canal in the north, Kalkkinen in the south and Vääksy connecting Lake Päijänne to the city of Lahti in the south. During summer, there are several cruise service providers available for travelling, including Lake Päijänne area. (<https://visitkouvola.fi/fi/a/317/kimolan-kanava#22d3ddca>, 2020) The renovation of Kimola canal cost around 20.8 million euros, this was two-thirds funded by the government with the rest funded by the surrounding municipalities (Kouvola, Heinola, Iitti) (<https://yle.fi/uutiset/3-10276550>, 2020). The recreational mobility is an important part of the tourism development and included in regional strategies and programmes, which provide opportunities for public funding in Lake Päijänne as in other parts of the regions. The preparation process of the regional strategies and programmes involves wide range of regional and local actors. The measures are not specifically targeted to promote integrated territorial development in Lake Päijänne. (Maakuntastrategia ja Päijät-Häme -ohjelma 2018-2021, 2017), (Keski-Suomen maakuntaohjelma 2018–2021, 2017)

Protection and valorisation of cultural and natural heritage (6.1)

Description of the issue

There is a shared understanding between national, regional and local actors that considerable potential exists to increase awareness of the cultural and natural heritage of Lake Päijänne among other Finnish Lakeland sites in order to increase the attractiveness of the region. There is no structure, single brand or even a website covering the entire Lake Päijänne, but northern and southern regions have been developed separately according to administrative regions of Central Finland and Päijät-Häme. Cooperation on a strategic level is fragmented and made on project basis on issues that are not monitored under the national environmental rules and regulations. (Uusitalo et al., 2008)

How it is tackled in the lake region

In recent years, two concrete initiatives have been put forward to streamline the efforts to increase the awareness of cultural and natural heritage, both of which have an international focus.

-In 2020, three municipalities directly riparian to the Lake Päijänne (Padasjoki, Asikkala and Sysmä) in the southern Päijänne area, together with three other (Lahti, Hollola, Heinola) municipalities riparian to the same watercourse decided to progress with an application for UNESCO Global Geopark status. Päijänne national park established in 1993, other protected areas and several landscapes defined as nationally valuable are situated in the area of **Salpausselkä Geopark**. Prior to submitting the application, a preparation project (2017-2020) was coordinated by a local university, the LAB University of Applied Science and involved in the preparation governmental organisations, the Geological Survey of Finland and Metsähallitus, municipalities and other local actors. The project received funding under the European Agricultural Fund for Rural Development Programme (EAFRD). The FRESHABIT LIFE IP (2016-2022) project financed under the LIFE Programme provided specific information on the underwater nature, cultural heritage and geological formations in the area to support the initiative. The initiative furthermore received additional funding for 2020-2021 under the ERDP to increase the awareness of Salpausselkä Geopark among local people, summer residents and tourists, as well as to finalise the UNESCO application.¹⁴

¹⁴ You may find more information on the [Salpausselkä Geopark](#) website.

-Another initiative aimed at Lake Päijänne joining **UNESCO's World Network of Biosphere Reserves**. The initiative was unique in terms of involving both Päijät-Häme and Central Finland Regions in the preparation process to discuss strategically the development of Lake Päijänne as a single entity. Interest in the concept of Biosphere Reserves began in the early 2000s viewing them as a potential platform for stable cooperation covering the entire Lake Päijänne area and for spatial branding purposes. In 2008, the Centres for Environment in both Central Finland and Häme produced a joint preparatory study on the potential for establishing a Biosphere Reserve. The study concluded that there is potential for establishing a Biosphere Reserve but further preparatory work is needed to clarify the concept and the potential impacts for the area. (Uusitalo et al., 2008) As a follow-up, a project "Branding Lake Päijänne" funded under the ERDF was carried out in 2018 by two local universities, the LAB University of Applied Science and JAMK University of Applied Sciences, to progress with the initiative and to fill in the information gaps. As a result, it was decided not to go forward with the initiative covering the entire Lake Päijänne area with its two regions. The main concerns here included fears relating to potential future restrictions on agriculture and forestry activities and the related impacts on employment in these sectors which play an important role in the area. (Päijänne Brändiksi - hanke. Loppuraportti, 2019) Thus, cooperation between Päijät-Häme and Central Finland remains fragmented on a strategic level in relation to Lake Päijänne particularly on issues that are not already monitored under the national environmental rules and regulations regime.

6.4 Cooperation initiatives around the lake

Name of cooperation initiative	
Salpausselkä UNESCO Global Geopark	
Historical background of the cooperation	
Päijänne Lake is geologically formed by the second Salpausselkä terminal moraine in the south, while Lahti region is located on the first Salpausselkä terminal moraine. These terminal moraines form globally a unique natural environment, which also have strong cultural and social connotations as sources of groundwater, valuable landscapes and early habitation. Even if the natural value of the terminal moraines has been recognised nationally and locally, a lack of scientific information on the area was identified. The initiative was launched to increase the knowledge on the natural values and develop sustainable nature tourism under an internationally recognisable label, while bringing together different actors. Preparation projects (2017-2019 and 2020-2021) have been financed under the European Rural Development Fund (ERDF) together with funding from the municipalities and the LAB University of Applied Science located in the area. ¹⁵	
Actions and achievements	
The initiative has succeeded in bringing together different actors and locations under the newly established Salpausselkä Geopark brand, producing several concrete products and progressing with the UNESCO Global Geopark application. During the preparation phase Metsähallitus and the Geological Survey of Finland produced several ecological and geological inventories in the Salpausselkä Geopark area. In addition to the preparation project the FRESHABIT LIFE IP (2016-2022) project financed under the LIFE Programme supported the initiative by providing specific information on the underwater nature, cultural heritage and geological formations in the area. The preparation phase included producing marketing and communication material, such as maps and brochures as well as producing information material to the Salpausselkä Geopark locations. In January 2020, Salpausselkä Geopark unit was established within Lahti Region Oy (Visit Lahti), which is a company owned jointly by municipalities in Lahti region to develop and promote tourism in the area, launched in January 2019. Visit Lahti provides coherent and easily accessible information on Salpausselkä Geopark for tourism purposes on its website. The municipalities are committed to funding the initiative for time being. ¹⁶	
Involved partners	
Name	Status

¹⁵ You may find more information on the [Salpausselkä Geopark](#) website.

¹⁶ You may find more information on the [preparation](#) and the [follow-up project](#) websites as well as on the [Salpausselkä Geopark](#) websites.

Municipalities Padasjoki, Asikkala, Sysmä, Lahti, Hollola, Heinola, (Kärkölä) directly and through jointly owned Lahti Region Oy (Visit Lahti)	Manager and coordinator	
The LAB University of Applied Science	Coordinator	
Metsähallitus	Project partner	
The Geological Survey of Finland	Project partner	
Private businesses and	stakeholders	
Land owners	stakeholders	
NGOs	stakeholders	
Thematic scope		
Water management	M: major x: minor	
Ecosystem management		x
Food production		
Demography, labour market and attractiveness		
Tourism		x
Cultural and natural heritage		M
Transport		
Spatial planning		

Name of cooperation initiative

UNESCO's World Network of Biosphere Reserves

Historical background of the cooperation

There is a shared understanding between national, regional and local actors that considerable potential exists to increase awareness of the cultural and natural heritage of Lake Päijänne among other Finnish Lakeland sites in order to increase the attractiveness of the region. However, there is no structure, single brand or even a website covering the entire Lake Päijänne, but northern and southern regions have been developed separately according to administrative regions of Central Finland and Päijät-Häme. Cooperation is fragmented and made on project basis on issues that are not monitored under the national environmental rules and regulations. Interest in the concept of Biosphere Reserves began in the early 2000s viewing them as a potential platform for stable cooperation covering the entire Lake Päijänne area and for spatial branding purposes. (Uusitalo et al., 2008)

Actions and achievements

The initiative was unique in terms of involving both Päijät-Häme and Central Finland Regions in the preparation process to discuss strategically the development of Lake Päijänne as a single entity. In 2008, the Centres for Environment in both Central Finland and Häme produced a joint preparatory study on the potential for establishing a Biosphere Reserve, financed under the European Regional Development Fund (ERDF) together with funding from the Finnish Ministry of Environment, local municipalities and enterprises. (Uusitalo et al., 2008) As a follow-up, a project "Branding Lake Päijänne", funded under the European Rural Development Fund (ERDF) together with funding from the Universities, was carried out in 2018 by two local universities, the LAB University of Applied Science and the JAMK University of Applied Sciences, to progress with the initiative by developing the network and to fill in the information gaps identified during the previous project. The project was participatory and included nine events, a survey to permanent and temporary residents and local actors. Participants in the events included a wide range of regional and local actors as well as residents interested in the theme. The project enhanced the local knowledge on the concept of Biosphere Reserves and brought together different viewpoints for discussion. As a result of the process the initiative was abandoned in terms of covering both the regions. Nevertheless, according to the project partners, the initiative supported creating new partnerships for further development actions and the outputs are used in other regional initiatives in the field of sustainability. (*Päijänne Brändiksi - hanke. Loppuraportti*, 2019), (Vihtonen et al., 2018)

Involved partners

Name	Status
The Centre for Environment Central Finland/ Centre for Economic Development, Transport and the Environment Central Finland	Preparation project 2007-2008, coordinator
The Centre for Environment Häme/ Centre for Economic Development, Transport and the Environment Häme	Preparation project 2007-2008, partner

The LAB University of Applied Science	Preparation project 2018, partner	
The JAMK University of Applied Sciences	Preparation project 2018, coordinator	
Municipalities: Jyväskylä, Jämsä, Korpilahti, Kuhmoinen, Joutsa, Luhanka, Muutame, Toivakka	Preparation project 2007-2008, funding partners	
The Regional Council of Central Finland	Preparation project 2018, steering group	
The Regional Council of Päijät-Häme	Preparation project 2018, steering group	
Metsähallitus	Preparation project 2018, steering group	
Business representative organisations	Preparation project 2018, steering group	
Private business	Preparation project 2007-2008, funding partners, stakeholders	
NGOs	stakeholders	
Land owners	stakeholders	
Thematic scope		
Water management	M: major x: minor	
Ecosystem management		x
Food production		
Demography, labour market and attractivity		
Tourism		x
Cultural and natural heritage		M
Transport		
Spatial planning		

Name of cooperation initiative

The Finnish River Basin management plan and regional programmes for River Kymijoki – Gulf of Finland

Historical background of the cooperation

As laid down in EU Water Framework Directive on integrated river basin management and in the national provisions incorporating the Directive, namely in Act on the Organisation of River Basin Management and the Marine Strategy (1299/2004), the Finnish River Basin management plan for River Kymijoki – Gulf of Finland covering Lake Päijänne is prepared to guide the sustainable water management in the area

Actions and achievements

The preparation of the Finnish River Basin management plan for the Kymijoki river – Gulf of Finland is organised based on a bottom-up approach, where the regional programmes for Central Finland and Häme covering Lake Päijänne are first prepared by the local authorities Centres for Economic Development, Transport and the Environment (ELY Centres). The preparation process of the regional programmes is participatory where the stakeholder engagement is organised around joint working groups as laid down in the Act on the Organisation of River Basin Management and the Marine Strategy (1299/2004, section 14) involving representatives of the main national and local authorities, organisations, landowners and business interests responsible for the use, protection and state of water bodies in the area. The River Basin management plan is drafted based on the regional programmes as a joint effort including all the respective ELY Centres in the area, followed by a public consultation process for both the plan and the regional programmes.

Involved partners

Name	Status
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Deconcentrated State: ELY Centre Central Finland, ELY Centre Häme		Plan and programme coordinator
Regional councils: Päijät-Häme, Central Finland		Members of the joint working group
National authorities: AVI, governmental agencies		
Municipalities		
National research institutes and universities		
Business representative organisations		
NGOs, Funds		
Thematic scope		
Water management	M	M: major x: minor
Ecosystem management		
Food production (incl. fisheries)	x	
Demography, labour market and attractivity		
Tourism		
Cultural and natural heritage		
Transport		
Spatial planning		

Name of cooperation initiative		
<i>The Fisheries Local Action Group of Central Finland (FLAG)</i>		
Historical background of the cooperation		
The preparation phase for establishing a Fisheries Local Action Group of Central Finland started in 2010 as an initiative of local action groups operating in the area under the Rural Development Programme for Mainland Finland and continued until 2015. The FLAG Central Finland is one of the 10 FLAGs operating in Finland, and managed by one of the local action groups Päijänne Leader ry.		
Actions and achievements		
The Fisheries Local Action Group of Central Finland financed under the European Maritime and Fisheries Fund supports and promotes the fishing industry and fishing tourism in the area. The FLAG Central Finland operates in most parts of the Kymijoki River Basin, including Lake Päijänne.		
Involved partners		
Name	Status	
Local action groups (ERDF)	Preparation and coordination of the Programme, members of the steering group	
Private business	Preparation and funding of the programme	
Business representative organisations	Preparation of the programme, members of the steering group	
Land owners	Preparation of the programme	
Educational institutions	Preparation of the programme	
Municipalities	Funding of the programme	
Regional Council of Päijät-Häme, Regional Council of Central Finland	Member of the steering group	
Thematic scope		
Water management	x	M: major

Ecosystem management	x	x: minor
Food production (incl. fisheries)	M	
Demography, labour market and attractivity	x	
Tourism	x	
Cultural and natural heritage		
Transport		
Spatial planning		

Name of cooperation initiative

Fisheries regions

Historical background of the cooperation

Fisheries regions were established in 2019 as laid down in the Fishing Act (379/2015).

Actions and achievements

Fishing in Lake Päijänne is managed by two fisheries regions, Southern and Central Päijänne fisheries region and Northern Päijänne fisheries region, established in 2019. As laid down in the Fishing Act (379/2015), the responsibilities of fisheries regions include planning the management of fish resources, enforcing the management plan approved by the respective Centres for Economic Development, Transport and the Environment (ELY Centres) and monitoring impacts, while a body of joint owners or owners of water decide on the use and management of fish resources in accordance with the plan. The preparation of the management plans needs to be finalised by the end of 2021. The members of fisheries regions include holders of fishing rights and national fisheries organisations approved by the Ministry of Agriculture and Forestry. Fisheries regions are funded by fishing management fees paid by those engaged in fishing.

Involved partners

Name	Status
Centre for Economic Development, Transport and the Environment (respectively Häme and Central Finland)	Managing authority
National fisheries organisations	Members
Body of joint owners or owners of water	Members

Thematic scope

Water management		M: major x: minor
Ecosystem management	M	
Food production	M	
Demography, labour market and attractivity		
Tourism		
Cultural and natural heritage		
Transport		
Spatial planning		

7 Lake Geneva

7.1 Introduction

The Lake Geneva is a lake at the border between France and Switzerland. The region is characterised by urban expansion and sprawl, most importantly around Geneva and Lausanne. In the 50 km buffer around the lake, other large agglomerations include Annecy and Evian-Thonon on the French side, and Fribourg, Yverdon-les-Bains, Montreux on the Swiss side. It overall represents a densely populated crossborder network of large and medium-size towns. Population has been growing fast around the lake between 2011 and 2017 with most the municipalities gaining more than 5% population between 2011 and 2017. Economic growth in and around Geneva and Lausanne boosted demographic growth of the area. Only exception are the remote valleys of the Bern Canton (east of the lake) and of the French Jura (North-West of the lake).

The entire lake Region is an economically dynamic area, with diverse territorial specialisation. Geneva is an international metropolis with a strong banking and industrial sector. In the area, industrial specialisation ranges from Technologies of Information and Communication, chemistry, mechatronics and watchmaking in the lemanic Arc to precision machining in the Arve valley (FR). Tourism is well-developed around the lake (lakeside tourism), in the rural areas of the Vaud Canton and in the Albanais (green tourism) and in the nearby mountains (Bernese and Pennine Alps, Chablais, Jura).

Population growth and topographical constraints (relief, rivers) led to transport being one of the major issues to coordinate between regional territorial actors. The lake region is well-connected to other surrounding metropolises via train and motorways (good connection with Lyon, Strasbourg, Zürich, Milan) but organisation of local and regional transport is a challenge. On the one hand, the lake is both a factor of attraction and an obstacle for transport infrastructures. On the other hand, the integration of the Geneva Canton with the French neighbouring municipalities faces several technical and political obstacles.

The lake region is cut across different administrative lines. First it is a crossborder area between France and Switzerland with few topics discussed directly by State representatives. At regional level, the lake region gathers several French-speaking swiss Cantons (Geneva, Vaud, and Valais). There is only one French department that is directly riparian to the lake (Haute-Savoie), but other départements are directly connected to the metropolitan dynamics steered by Geneva and Lausanne (Ain in Auvergne-rhône-alpes and Jura in Bourgogne-Franche-Comté). At local level, the municipal fragmentation only plays a significant role for certain metropolitan transportation topics where local spatial planning is involved. Overall, the political-administrative fragmentation is mostly relevant in the regional/cantonal interplay which has directly control over lake-related issues (water quality, transport, spatial planning).

7.2 Synthesis of the lake-related multi-level governance framework

Around lake Geneva, four relevant lake-related issues were identified: preservation of water quality (1.2), business development policies targeting entrepreneurs in the lake region (4.2), development and networking in the tourism industry (5.1), and management of daily mobilities (7.3).

Lake-related cooperation landscape is structured by a large variety of institutional arrangement or initiatives. The selection of entities includes an international Commission under the direction of a consortium of national and regional authorities; a cross-border cooperation body coordinated by regional authorities; a Swiss-French joint venture for railways operation; and an association of mostly private tourism actors. Other cross-border initiatives are active in the lake surroundings that are not specifically centred on the lake. The cooperation landscape is affected by the cross-border and metropolitan (Geneva) nature of the lake. The development of a polycentric urban system next to the lake holds specific challenges in terms of transport, urban development, or tourism. In this context, the lake is used as a symbol or as a common denominator for the development of urban cross-border cooperation. Prominent actors for the lake-related cooperation are regional authorities (Regions and Département in France and Cantons in Switzerland).

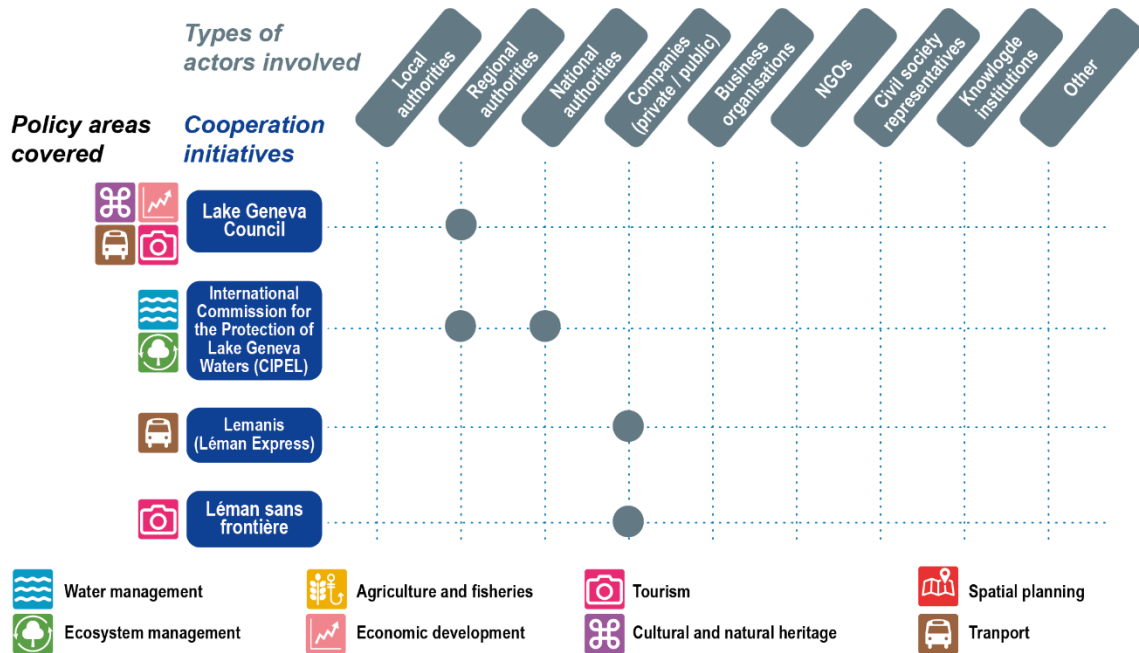


Figure 7-1 Main cooperation and institutional arrangements around Lake Geneva

7.3 Lake-related issues

Preservation of water quality (1.2)

Description of the issue

In 2020, the water quality of Lake Geneva is considered as good. Main long term challenges are (1) the control of phosphorus levels that generate eutrophication, (2) the proliferation of micropollutants (pesticides, herbicides, metals and pharmaceutical residues); (3) the monitoring of climate change effects on water quality (CIPEL, n.d.). According to Rapin and Gerdeaux, (2013), the control of phosphorus levels has improved since the 1970s thanks to “the increase of wastewater treatment plants eliminating phosphorus, to the improvement of performance of the latter, to actions at the source such as the ban on phosphorus in laundry products, to the improving of the quality of sewerage networks (limitation of sewer overflows) and to actions in agriculture to reduce phosphorus fertilization and fight against soil erosion”. It has therefore been reduced to 18 µg/L in 2017 which is close to the objective set by the authorities (CIPEL).

The proliferation of micropollutants requires a constant surveillance effort, as forbidden substance may reappear from time to time (e.g. atrazine in 2014) and the presence of pharmaceutical residues of several types is recorded every years (CIPEL, n.d.).

How it is tackled in the lake region

The issue of water quality in the Lake Geneva river basin has been raised at crossborder level since 1950s when high levels of phosphorus were damaging the health of the lake and the drinking water supply. In 1963, a convention has been signed between France and Switzerland to monitor water quality (CIPEL – convention Internationale pour la Protection des eaux du Léman). Since 1971, the international convention implements research programmes and actions. It coordinates the water policy between the two countries based on the involvement of regional actors (Cantons in Switzerland and Régions and Départements in France).

The issue of water quality is approached by the CIPEL through thematic focus on different sources of pollutions: phosphorus, agrochemicals, waste, invasive species, leisure activities. The CIPEL elaborates and implements action plans (1991-2000, 2001-2012, 2011-2020). The current action plan 2011-2020 provides for concrete measures to be implemented by the CIPEL. It mostly encompasses monitoring measures of water quality, and actions towards reducing pollution load from domestic and urban activities, industries, agricultures and for the protection of the natural milieux. Actions are described in fiches that mention project owners (local authorities, inhabitants, farmers, industries). An Action Plan for 2021-2030 is under preparation.

Business development policies targeting entrepreneurs in the lake region (4.2)

Description of the issue

The Geneva lake region has a long track-record of industrial excellence especially in cutting-edge industries (chemistry, nanotech, micromechanics, watchmaking, machine tool, plastics processing), biotechnologies (wood processing, food processing) and mountain-dependant industries (energy, tourism, outdoor products). The economic base of the riparian regions is solid thanks to a strong network of SMEs as well as large structuring industrial enterprises. However, business cooperation between enterprises from France and Switzerland are still underdeveloped.

How it is tackled in the lake region

Mainstream support measures to businesses are mainly implemented at regional and national levels through fiscal and financial instruments and through activities of Chamber of Commerce/Industries.

In the 2010s, some initiatives were launched at crossborder level through the Lake Geneva Council, in partnership with the Lemman Union of Commercial Chambers (ULCC). From 2011, the ULCC has identified sectors of excellence operating in the lake region. A set of 18 sectors were identified and described in dedicated fiches (Conseil du Léman, 2016). Concrete actions through the Lake Geneva council to support business development are modest (e.g. crossborder networking event organised every year), but the initiative shows how the lake is used as a federating object to develop sectoral bridges across the region, to make it emerge as a metropolitan polycentric productive region.

Development and networking of the tourism industry (5.1)

Description of the issue

The lake Geneva region has multiple touristic assets to capitalise on: the metropolitan dimension of Geneva and Lausanne mobilised for *business tourism* (international conferences and congress), international organisations in Geneva that support *diplomatic tourism*, international exhibitions and a rich urban history as a basis for *cultural tourism* (Union lémanique des Chambres de Commerce, 2017). The lake itself is used for nautical and thermal activities. Surrounding mountains provides direct connections to skiing resorts especially in Haute-Savoie (FR) and Wallis Canton (CH).

Several educational institutions oriented toward hospitality industry or tourism management are located in the area especially in the Vaud and Geneva Cantons.

However, networking and dialog between actors of these different destinations/offers is still limited.

How it is tackled in the lake region

The regional tourism offer is managed and promoted at local and regional level by tourism boards. However, the lake itself appears as a secondary asset for most regional tourism boards (Vaud Canton primarily focused on rural tourism, wine and gastronomy, Geneva Canton primarily focused on business, diplomatic and city tourism, Haute-Savoie and Wallis primarily focused on mountain tourism and winter sports). The lake is therefore a blind spot of the official tourism promotion.

However, a combined crossborder offer whose brand is based on the lake has emerged in the 1990s: "Léman sans frontière" (www.leman-sans-frontiere.org). It is coordinated by an association of tourism actors (mostly private businesses) and provides a common umbrella for specific attractions around the lake between France and Switzerland. It combines specific commercial offer from a portfolios of 29 partners, ranging from cultural institutions, to historical monuments and leisure parks.

The possibility of developing a touristic offer centred on the lake is an emerging topic of the crossborder institutional cooperation initiated by the Lake Geneva Council. In 2011, the Lemman Union of Chambers of Commerce (ULCC) identified tourism as one of 18 "sectors of excellence" on which crossborder cooperation could focus efforts.

Management of daily mobilities (7.3)

Description of the issue

On the west end of the lake, the Geneva agglomeration has grown fast during the last decades. The growth of employment have even surpassed the growth of population, leading to an increase in commuting flows with neighbouring France. This created cumbersome situations for crossborder workers commuting everyday. As the Geneva functional metropolitan area extended to neighbouring areas in France, the issue of coordinating transport at crossborder level became a necessity.

- Transports in the area are organised by different authorities covering multiple overlapping jurisdictions:
- TPG in the Canton de Genève (and in crossborder France for specific crossborder lines).
- Multiple Mobility Authorities at inter-municipal levels in France for urban and suburban transports (CA du Pays de Gex, Thonon Agglomeration, Communauté d'agglomération du Pays de Gex).
- Region Auvergne-Rhône-Alpes and SNCF for regional transport on the French side
- CFF (Swiss national railways) for interurban railway transport

In this sense, the metropolitan transport system around the lake is fragmented. The lake is an additional obstacle to seamless transports in the area. The Railway connection between Switzerland and Haute-Savoie (through Geneva) was historically hampered by a missing railway link between Geneva and Annemasse.

How it is tackled in the lake region

In the last decade there has been multiple efforts towards more coordination in transport in the crossborder metropolitan area and beyond. It includes:

- The creation of several crossborder transport lines in the local network managed by Geneva public transport (TPG), based on tram, bus and bus rapid service (Grand Genève, n.d.).
- The establishment of an integrated Express Railway Regional Network ("Leman Express") based on a newly built railway line between Geneva-Cornavin and Annemasse. This network is operational since 2019 and is coordinated via "Lémanis" a joint venture established between SNCF and CFF. It provides regular connections between Annecy (FR) and Geneva and Lausanne (CH). In the next years, it is expected to have a "considerable impact on local areas with respect to housing construction, population growth, the creation or transfer of jobs toward more accessible localities, the reorientation of pendulum movements, and the development and specialization of localities" (Pini, 2020).
- Crossborder transport is also organised across the lake itself. The crossing of the lake via regular ferry service is implemented by a private company based in Lausanne (Compagnie Générale de Navigation) on three lines: N1 Lausanne-Evian, N2 Lausanne-Thonon, N3 Nyon-Yvoire).

The development of crossborder transport at a metropolitan level (Geneva) is supervised by the Grand Genève, a local grouping of crossborder cooperation, that gathers local and regional authorities from the Geneva agglomeration in France and Switzerland. The Geneva financial allowance (CFG) that is transferred from the Geneva canton to French regional bodies contributes to the development of public transport on the French suburbs of Geneva.

The Lake Geneva Council establishes the crossborder transport scheme at inter-regional level.

7.4 Cooperation initiatives around the lake

Name of cooperation initiative

Lake Geneva Council

Historical background of the cooperation

Lake Geneva Council (Conseil du Léman) is a cross-border cooperation body bringing together the French departments of Ain and Haute-Savoie and the Swiss cantons of Vaud, Valais and Geneva. It was created in 1987 on the basis of a Convention between the Swiss cantons of Vaud, Valais and Geneva and the French NUTS3 regions of Ain and Haut-Savoie.

The Council deals with issues of transport, border workers, spatial planning and the environment, the economy, tourism, sport and culture. In order to implement effective and pragmatic cooperation, the Lake Geneva Council relies on five standing committees: (1) Economy and Tourism, (2) Spatial Planning and Environment, (3) Education and Culture, (4) Border population and social issues; (5) Transport and Communication. The Conseil du Léman is attentive to the socio-economic actors of the region and works in coordination with the chambers of commerce, agriculture, crafts and trades of the five member entities.

The focus is on cross-border cooperation, rather than on the lake as such. It mobilises the lake as a symbolic object to promote FR-CH crossborder cooperation in the region.

Actions and achievements

In the field of management of daily mobilities, the Lake Geneva Council elaborates and update a strategic transport scheme.

In the field of development and networking of the tourism industry, it organises exchanges between professionals of the tourism sector.

In the field of business development policies, the cooperation format identified sectors of excellence on which the region could further secure its competitive advantages. Source: (Conseil du Léman, 2016)		
Involved partners		
Name	Status	
Regional authorities: Département Ain (FR), Département Haute-Savoie (FR), Canton de Genève (CH), Canton de Vaud (CH), Canton du Valais (CH).	Members	
Thematic scope		
Water management		M: major x: minor
Ecosystem management		
Food production		
Demography, labour market and attractivity	M	
Tourism	X	
Cultural and natural heritage	X	
Transport	M	
Spatial planning		

Name of cooperation initiative	
<i>International Commission for the Protection of Lake Geneva Waters</i> <i>Commission internationale pour la protection des eaux du Léman (CIPEL)</i>	
Historical background of the cooperation	
The International Commission for the Protection of the Waters of Lake Geneva (CIPEL), a Franco-Swiss inter-governmental body, has been contributing since 1963 to the coordination of water policy at the level of the Lake Geneva basin, more particularly between the departments of Ain and Haute-Savoie and the cantons of Vaud, Valais and Geneva. The CIPEL's territory, covering an area of 10,300 square kilometres, covers the Lake Geneva catchment area as well as the downstream Rhône, from the outlet of the lake to the French-Swiss border at Chancy.	
Actions and achievements	
The objective of the CIPEL is to maintain or restore the ecological quality of water and aquatic environments considered as a whole (physical characteristics, state of the banks, the bottom, etc.), in particular to ensure that the water is of good quality: for the use of lake water as drinking water after simple treatment; (2) the practice of leisure activities (fishing, swimming, water sports, etc.) in optimal conditions; and the predominance of noble fish (Arctic char, whitefish/ferra, trout, ...) ensured by natural reproduction. To do so, the CIPEL monitors the evolution of the quality of the waters of Lake Geneva, the Rhône and their tributaries. It organises and carries out all the research necessary to determine the nature, the importance and the origin of pollution and it exploits the results of this research. It coordinates water policy on the scale of the Lake Geneva basin. It recommends to the contracting governments the measures to be taken to remedy current pollution and prevent any future pollution. It provides well-curated information to the population, through regular reports and public events. Source: www.cipel.org	
Involved partners	
Name	Status
National authorities, agencies, and deconcentrated State France: Prefecture Auvergne-Rhône Alpes, Préfecture Ain, Préfecture Haute-Savoie, Water Agencies, Environnement Agency (DREAL) Switzerland: Federal Office for Environment, Federal department for foreign affairs.	Represented in the executive board
Regional authorities: France: Département de l'Ain, département de la Haute-Savoie, Region Auvergne Rhône-Alpes Switzerland: Canton de Genève, Canton de Vaud, Canton du Valais	Represented in the executive board
Thematic scope	

Water management	M	M: major x: minor
Ecosystem management		
Food production		
Demography, labour and market and attractivity		
Tourism		
Cultural and natural heritage		
Transport		
Spatial planning		

Name of cooperation initiative		
Lemanis - Léman Express		
Historical background of the cooperation		
The Léman Express is the regional express railway network centered on the Geneva metropolis and reaching out towards Lausanne (CH), Annecy (FR), and Bellegarde sur Valserine (FR). Lemanis has been established in 2017 as a joint venture by the Swiss national railways (CFF) and the French national railways (SNCF).		
Actions and achievements		
As the sole transport operator of the Léman Express network it is in charge of the production (regular train service), the coordination and monitoring of the convention signed with regional partners, the planning of the offer, as well as marketing and communication surrounding the service (Lémanis, 2018)		
Involved partners		
Name	Status	
Swiss national railways (CFF)	Partner	
French national railways (SNCF)	Partner	
Thematic scope		
Water management		M: major x: minor
Ecosystem management		
Food production		
Demography, labour and market and attractivity		
Tourism		
Cultural and natural heritage		
Transport	M	
Spatial planning		

Name of cooperation initiative		
Léman sans frontière		
Historical background of the cooperation		
Léman sans frontière is an association of tourism actors located around lake Geneva in France and in Switzerland. It was established in 1997. It provides a combined offer of tourism product under the same branding umbrella. It combines specific commercial offer from a portfolios of 29 partners, ranging from cultural institutions, to historical monuments and leisure parks.		
Actions and achievements		
The website www.leman-sans-frontiere.org gathers all information provided by the association. It features: general information on tourism around the lake, information on specific attractions (members) including discounts, an agenda with upcoming events, and other information on accommodation, restaurants, and public transports. A map provides an overview of the available touristic offer.		
Involved partners		
Name	Status	
Private and public tourism service providers	Member	
Public transportation companies	Member	

Thematic scope		
Water management		M: major x: minor
Ecosystem management		
Food production		
Demography, labour market and attractivity		
Tourism	M	
Cultural and natural heritage		
Transport		
Spatial planning		

8 Lake Maggiore

8.1 Introduction

Lake Maggiore is a large sub-alpine lake located between Switzerland and Italy. It is the second largest lake in Italy (after lake Garda) and the fourth largest lake in Switzerland (after lakes Geneva, Constance, and Neuchâtel), with a surface of 212,2 km², an extension of 65 km and a maximum width of 12 km (Enciclopedia Treccani, 2021). The main tributaries to the lake are rivers Ticino, Maggia and Tresa from Switzerland, and Toce (from Italy). It is downstream of lake Orta (via Toce) and of lake Lugano (via Tresa). Its sole emissary is the Ticino (in Italy), which then flows into the Po.

Its shores are shared between the Italian Regions of Lombardy and Piedmont, and the Swiss Canton of Ticino. In Italy, the lake touches three provinces: Varese in Lombardy, and Verbano-Cusio-Ossola and Novara in Piedmont. In Switzerland, concerned administrative units are also the Distretto (Bezirk) of Locarno and the four Circoli (Kreis) of Isole, Locarno, Navegna, and Gambarogno. Overall, there are 36 municipalities on the lake's shores, of which 28 on the Italian side (16 in the Province of Varese, 7 in the Province of Verbano-Cusio-Ossola, and 5 in the Province of Novara), and 8 on the Swiss side. Administrative fragmentation has caused a few issues in the coordination on some lake-related issues, described in greater detail below. Relevant examples are key issues such as the regulation of the water level and navigation on the lake: these are normally tackled with regional or supra-regional measures (such as basin authorities) both in Italy and in Switzerland, but in this case are managed by national level institutions. Only in recent years have there been cooperation initiatives, mostly prompted by European Territorial Cooperation Programmes, between administrations around the lake on some issues, notably tourism. The lake is a popular tourist destination: the area of Lakes Maggiore, Orta and Mergozzo has historically been the most preeminent tourist area in Piedmont. It is widely equipped with hotels and complementary services and also concentrates most of the Region's camping sites. Lake Maggiore area is also an important centre for Meetings, Incentives, Conferences and Exhibitions (MICE) tourism. (Regione Piemonte, 2019). Tourism has been growing steadily in recent years both on the Italian side (Regione Piemonte, 2020) and on the Swiss side, (Beritelli et al., 2015; O-Tur, 2020), with the exception of 2020 due to the Covid pandemic. In Ticino, in the lake shore area and neighbouring valleys, tourism is among the most relevant economic sectors, accounting for 25% of employment and 21% of the GDP¹⁷ (Rütter Soceco, tiresia, Line@soft, 2014). Similar shares can be expected on the Italian side of the border. Economic performance in the three main concerned regions is somewhat different. In terms of per capita GDP,¹⁸ it is 40 804 USD in Piedmont, 50 826 USD in Lombardy, and 65 960 USD in Ticino. However, looking at disposable income,¹⁹ the picture is much closer, with Piedmont at 25 509 USD, Lombardy at 27 734 USD and Ticino at 24 421 USD. Overall, economies around the lake are rather healthy, with slow but generally steady growth rates in the years after the 2008 financial crisis. The dynamics and values of disposable income lead to conclude that there is no large economic disparity between the Piedmontese, Lombard, and Ticinese shores. The population around the lake's territory is rather homogeneously distributed along the shoreline, which is mostly urbanised: as in all alpine lakes, the close proximity of mountains and hills caused a concentration of settlements along the shores. Areas closer to the Lombard plains (between Laveno and Ispra) are more populated, while northern shores, especially the western one, are more sparsely populated. Major urban settlements are Provincial capital Verbania on the Italian side and the twin towns of Locarno and Ascona on the Swiss side. Population change is a mixed picture, mostly showing a small decrease on the Italian side and generally growing on the Swiss side, with a few exceptions on both sides. Overall, the areas around the lake do not benefit from the sustained growth in population in the main metropolitan areas of Lugano-Mendrisio-Chiasso on the Swiss side and of the greater Milan area on the Italian side, which are also the main reference points of the area in terms of economic performance.

¹⁷ Including direct and indirect contribution

¹⁸ In current prices, purchasing power parity, sourced in January 2021 from OECD.Stat. Reference year 2017

¹⁹ In current prices, purchasing power parity. Own elaboration based on OECD.Stat data sourced in January 2021. Reference year 2017. For Ticino, as the most recent figure available for disposable income is 2013, the figure for 2017 is a projection based on GDP growth, assuming that income grew between 2013 and 2017 at the same rate as GDP.

8.2 Synthesis of the lake-related multi-level governance framework

Around lake Maggiore, five relevant lake-related issues were identified: Regulation of the water level of the lake (1.1), Regulation of the quality of lake water, limiting water pollution (1.2), Development and networking of the tourism industry (5.1), Organisation of public transport across the lake (ferry) (7.2), and organisation of transit traffic (7.4).

The cooperation landscape of Lake Maggiore is strongly affected by the crossborder character of the lake. Major initiatives or institutional arrangement include an international commission for the protection of waters (CIPAIS) created by Swiss and Italian counterparts in 1974, a public-private scheme for the provision of crossborder transport on the lake (Corsorzio dei Laghi), a consortium of private actors of the tourism industry to provide an integrated tourism product (the “Lago Maggiore Express”) and two projects funded by the Interreg Switzerland-Italy crossborder programme 2014-2020 on tourism (AMALAKE) and green mobility (SLOWMOVE).

Prominent actors for the lake-related cooperation are national and regional authorities on matters related to water management and crossborder cooperation. The lake region also stand out for the numerous initiatives related to transport on the lake, which imply cooperation between public actors (authorities) and private actors (services providers).

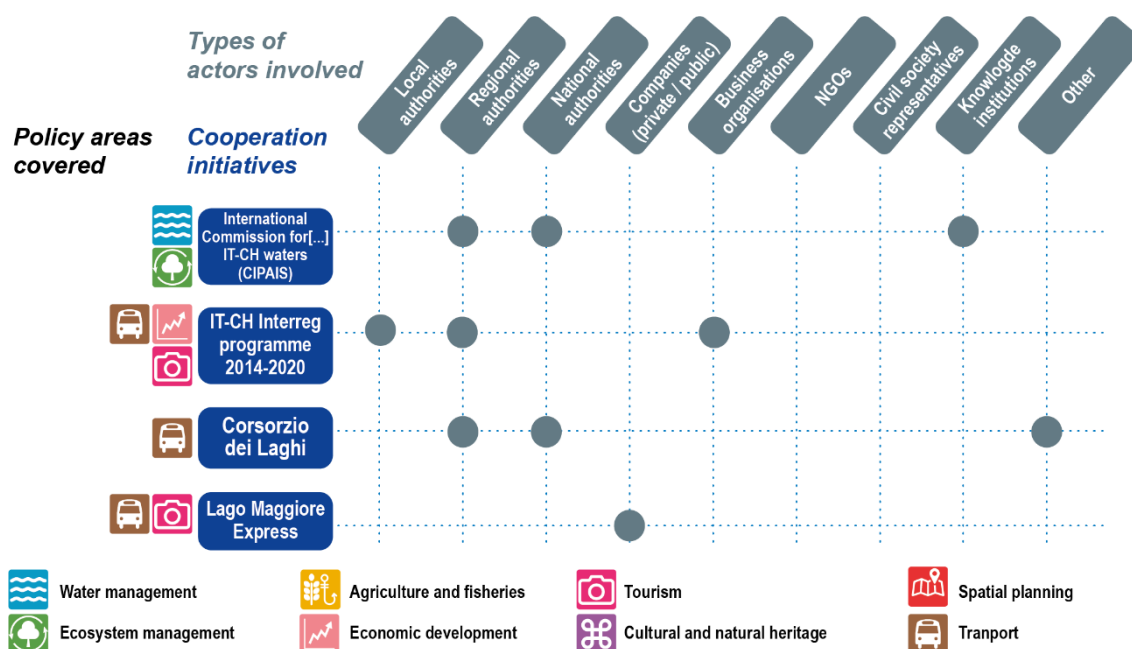


Figure 8-1 Main cooperation and institutional arrangements around Lake Maggiore

8.3 Lake-related issues

Regulation of the water level of the lake (1.1)

Description of the issue

The lake’s water level is influenced by the roughly 30 artificial basins located upstream of the lake, both in Italian and Swiss territory. The catchment area upstream of the lake is large, measuring 6 599 km² (3 370 in Swiss territory and 3 229 in Italian territory) and concerning 670.000 inhabitants.

In the past several years, authorities on the Italian side have been authorising increasing levels of the lake in summer months in order to provide more water storage capacity for irrigation and hydro power generation purposes in view of summer draught, chiefly for the benefit of the Lombard territory. This has caused concern by some mayors of municipalities on the lake shores, as well as representatives of the “Distretto Turistico dei Laghi” (lakes tourist district, a ERDF-backed organisation concerned with tourism in the lake area), that the increase in levels could cause damage to tourism (Gemelli, 2015a; Gemelli, 2015b). This was reinstated as a matter of concern following a recent flooding of lake banks in October 2020 (Arona24, 2020).

Droughts, on the other hand, are of particular concern as the lake is recurrently reported to notably low levels. Again in 2020, the lake recorded a record -11% filling rate in August, making it one of the most prone to drought risk in Northern Italy (ANBI, 2020).

How it is tackled in the lake region

The water level of the lake is regulated by an international convention between Italy and Switzerland, defining two fixed maximum levels for the winter and summer period. Ultimately, the responsibility of decisions on the water level is on the Italian side (which is downstream) and lies with the Po Basin Authority. (Autorità di Bacino Distrettuale del Fiume Po, 2021; Autorità di Bacino Distrettuale del Fiume Po, 2007), an authority managed jointly by the State and the Regions concerned by the Po River Basin, chiefly Piedmont, Lombardy, and Emilia-Romagna. The water level itself is regulated by a water barrage (Miorina) managed by the Ticino River Consortium (Conorzio del Ticino, 2021). Other authorities largely concerned with the issue are the Lombardy and Piedmont Regions, as the Ticino river flowing out of the lake runs largely along the border between the two Regions, and the Autorità Parco del Ticino (Ticino River Park Authority), which manages the protected natural area along the riverbanks.

The main active actor is the Po Basin Authority, which takes decisions on the regulation of the water level. The issue is dealt with via institutional layouts dating back many years. While the Po Basin Authority was recently reformed (in 2016) widening its scope of action, Lake Maggiore was within its scope since its creation in 1989. The international agreement regulating water levels dates back to 1938 and has not been updated since, and has impacts on the Italian side downstream. The agreement cannot be managed locally, but require a direct involvement of national authorities on the Italian side and federal authorities on the Swiss side. These happen in meetings between the Italian and the Swiss Government which are not regular and are called for when the need arises. After the first meetings in the '30s and early '40s, there was a meeting in 1947 in which the Italian delegation asked for permission to start experimentations to increase the water level of the lake above the agreed values. The Swiss delegation replied that it did not have the mandate to approve such an exception, and the Italian delegation communicated that, if Switzerland were not to formally oppose to the proposal, it would be considered agreed upon. The delegations did not meet again until 1971, with another Italian proposal for a further increase in the water levels, and another Swiss declaration that the delegation did not have the mandate. The delegations have met several times in the following years, exchanging studies and proposals on how to improve the regulation of the water level, however no agreement was reached on new standards. The most recent known meeting of the delegations took place in 1997 (Autorità di Bacino Distrettuale del Fiume Po, 2007).

Since there was no formal reply from the Swiss delegation to the Italian proposal, the Italian government seems to consider that the modifications have been tacitly approved. However, on the Swiss side, the original agreement is considered to be still valid, as demonstrated by an interrogation to the Swiss Federal Parliament, in which experimental increases in the lake level were deemed to have been decided unilaterally by Italian authorities (Merlini, 2015).

While there are contrasting interests in the tackling of the issue (irrigation needs are almost exclusively located in Lombardy, while hydro power use is mostly relevant in the Swiss upstream basins) the main negative effects of extreme water levels (floodings in case of excessive level and damage to coastal and beach tourism in case of insufficient water level) concern all areas of lake shores equally. There don't seem to be innovative solutions under way in tackling the issues. A reason for the topic not being properly addressed, as demonstrated by the weak institutional arrangement and the rare meetings between concerned authorities on both sides of the border might be that the topic is not deemed as relevant as other historically key cross-border issues between Ticino and Northern Italian Regions, which do not concern Lake Maggiore. These are chiefly cross-border labour regulation and cross-border rail transit and rail development projects (Torricelli and Stephani, 2009). Regulation of the water level comes up in local news and in local government discussions when extreme water events occur but is otherwise not preeminent in the public debate. The distance between the impacted levels (local) and the policy level (national) may be another reason why it has been impossible to get so far to a satisfactory solution to the issue, as the national authorities may be concerned with other issues of broader scope.

Regulation of the quality of lake water, limiting water pollution (1.2)

Description of the issue

Switzerland and Italy share numerous water resources which could be affected by mutual pollution. Lake Maggiore is one of them. Pollution on the lake is a particularly relevant matter as the lake has three drinking water intakes: one in Lombardy (Leggiuno), one in Piedmont (Ghiffa), and one in Ticino (Brissago). The lake is also

used for swimming, recreational fishing and sailing, while outgoing water are used mostly for irrigation and hydro power. A significant urbanisation of the lake shores, especially the Lombard shore, makes monitoring of discharges in the lake particularly relevant. In spite of important improvements in recent years, pollution of the lake is still regarded as critical by environmental NGOs, particularly in six spots on the Lombard and Piemontese shores, (Legambiente, 2020) where quality of water has been deemed as poor.

How it is tackled in the lake region

Pollution on all cross-border waters between Italy and Switzerland is regulated since 1972 by an international convention (Consiglio federale svizzero and Governo italiano, 1972). The Commissione Internazionale per la protezione delle acque italo-svizzere (CIPAIS - International commission for the protection on Italian-Swiss waters) was set up in 1974 according to this convention. It is a joint initiative with representatives from both central governments and of Lombardy and Piedmont Regions, and the Ticino, Valais, and Grisons Cantons. Joint monitoring and research efforts by the international commission have helped in reducing the concentration of phosphorus in the lake, allowing the transition from a mesotrophic state to an oligotrophic state (ideal for drinking water). The International commission has produced numerous reports and monitoring initiatives on pollutants such as DDT (caused by a chemical plant in Piedmont), PAHs, PCBs, PBDEs, pesticides, mercury, and on antibiotic resistance in lake bacteria (Cipais, 2021). The International Commission has also been monitoring shore ecosystems, evaluating the potential for renaturation, studying the ecological quality of shores, and the presence of alien species.

The CIPAIS Action Plan 2019-2027 (Cipais, 2018a) set out the priority strategic objectives to be achieved over the next few years to ensure the quality of the aquatic environments in the Lugano lake and Maggiore lake basins. It aims to integrate and harmonise, as far as possible, the requirements of the bodies involved in the protection of the common waters at various levels, in application regulations issued by the two countries, but also according to scientific reports and studies. At the international level, EU regulations are taken into account by the CIPAIS (in particular the 2000 WFD), which are binding at EU level for Italy. At the cantonal level, CIPAIS applies guidelines set out in the Piano Direttore and in the "Ambiente in Ticino" publications (Cipais, 2018b). Strategic objectives expressed in the Action Plan can be summarised as follows:

- to ensure the good ecological status of aquatic ecosystems;
- to preserve the health of humans, animals and plants;
- to guarantee the supply of water and to promote saving of drinking and industrial water;
- to conserve natural biotopes for indigenous fauna and flora;
- to conserve fish waters;
- to preserve water as an element of the landscape;
- to guarantee agricultural irrigation;
- to allow the use of water for recreation;
- to ensure the natural function of the hydrological cycle.

According to these objectives, the CIPAIS will continue with its studies and analyses.

The CIPAIS, however, has a limited scope of action since, as stated in the 2019-2027 Action Plan, "The role of CIPAIS in achieving the objectives defined in the Action Plan consists in informing Governments and competent Administrations on the results achieved in the annual surveys promoted by the Commission and made available in the publication of the Annual Reports and the Monitoring Panel; raising awareness of local authorities through information (e.g. research reports) and organisation of events; raising awareness of the general public through the publication of documents and news letters on the institutional website".

The actual planning and implementation of pollution prevention and mitigation measures is regulated at the national level in Italy, in application of EU directives such as Directive 2000/60/EC and 2013/39/EU, implemented with several national legislative actions. Planning is also carried out at the level of river basin (by the Po river basin institutional committee, with the Po River Basin management plan) and at the regional level via various legislative acts (chiefly the regional Plans for water protection, Piano di Tutela delle Acque – PTA). Likewise, in Switzerland the matter is regulated by several federal level ordinances, guidelines, and laws (chiefly, the 24/01/1991 Federal law on water protection), and at cantonal level.

Interests are not evenly distributed among actors, as Piedmont and, mainly, Ticino are upstream while Lombardy is downstream. However, lake pollution damages ecosystems and tourism on all lake shores, so the issue impacts all actors.

As mentioned, the CIPAIS is a key tool in tackling pollution on common waters, as it supports authorities with research and coordination. However, decisions on pollution regulation are ultimately taken by decisional bodies at different regional and national levels according to a complex body of regulation. This could be hindering the

application of more effective approaches, ultimately leading the issue of water pollution not being fully resolved, as pointed out by the above-mentioned calls by environmental NGOs.

Development and networking of the tourism industry (5.1)

Description of the issue

Joint development of tourism in the Lake Maggiore area is a concern of all territories bordering the lake. Just considering the Piemontese side of the lake and its neighbouring territories, the area has attracted between 3,5 and 3,7 Million tourists per year in recent years, making it the third most touristic-oriented destination in Italy in terms of tourism-related density of economic activity (Distretto Turistico dei Laghi, Monti e Valli dell'Ossola, 2016; Distretto Turistico dei Laghi, Monti e Valli dell'Ossola, 2019). The Lombard side of the lake attracts roughly 250 000 tourists per year. These figures have been growing in recent years.

How it is tackled in the lake region

Several joint touristic promotion initiatives have been put in place, most notably the website illagomaggiore.it, a joint initiative by the chambers of commerce of Verbano-Cusio-Ossola and Novara in Piedmont, Varese in Lombardy, and Ascona-Locarno in Ticino. The website provides touristic information on all lake areas, together with 14 local tourist offices, park authorities, and mountain communities, and was established as part of Interreg project AMALAKE.

The main active actors are lead partners of the AMALAKE project: the Italian Verbano Cusio Ossola Chamber of Commerce, responsible for tourism promotion in the Verbano-Cusio-Ossola Province, and the Swiss OTLMV - Lago Maggiore and Valli Tourist Organization, in charge of tourism promotion for the Ascona-Locarno area.

On top of joint efforts via the AMALAKE project, tourism is a subject of policy making at the level of all Regions involved in the lake area, as well as the Ticino Canton, and also at municipal level and by local tourism promotion initiatives and business organisations.

Except AMALAKE, there are no coordinated multi-level governance approaches in place and each local institution has its own policies in place. This does not seem to have impaired a healthy and sustained growth of tourism in the lake area.

Organisation of public transport across the lake (ferry) (7.2)

Description of the issue

Lake Maggiore is served by a ferry transport service. The service includes 25 stops on the Italian side of the lake and 11 stops in the Swiss area (Ministero delle Infrastrutture e dei Trasporti Gestione Governativa Navigazione Laghi Maggiore, di Garda e di Como, 2011) and is operated with 35 ferry ships, including 6 ferries for vehicle transport and 7 fast boats. Most recent data, available for the Swiss side of the lake (Beritelli et al., 2015), show a strongly decreasing demand of ferry transport ridership (down from 1 M passengers in 2005 to 472.515 in 2014). Figures for 2014 show 1,3 Million tickets sold on the Italian side of the lake.

Difficulties in reaching an agreement for the formation of a consortium for the cross-border management of the service have caused a block of international navigation services for a few months in 2018 (Gemelli, 2018).

Ferry transportation on the lake has a predominantly touristic nature, however ferries are also used by commuters, also on international routes. Ferries are used in conjunction with the Domodossola-Locarno railway for the "Lago Maggiore Express" service, a round-trip international tour combining water and rail transport, which has seen average ridership of between 30 000 and 50 000 passengers per year. The combined touristic importance, unstable political agreement across territories, and dwindling ridership numbers make lake transport one of the key lake-related issues in Lago Maggiore.

How it is tackled in the lake region

Navigation on the lake is regulated by an international convention between Italy and Switzerland, (Consiglio federale svizzero and Governo italiano, 1992), first stipulated in 1956 and last updated in 1992. The international convention commission is also responsible for regulating recreational and non-scheduled transport service across the lake. The international ferry service on the lake has been managed until 2016 by the Italian Ministry for Infrastructures and Transport directly, via its agency for the management of lake transport on Maggiore, Garda and Como lakes (Gestione Governativa Navigazione Laghi Maggiore, di Garda e di Como - GGNL) (Italian Parliament, 1957). In accordance to the international convention, the service was operated by the Italian agency both on the

Italian and Swiss side of the lake. In exchange, all lake ferry services on the other large lake shared between Italy and Switzerland, lake Lugano, was run by a Swiss company, the Società di Navigazione Lugano (SNL), a private company partly owned by the Ticino Canton. In 2016, when the previously agreed upon concessions expired on both sides of the border, the Swiss and Italian governments agreed that the service would have to be instead managed in a shared way on both lakes, in order to allow for a more precise and fair distribution of costs. Therefore, since 2016, the service has been managed in sharing between the Italian agency (GGNL) and the Società Navigazione Lugano (SNL) via a consortium “Consortio dei Laghi”. However, no long-term agreement was reached over the financial and operational details for shared management of the service. In lake Maggiore, main disagreement points concern the rents that the Italian Ministry is asking to SNL for the use of its ferry boats, and labour arrangements. The agreements are currently renewed on a short-term basis, with the latest agreement covering international service for two months, until the end of february 2021 (Como City, 2020). So far, there is a lack of a proper governance setup for the issue, as it seems that the issue, after being regulated by a national level international agreement, was left to bargaining between a semi-private company on the Swiss side and a national agency on the Italian side, with little to no involvement of local authorities.

Organisation of transit traffic (7.4)

Description of the issue

The area around the lake bears importance with respect to cross-border transit as it hosts the Domodossola-Locarno railway. The railway, running 52km from Domodossola in Italy to Locarno in Switzerland, serves the primary function of public transit for the Vigezzo valley in Italy and the Centovalli in Switzerland, but it is also the shortest rail link between the Canton of Valais and the whole southwestern area of Switzerland and the Canton of Ticino. In modern times, however, the main function of the railway is touristic.²⁰ The railway carried about half a million passengers in recent years, with a stable outlook (Ferrovie Autolinee Regionali Ticinesi, 2019; ANSA, 2020; La Regione, 2020).

How it is tackled in the lake region

The railway is operated cross-border thanks to an international convention dating 1918 (de Segesser and Sonnino, 1918). Since 1958, the Italian section of the railway has been integrated in the Swiss tariff system, in order to facilitate national swiss transit via Italy (Rassegna Ticinese, 1958). The railway is a key element of the touristic promotion of the area and is due for a complete renovation of the rolling stock in 2023.

The Italian side of the railway is operated under concession to the company “Società Subalpina Imprese Ferroviarie”, completely privately owned, which both manages the infrastructure and operates the service. On the Swiss side, the same role is taken by the “Ferrovie Autolinee Regionali Ticinesi”, a mixed capital company owned by the Ticino Canton (51%), the Swiss Federal Government (34%), municipalities (8%) and private investors (7%).

Except for the international convention, the agreement between the companies managing each side of the railway, and other bilateral agreements such as the above-mentioned deals to integrate the railway in the Swiss tariff system and to operate the “Lago Maggiore Express” service, there are no formal cooperation initiatives nor planning tools concerning transit traffic around the lake area. This institutional layout has a long track history and does not seem to be put up for discussion on either side of the border.

In order to promote a more sustainable form of transit along the lake area, together with a tourism development goal, the SLOWMOVE transnational cooperation project was set-up, with measures facilitating clean mobility (essentially biking and navigation) along the lake. The project is described in more detail below.

8.4 Cooperation initiatives around the lake

Name of cooperation initiative

Commissione Internazionale per la protezione delle acque italo-svizzere (CIPAIS - International commission for the protection on Italian-Swiss waters)

²⁰ More information available at <https://www.vigezzinacentovalli.com> and <http://www.centovalli.ch>

Historical background of the cooperation		
<p>The CIPAIS was set up in 1974 following an international convention between Switzerland and Italy, with the scope of supporting the Governments and relevant administrations with studies on water pollution in common Swiss-Italian waters, including lake Maggiore. The CIPAIS was an evolution of the pre-existing International Commission for water protection set up in 1960 in the context of the Italian-Swiss Commission for fishing (CISPP). In 1972, the CISPP decided that water protection deserved to be addressed by a specific organisation, out of the specific context of fishing policy. The CIPAIS's scope has remained unchanged since. A more detailed historical background of CIPAIS is provided above.</p>		
Actions and achievements		
<p>In the field of the regulation of water quality (1.2), Monitoring and reports by the CIPAIS have supported efforts to reduce pollution in lake waters, allowing for the transition from a mesotrophic state to an oligotrophic state. The International commission has produced numerous reports and monitoring initiatives on pollutants such as DDT (caused by a chemical plant in Piedmont), PAHs, PCBs, PBDEs, pesticides, mercury, and on antibiotic resistance in lake bacteria (Cipais, 2021).</p> <p>The CIPAIS has set up communication and dissemination efforts through the publication of reports, the publication of information on its website and via newsletters, the organisation of events, and via a "monitoring panel" regularly updated with information on monitorings carried out.</p> <p>In the field of protection of lake specific eco-systems, the International Commission has also been monitoring shore ecosystems, evaluating the potential for renaturation, studying the ecological quality of shores, and the presence of alien species.</p>		
Involved partners		
Name	Status	
Italian National Government and Italian Ministries (Environment, Health, Infrastructure and transport)	Participants	
Regions (Lombardy, Piedmont)	Participants	
Swiss authorities (Swiss federal environment bureau (UFAM), Swiss Federal Department of Foreign Affairs, Swiss Federal Department of territory – Environment division)	Participants	
Swiss cantons (Ticino, Grisons, Valais)	Participants	
Arpa Lombardia, Arpa Piemonte	Research partners	
Consiglio Nazionale delle Ricerche, Istituto di Ricerca sulle Acqua	Research partners	
Universities and research centres	Research partners	
Thematic scope		
Water management	M	M: major x: minor
Ecosystem management	x	
Food production		
Demography, labour market and attractivity		
Tourism		
Cultural and natural heritage		
Transport		
Spatial planning		

Name of cooperation initiative
AMALAKE
Historical background of the cooperation
<p>The project AMALAKE – Amazing Maggiore: active holiday on the lake Maggiore was set up as part of the Interreg Italy-Switzerland Programme 2014-2020, following a similar initiative under the previous Programming Period, which established the Distretto Turistico dei Laghi.²¹ The main objective is to increase the number of tourists in</p>

²¹ More information available at <https://www.distrettolaghi.it/>

the destination Lake Maggiore and its surrounding valleys. Other objectives are to increase the economic effects generated by tourism and increase the number of beneficiaries to encourage the development of new services, in particular sports-recreational and cultural ones, and the qualitative growth of the existing ones, to enrich/innovate the tourist offer and contribute to extending the season to strengthen the identity of the destination on international markets and communicate an image that is consistent with the identity elements but more dynamic and open. Particular attention is paid to the sustainability of the project over time (by encouraging aggregation/collaboration between businesses, operators from various sectors, public stakeholders, developing working methods and relationship capital) and to collaboration with other areas/projects, to share communication/promotion actions on non-European markets.²²

Actions and achievements

The project has worked along two main lines of action:²³

- OUTDOOR - active holiday: construction of networks of professional, cultural, etc. companies/operators and networking of outdoor sports itineraries.
- TURISMO GREEN: green certification of cultural/sports events in the area that are major international attractors and development of a network of green services/products in support of events and especially for the composition of green tourism offers/products.

The creation of the website www.illagomaggiore.com has been one of the outputs of the project. The website shows a broad range of tourist information on the lake, including accommodation, restaurants and shopping, and allows for bookings.

The project will run for 36 months from December 2018.

Involved partners

Name	Status
Verbano Cusio Ossola Chamber of Commerce	Lead partner
OTLMV - Lago Maggiore and Valli Tourist Organization	Lead partner
Novara Chamber of Commerce	Partner
Varese Chamber of Commerce	Partner

Thematic scope

Water management		M: major x: minor
Ecosystem management		
Food production		
Demography, labour market and attractivity		
Tourism	M	
Cultural and natural heritage		
Transport		
Spatial planning		

Name of cooperation initiative

SLOWMOVE

Historical background of the cooperation

The project SLOWMOVE – Water bridges towards the future is part of the Interreg Italy-Switzerland Programme 2014-2020. The main objective is to improve mobility along lake Maggiore, the Ticino river and the canals system by promoting green mobility and tourism. The project started in June 2019 and will last for 36 months. It builds on the activity of the Associazione Locarno-Milano-Venezia, a partnership between several public bodies located between Locarno in Switzerland and Venice in order to promote sustainable river transport between Ticino and Italy.

Actions and achievements

²² As described in the Programme website available at <https://interreg-italiasvizzera.eu/progetti/amalake/>

²³ As described in the project website available at https://www.illagomaggiore.com/en_US/home/amalake

<p>Actions of the project include three main lines of measures, focused on commuter and tourist traffic along the lake:</p> <ol style="list-style-type: none"> (1) The development of an electric corridor along the lake and the Ticino, with EV charging points and proximity electric vehicles for the parks. (2) Development of waterways, with the development of an online tool for navigation on Italian-swiss waters and remote control of navigation locks, as well as new docks. (3) Development of cycling infrastructure. <p>Project outputs are not yet available.</p>		
Involved partners		
Name	Status	
Provincia di Novara, Regions (Lombardy, Piedmont)	Partners	
Association for the promotion of tourism	Partners	
Comune Castelletto Sopra Ticino	Partners	
Regional park (Parco lombardo Valle del Ticino)	Partners	
Thematic scope		
Water management		M: major x: minor
Ecosystem management		
Food production		
Demography, labour market and attractivity		
Tourism	M	
Cultural and natural heritage		
Transport	M	
Spatial planning		

Name of cooperation initiative	
<i>Corsorzio dei Laghi</i>	
Historical background of the cooperation	
<p>The Consorzio dei Laghi was set up in 2018 as a joint initiative of Gestione Governativa Navigazione Laghi Maggiore, di Garda e di Como (GGNL), previously managing navigation on the whole lake Maggiore, and the Swiss Società Navigazione del Lago di Lugano (SNL), previously in charge of navigation on lake Lugano (Ufficio federale dei trasporti, 2018). After the expiry of concessions for navigation on both lakes Maggiore and Lugano, on both the Italian and Swiss sides, the working group for navigation on Lake Maggiore and Lake Lugano agreed upon the establishment of a new consortium for a shared management of the service on both lakes.</p>	
Actions and achievements	
<p>The consortium is tasked with coordinating and jointly managing ferry services on the lake. However, no long-term agreement was reached over the financial and operational details for shared management of the service. Main disagreement points concern the rents that the Italian Ministry is asking to SNL for the use of its ferry boats, and labour arrangements. The agreements are currently renewed on a short-term basis, with the latest agreement covering international service for two months, until the end of february 2021 (Como City, 2020). There is currently no information publicly available on the details of the agreements and on whether a longer-term solution is in sight.</p>	
Involved partners	
Name	Status
Gestione Governativa Navigazione Laghi Maggiore, di Garda e di Como (GGNL)	Partner
Società Navigazione Lugano	Partner
National authorities (Italian Ministry of infrastructure and transport, Swiss federal transport bureau - Ufficio federale dei trasporti (UFT))	Participants to the working group
Canton Ticino	Participants to the working group

Thematic scope		
Water management		M: major x: minor
Ecosystem management		
Food production		
Demography, labour and market and attractivity		
Tourism		
Cultural and natural heritage		
Transport	M	
Spatial planning		

Name of cooperation initiative		
Lago Maggiore Express		
Historical background of the cooperation		
<p>The Lago Maggiore Express is an integrated cross-border tour comprising rail and boat travel which runs at least since 1999. With a single ticket, it allows round trip travel around the whole lake area. Ferry boats depart from Arona and travel the whole lake up to Locarno, where tourists can exchange to the Vigezzina-Centovalli railway, riding across the mountains all the way to Domodossola, where they can board a Trenitalia train back to Arona. The tour can be started at any stop, and passengers can hop on and off using a 1-day or a 2-day ticket (Lago Maggiore Express, 2013).</p>		
Actions and achievements		
<p>The deal for providing the joint touristic service has been in place at least since 1999 and the service has been successful since, with average ridership between 30 000 and 50 000 passengers per year between 2000 and 2012 (Beritelli et al., 2015). No more recent data is available. As of February 2021, the service is suspended because of the COVID pandemic, however it is due to restart when possible.</p>		
Involved partners		
Name	Status	
Società Subalpina Imprese Ferroviarie, Italy (SSIF)	Partner	
Ferrovie Autolinee Regionali Ticinesi, Switzerland (FART)	Partner	
Gestione Governativa Navigazione Laghi Maggiore, di Garda e di Como, Italy (GGNL)	Partner	
Trenitalia, Italy	Partner	
Lago Maggiore and Valli Tourist Organization, Switzerland (OTLMV)	Sales partner	
Thematic scope		
Water management		M: major x: minor
Ecosystem management		
Food production		
Demography, labour and market and attractivity		
Tourism	M	
Cultural and natural heritage		
Transport	M	
Spatial planning		

9 Lake Mjøsa

9.1 Introduction

In policy documents, the Mjøsa Lake region (“Mjøsregion”) tends to be defined as the area around the northern part of the Lake only. The “Inland Region Commission”, which was appointed by the national government and operated between 2013 and 2015, defines the “Mjøsregion” as a triangular area delineated by the towns of Elverum, Raufoss and Lillehammer. This area concentrates over half total population of Inland Region. The Inland region became a formal county from 1st January 2020, as a result of a country-wide regional reform. Its capital city is Hamar, which is the main urban agglomeration in the Mjøsa Lake region, with 31,369 inhabitants in 2020.

The Mjøsa Region attracts migrants from neighbouring more rural municipalities, but experiences net losses of migrants in direction of Oslo (Mjøsbyen / ‘Mjøsa City’ cooperation initiative, 2019: 14). Historically, towns and settlements have avoided the shoreline. However, this has changed in recent years. Interest in using areas along the lake is rising.

The “Mjøsregion” (Mjøsa Region) includes companies (with over 100,000 employees, of which 10,000 work in manufacturing), universities/polytechnics, competitive industrial clusters. The observation of commuting statistics indicate that the Mjøsregion is subdivided in 3 functional regions: Gjøvik-Toten, Lillehammer and Hamar, which in some respects includes Elverum. A main element of regional development strategies is to facilitate integration between these urban centres through infrastructure investments. (Innlandsutvalget / Inland Commission, 2015). The construction of a new bridge across the Lake south of the existing one is foreseen to be finalised in 2025. However, while the railway between Eidsvoll (southern tip of Mjøsa) and Hamar is expected to be upgraded from single to double track by 2026, an equivalent upgrade of the line between Hamar and Lillehammer is not expected to be finalised before 2034.

The Mjøsa Region attracts migrants from neighbouring more rural municipalities, but experiences net losses of migrants in direction of Oslo (Mjøsbyen / ‘Mjøsa City’ cooperation initiative, 2019: 14). Historically, towns and settlements have avoided the shoreline. However, this has changed in recent years. Interest in using areas along the lake is rising.

The Mjøsa Lake and its shores are considered areas of importance for biodiversity (Mjøsbyen / ‘Mjøsa City’ cooperation initiative, 2019). However, only few protected areas are identified in proximity of the the lake. Those that can be found are of limited extent²⁴.

9.2 Synthesis of the lake-related multi-level governance framework

Around lake Mjøsa, three relevant lake-related issues were identified: Management of daily mobility (7.3), Regulation of the quality of lake water, limiting water pollution (1.2), Promoting urban polycentric development (8.2).

Identified cooperation initiatives around lake Mjøsa all target a specific objective.

- Mjøsbyen - Mjøsa City cooperation, which addresses spatial planning and transport challenges
- Watercourse association for Mjøsa with tributaries, which monitors the water quality around the lake
- Mjøsa shoreline land owner association, which promote business and leisure activities around the lake.

²⁴ <https://geocortex3.innlandsgis.no>

The cooperation landscape is affected by the recent regional reform that merged together former counties Hedmark and Oppland in the new Innlandet county that includes most of lake Mjøsa . Prominent actors for the lake-related cooperation are regions (Innlandet county council), deconcentrated state representatives (Innlandet county governor) and – on some specific regional development issues – municipalities. Lake Mjøsa cooperation landscape stands out for the pragmatic approach taken by actors (one issue – one cooperation format).

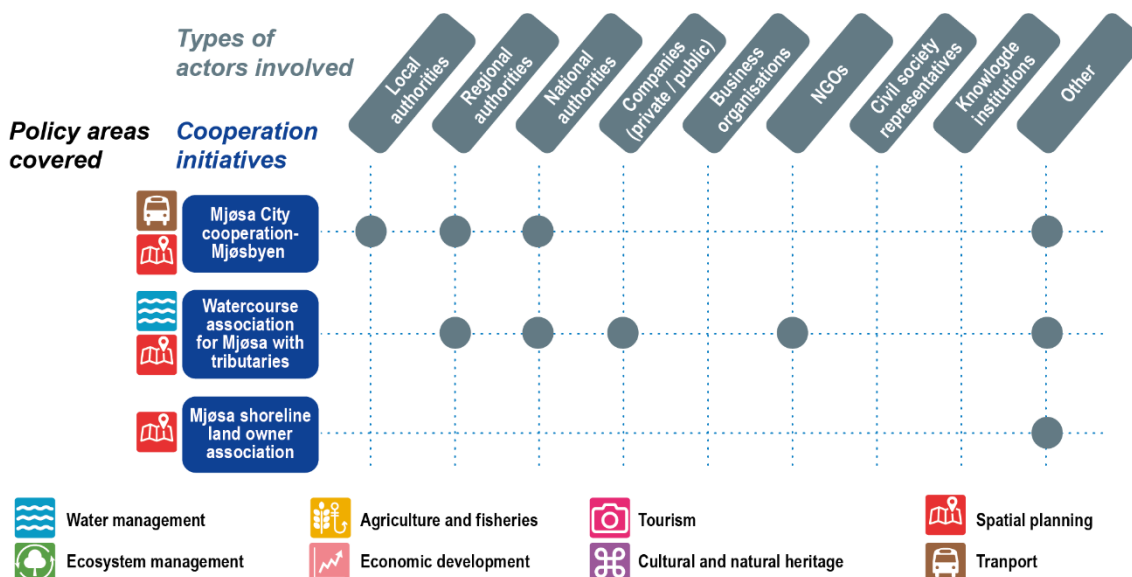


Figure 9-1 Main cooperation and institutional arrangements around Lake Mjøsa

9.3 Lake-related issues

Management of daily mobility (7.3)

Description of the issue

This is a central issue of the Mjøsa City cooperation initiative. The key challenge is the difficulty of organising East-West flows. Crossing the lake remains an issue. The bridge at Moelv (built in 1985) facilitates flows between Hamar and Lillehammer (50 minutes by road). However, travelling between Hamar and Gjøvik takes 43 minutes, against only 20 minutes by boats currently operated on a seasonal basis. The possibility of running fast electric ferries is currently investigated by the county council, with state funding. Challenges in this respect are to run ferries sufficiently frequently to make them an attractive option, and to allow for year-round operations (also when the lake is covered by ice).

Maritime traffic is a component of this, albeit not the most important. Increasing the proportion of public transport is a key objective. However, it will mainly be on the basis of buses and trains (on the long term – 2036)

How it is tackled in the lake region

A project plan for a coordinated spatial planning and transport planning approach in the Mjøs City was adopted by the two County councils of Oppland and Hedmark in 2017. A steering group was established, with a mandate to elaborate a strategy that would “contribute to more coordinated area and transport development in the region”.

The more specific objectives for the strategy were to

- clarify the region's challenges as an integrated and independent housing and labour market region, and show how more coordinated area and transport development can contribute to competitiveness and sustainability.
- allow the state, the county and the municipalities to have a common perception of overall and long-term goals.
- form the basis for state, municipal and county municipal planning in the region by providing direction and guidelines for specific planning processes.
- clarify regional transport priorities, and be a basis for input to national transport priorities and framework conditions.
- clarify possibilities for securing financing and implementation of strategically important regional projects.

The strategy was adopted by the County Councils of Hedmark and Oppland in 2019. After the merger of these two counties, The County Council of the new Innlandet county adopted it again in April 2020 (Innlandet County, 2020). In this decision, it is pointed out that:

- Climate change-related challenges should be focused on
- A cooperation agreement between Mjøs City partners needs to be concluded in 2021 to pursue the cooperation.
- The establishment of a national funding arrangement to promote the greening of transports should be encouraged.
- The County council will encourage the establishment of State-funded incentives for medium-sized towns (including towns constituting the Mjøs City);
- The development of the Mjøs City should not be supported at the expense of the rest of the Innland region but should function as a motor for the entire region making it possible to preserve current settlement patterns.

The adopted strategy proposes concrete measure for the improvement of the local and regional transport network and services.

Regulation of the quality of lake water, limiting water pollution (1.1)

Description of the issue

Around the lake coordinated actions are taken to correct identified water quality issues. Urban and rural wastewater is addressed jointly with emissions from agricultural and industrial emissions.

In the early 1970s, the main issue was algae and eutrophication, which threatened drinking water, the use of the lake for bathing and leisure and wildlife. These problems were overcome over a 20-year period.

Water quality in Mjøsa is not critically low but remains under scrutiny. Mercury, PCB and dioxin levels remain high. As a result, health authorities for example recommend that children and women of childbearing age should not consume trout from the Lake more than 4 times a year²⁵.

Effects of drug residues and microplastics are largely unknown. In 2019, cyanobacteria blooms along a large part of the shoreline made it necessary to advise against bathing in the lake. This is said to result from a combination of warmer weather and more abundant rainfalls since 2010. The overall ecological status of the lake is nonetheless qualified as 'good'. (Lyche Solheim et al., 2020)

How it is tackled in the lake region

Between the 1970s and 1993, the Mjøsa Action made it possible to implement a number of actions. Its success created a solid basis for cooperative action, which has been capitalised on since. (Stuen, 2013)

Lake Mjøsa has a dedicated "Water area coordinator" ("vannområdekoordinator"), who coordinates the Water-course association for Mjøsa with tributaries. Identified issues in relation to water management include (Stuen, 2017): concessions for production of hydroelectricity; mitigation, management of erosion; agriculture; dispersed emissions of sewage water; municipal water pipes and sewage treatment facilities; pollutants in fishes; zooplanktons; lake sediments; road and railway infrastructure construction.

In accordance with the Water Framework Directive (implemented in Norway since 2008), a River Basin Management Plan for Innlandet and Viken counties has been elaborated. This plan was made public on 1st February 2021, and is open for public consultation until 31st May 2021.²⁶

The regulation and monitoring of water quality is therefore based on a multiscalar coordination, with water areas (Lake Mjøsa and tributaries), wide water regions (Innlandet and Viken), but an active role played by municipalities in the design and implementation of concrete measures.

Promoting urban polycentric development (8.2)

Description of the issue

²⁵ <https://www.statsforvalteren.no/nb/Oppland/Miljo-og-klima/Fiskeforvaltning/Organiske-miljogifter/>

²⁶ <https://www.vannportalen.no/vannregioner/innlandet-og-viken/aktuelt-for-vannregion-innlandet-og-viken/horing-av-regionale-vannforvaltningsplaner-for-innlandet-og-viken-vannregion-og-for-de-norske-delene-av-vannregion-vasterhavet/>

Promoting urban polycentric development is the major issue addressed by Mjøsa City cooperation in the northern part of the lake. Main issues in the process of polycentric integration are:

- The improvement of transport infrastructure (roads (bridge), railway, passenger boat)
- The reduction individual car traffic. This could be achieved by organising development around 11 identified hubs for public transportation. The notion of “10-minute town” is a guiding principle in this respect (Mjøsbyen / ‘Mjøsa City’ cooperation initiative, 2019)

Polycentric development has been recently debated in relation to the construction of a regional hospital in Moelv, a small town of 4,500 inhabitants located close to the bridge crossing the lake and between the main regional centres of Hamar, Lillehammer and Gjøvik. This decision was made in January 2019²⁷. It is heavily disputed²⁸, as there are currently hospitals in different locations around the lake (Hamar, Lillehammer, Elverum, Tynset, Gjøvik) and as it would be possible to maintain three hospitals which could serve a population of 100,000 persons each²⁹.

How it is tackled in the lake region

A strategy was developed in the 2000s to enhance polycentric development at the level of south-eastern Norway as a whole. The plan for urban development around Hamar on the east side of the Lake was established since 2009, with a 2030 time-horizon and was developed by Hedmark county council (incorporated in Inland County Council from January 2020). This plan covers 4 municipalities and 8 settlement areas / urban core areas. Three out of the four concerned municipalities would like to update it (Mjøsbyen / ‘Mjøsa City’ cooperation initiative, 2019).

This issue is now approached jointly with the Mjøsbyen transport strategy, and in the Mjøsbyen planning strategy (Mjøsbyen / Mjøs City, 2019). The objectives of the strategy is to follow the principles of polycentric development, with concentrated development in a certain number of towns, well-defined profiles for each of them and enhanced links between them, while limiting the loss of agricultural areas to a minimum.

In this context, Mjøsa Lake is referred to as a common resource, and vector of cultural heritage. Reflections on these aspects were developed in the 2008 report ‘The Good Life by Mjøsa’ (Steering group for the project ‘shore-line of Lake Mjøsa, 2008). This report was in turn inspired by the Interreg Projects Big Lakes³⁰ and Big Lakes II, which explored perspectives for sustainable development around lakes Mjøsa, Päijänne, Peipsi and Ladoga. It also updated the guidance from 1995, which focused on protected areas.

9.4 Cooperation initiatives around the lake

Name of cooperation initiative

Mjøsa City cooperation (Mjøsbyen)

Historical background of the cooperation

Mjøsbyen is a cooperation initiative led by the county council. The steering group also includes the county governors (state representatives), the municipalities, the regional road administration for region East, the national railway administration. These same partners were also organised in a so-called “project group”, which has had monthly meetings between 2017 and 2019 for the development of the spatial planning and transport strategy.

The cooperation initiative covers a slightly larger area than the Mjøsa region. It includes the Inland county council and 10 municipalities of that region that are located in the vicinity of the Lake. Significantly, neither the Eidsvoll

²⁷ <https://www.nrk.no/innlandet/vedtok-nytt-hovedsykehus-ved-mjosbrua-1.14408809>

²⁸ <https://www.aftenposten.no/meninger/debatt/i/mR4KBp/katastrofevedtaket-om-storsykehus-ved-mjoesbrua-maa-reverseres-gaute-b>

<https://www.nationen.no/motkultur/kronikk/sykehus-innlandet-til-moelv-helt-pa-jordet/>

²⁹ <https://www.aftenposten.no/meninger/debatt/i/mR4KBp/katastrofevedtaket-om-storsykehus-ved-mjoesbrua-maa-reverseres-gaute-b>

³⁰ <https://keep.eu/projects/684/Sensitive-Nordic-Big-Lakes-EN/>

<p>municipality nor the Viken county council are part of “Mjøsbyen”, in spite of being riparian of the Mjøsa Lake. The main settlement of Eidsvoll is located along the Vorma river south of Mjøsa.</p> <p>The object of the Mjøsbyen cooperation is not primarily focused on the Lake, but more generally ambitions to address spatial planning and transport challenges. Workshops on “spatial planning”, “economic development”, “infrastructure “ and “public transportation” have been organised in 2018. A wider range of stakeholders were involved in these different workshops.</p>		
Actions and achievements		
<p>In the field of management of daily mobilities, Mjøsbyen has organised workshops and project group meetings, compiled evidence and elaborated a strategy for the management of daily mobility.</p> <p>In the field of the promotion of urban polycentric development, Mjøsbyen has organised workshops and project group meetings, compiled evidence and elaborated a strategy for the policy urban development, as part of its spatial planning strategy.</p>		
Involved partners		
Name	Status	
Regional authorities: County council Innlandet	Steering group partner	
Deconcentrated national authorities: County governor Innlandet	Steering group partner	
Municipalities of Øyer, Lillehammer, Ringsaker, Hamar, Stange, Løten, Elverum, Gjøvik, Østre Toten, Vestre Toten	Steering group partners	
National sectoral authorities: State road authority – region East, State railroad authority	Steering group partner	
Thematic scope		
Water management		M: major x: minor
Ecosystem management		
Food production		
Demography, labour market and attractiveness		
Tourism		
Cultural and natural heritage		
Transport	M	
Spatial planning	M	

Name of cooperation initiative	
<i>Watercourse association for Mjøsa with tributaries / Vassdragsforbundet for Mjøsa med tilløpselver</i>	
Historical background of the cooperation	
<p>The Watercourse Association for Lake Mjøsa and tributaries is a non-profit association that was founded on 31 March 2003, driven by the EU Water directive and inspired by examples in Sweden.. The Watercourse Association has its origins in the Lake Mjøsa Monitoring, which was started in the early 1970s as part of a nationwide state monitoring program on water pollution. The association currently has 59 members, including all municipalities of Mjøsa City except Elverum.</p>	
Actions and achievements	
<p>The Watercourse association for Lake Mjøsa and tributaries is mainly focused on monitoring water quality through surveys and special research, on strategic environmental planning in relation to water and on administrative support to water agencies. According to its status, tasks of the association are to fund, conduct and report an annual water quality monitoring report; set environmental goals for Lake Mjøsa and the tributaries and propose measures to achieve these; coordinate other ongoing surveys in the watercourse.; conduct information and motivational work; do special research if needed; function as secretariat for the Hunnselva water area in the pilot phase; be a water area committee for vo Mjøsa, where the general manager is the water area coordinator.</p>	
Involved partners	
Name	Status
Regional authorities: County council Innlandet	Member
Deconcentrated national authorities: County governor Innlandet	Member
Water regulation bodies	Members

21 private companies		Members
4 NGOs		Members
9 support members		Members
Thematic scope		
Water management	M	M: major x: minor
Ecosystem management		
Food production		
Demography, labour market and attractivity		
Tourism		
Cultural and natural heritage		
Transport		
Spatial planning	x	

Name of cooperation initiative		
<i>Mjøsa shoreline land owner association</i>		
Historical background of the cooperation		
<p>This is a grouping of owners of land along the shoreline of Lake Mjøsa, established in 1965. It is structured as a not-for-profit association. The association is mobilised to promote business and leisure activities around lake with respect to the private interests of land-owners and to provide information to public authorities and to the general public on the use of the shores.</p>		
Actions and achievements		
<p>According to its status, the objective of the association is to “contribute to management of fish resources in the lake; promote a sustainable use of the lake for fishing and recreation; communicate on the regulatory frameworks for land owners and users of the lakes and its shores; Develop economic activities on and next to the lake; Bring together the counties and municipalities around issues related to the use of Mjøsa for recreation and economic development; Coordinate communication with authorities, regulating bodies and other stakeholders for questions connected to the lake and its shores; Participate in public hearings on issues such as regulation of e.g. water level and water quality; provide information to the primary stakeholders and the general public.</p>		
Involved partners		
Name		Status
Owners of land with a lake shoreline		Members
Thematic scope		
Water management		M: major x: minor
Ecosystem management		
Food production		
Demography, labour market and attractivity		
Tourism		
Cultural and natural heritage		
Transport		
Spatial planning	M	

10 Lake Prespa

10.1 Introduction

The Prespa lakes basin is an area of significant environmental importance, as well as of a unique case, where the basin is shared by neighbouring countries. The Prespa lakes basin consists of the Great and the Lesser or Micro Prespa lakes. The Great Prespa Lake³¹ is a freshwater tectonic lake at the borders of Greece, Albania and North Macedonia. It borders the municipalities of Prespes (Greece), Pustec (Albania) and Resen (North Macedonia). The Great Prespa Lake is the largest lake in the Balkans, covering an area of about 259,4 km² (Perennou et al., 2009). The total Prespa area includes Micro Prespa, which borders Albania and Greece, with the latter having the biggest part of the lake.

The area has a low population density (see demographic map) with few settlements around the lake, the majority to be found in the Albanian part. The municipality of Prespes has by far the lowest population the three municipalities of the prefecture of Florina. Based on the 2011 census, the population was 1,560, shortly declined compared to the 1,781 inhabitants according to the 2001 census (Hellenic Statistical Authority, 2001, 2011). The area is characterised as an area with low population potential, being at risk of becoming a sparsely populated area (Gløersen et al., 2019).

The region cannot be characterised as an economically dynamic region. Overall, the three neighbouring territories share some common economic features, characteristic for border regions, such as isolation and remoteness from population centres, low population density, unemployment, underdeveloped services sector, predominance of the agricultural sector and hurdles of local products marketing (Mantziou, 2014). The main economic activity of the municipalities around the lake is the primary sector, especially farming. More specifically, in the Greek part of the area, the cultivation of Protected Designation of Origin beans is a core economic activity, while fishing has largely declined. In the Albanian part, again agriculture is the main activity, mostly regarding cereals, with small scale fishing and stock farming following. Lastly in the North Macedonia part of the lake area, agriculture regards the cultivation of apple trees, followed by small scale fishing and stock farming (Society for protection of Prespa, n.d.). Almost all of the agricultural land in the North Macedonian side is privately owned and fertilisers use has been intensive (Society for the Protection of Prespa (SPP) et al., 2005), leading to environmental consequences.

The lake has a rich biodiversity, being home to a rich flora and fauna and rare, as well as endemic species, such as the Dalmatian pelican, the white pelican, cormorants and others, as well as the endemic Prespa trout, the Prespa centaur flower and others. A number of national parks are located in the three neighbouring countries, protecting this rich environmental culture. The area is also listed as a UNESCO heritage with a continuous cultural presence throughout centuries, reporting civilisation and human activity from the Neolithic Age until today, with its cultural heritage being most prominent in the Byzantine years. The natural beauty of the area, the eco-tourism potential is high, with activities such as hiking, trekking and mountain bike taking place in the area.

Located at the external borders of three countries and in a mountainous area, the area is far from big urban centres, where also more economic activities take place. In Greece the catchment basin has 13 villages, falling under the Prespa municipality and the area communicates with the cities of Florina and Kastoria. (Society for the Protection of Prespa (SPP) et al., 2005). In Albania, the Great Prespa belongs to the Korcha District and its nine villages belong to Pustec. The Micro Prespa belongs to the municipality of Devoll. From the North Macedonia site, the Prespa valley has an urban centre, Resen, and 43 small and large villages and settlements. The area communicates with the city of Bitola and the Ohrid region. (Society for the Protection of Prespa (SPP) et al., 2005). From an administrative point of view, the lake is therefore mostly affected by its international fragmentation.

³¹ Please note that for the purpose of this study we primarily focus on the Great Prespa Lake, which is at the borders of Greece, Albania and North Macedonia, with references to the whole Prespa area incl. all lakes.

10.2 Synthesis of the lake-related multi-level governance framework

Around lake Prespa, three relevant lake-related issues were identified: Regulation of the quality of lake water, limiting water pollution (1.2), Protection of lake-specific biodiversity (2.2), Protection and valorisation of cultural and natural heritage around the lake (6.1).

Lake-related cooperation is relatively limited. All three identified lake-related issues are primarily dealt with at national level. For instance, the monitoring of water quality is still lacking common measurement standards; environmental action is mostly organised through national programmes and civil societies.

Cooperation around lake Prespa is structured by four main pillars: a crossborder park aiming at coordinating environmental protection around the lake, a strong involvement of the NGO sector (see e.g. PrespaNet), funding possibilities offered by the Interreg IPA CBC programmes (Greece-North Macedonia, Greece-Albania) and a project-based dynamics regularly supported by international organisations or funding schemes. The cooperation landscape has been affected by the absence of cooperation between the three countries until the late 1990s, the sparsely populated character of the area and the limited density of infrastructures. Cooperation around the lake is therefore focused on immediate threats (water pollution, degradation of ecosystems) and opportunities (preservation of cultural heritage, development of tourism) for which the benefit of coordinated action is most obvious.

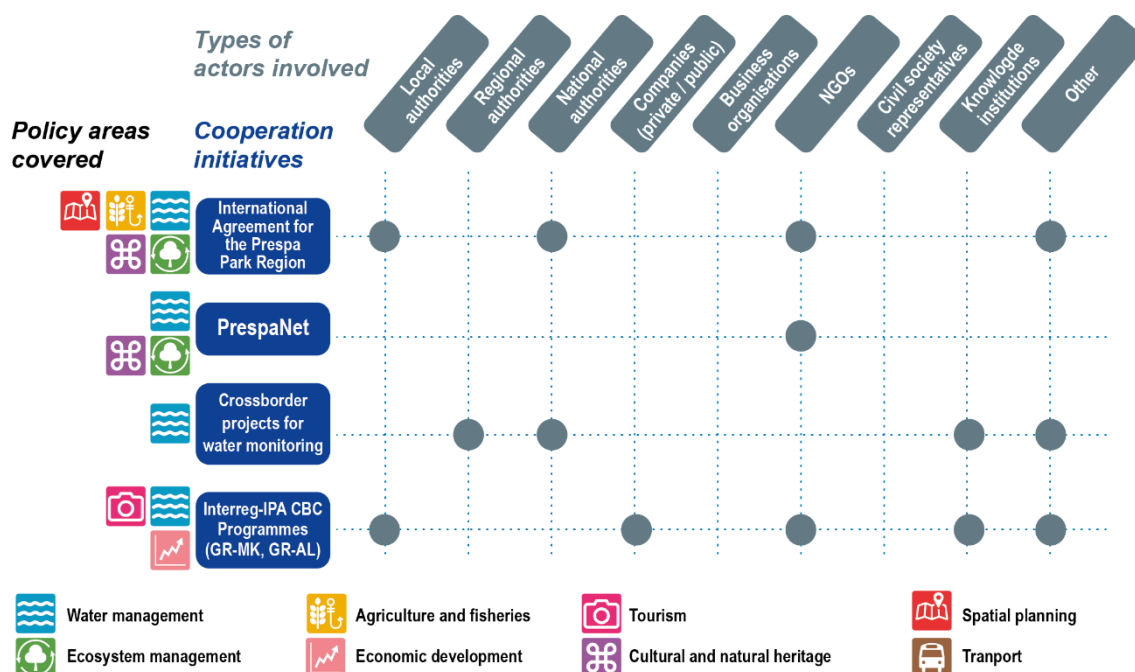


Figure 10-1 Main cooperation and institutional arrangements around Lake Prespa

10.3 Lake-related issues

Regulation of the quality of lake water, limiting water pollution (1.2)

Description of the issue

Water pollution has been one of the environmental challenges and human activities' consequences in the area. Since the early 2000 the trophic status of the Prespa lakes has been the most important conservation challenge with eutrophication and increased nutrients prevailing (PrespaNet, 2017). The Micro Prespa in Greece was classified as in 'poor ecological status', while the Great Prespa lake was classified as 'moderate' in Greece and North Macedonia and recent studies in Albania show a deteriorated water status (PrespaNet, 2017).

The preservation of water resources is vital to the life of lake species and hence one of the key elements to address through the transboundary park. Overall, there are limited data on the water quality across all three countries, however, efforts have been made to monitor the water quality of the lake area. Despite the national and transnational coordinated actions to improve the situation, agriculture seems to be the key pollution source

(Society for the Protection of Prespa, 2018). Irrigation practices, fertiliser application, use of hazardous chemicals and untreated sewage are among the practices causing environmental impacts in the area. (PrespaNet, 2017)

How it is tackled in the lake region

In general, countries around Prespa have all taken their own actions to improve water quality, e.g. through monitoring and national water monitoring programmes (Greece) aligned to the EU Water Framework Directives (PrespaNet, 2017). A national water monitoring programme started in Albania in 2012, while in North Macedonia the water monitoring takes place through the project 'Restoration of the Prespa Lake ecosystem' (PrespaNet, 2017). Adjustment of the legislation on water management has been a first step for all three riparian countries.

- Thanks to its EU membership, Greece has transposed relevant important regulation in its national legislation, including the EU Water Framework Directive in 2003 and the Convention on usage and protection of transboundary rivers and lakes. Greece has also a management plan for the river basins of Western Macedonia River Basin District (January 2014). The Ministry of Environment, Energy and Climate change is the responsible body. (Ministry of Environment, Energy and climate change and Special Secretariat for water, 2012)
- North Macedonia has adopted the Law on Water, a framework for the protection and sustainable management of water resources, where the Ministry of Environment and Physical Planning plays a key role. Furthermore, the EU Water Directives have also been transposed in this law. A number of further laws reinforce the water issues, namely the Law on Environment, the Law on Water Supply, Collection and Treatment of Waste Water, the Law on Water Economies and the Law on Water Users Associations, while several ministries share the responsibilities. The country has also has adopted some main documents for the water management, such as the National Strategy for Water (adopted in 2012), the Water Master Plan and the River Basin Management Plans. (Mirta, n.d.)
- Albania has adopted in 2012 and amended in 2018 a Law on the integrated management of water resources, aligned with the EU Water Framework Directive (FAO, 2021). There is also a national strategy of Water Resources integrated management (2018-2027), further regulations on the quality of drinking water (2016), the territorial and hydrological borders of the water basins in the Republic of Albania and the headquarters and composition of their councils, the Regulation on the Functioning of the National Water Council (2016). Responsibilities over water management is shared by two bodies: the Water Resources Management Agency and the Technical Secretariat of National Water Council.

The topic of water management has been practiced at national level, however, a more integrated approach to the river management is deemed necessary. When it comes to monitoring, for example, although national monitoring networks have been established, the data cannot be comparable as the parameters and methodologies vary.

Protection of lake-specific biodiversity (2.2)

Description of the issue

The Prespa lakes and area are a biodiversity hotspot in the Balkans, having a unique biodiversity with unique flora and fauna species, not only due to their number but also due to their rarity and conservation significance. In Greece alone, there are 1249 species of higher plants in the Prespa National Forest. Other biodiversity richness regards the Balkan pine, *Viola eximias*, Pelister stream trout, the Dalmatian Pelican, the Pygmy Cormorant and the Balkan Lynx. (Seizova, 2009) Numerous local endemic species regarding both plants and animals are unique in the area and cannot be found anywhere else in the world. There are more than 2000 plant species and 11 amphibian, 21 reptile and 62 mammal species, with 375 recorded species of birds, with the Dalmatian Pelican forming the largest colony in the world. Furthermore the area is famous for its fish fauna being home to 23 fish species, 9 of which are endemic and others with economic importance for the fisheries sector (Koutseri, 2012).

Nevertheless, pollution persists in the area, mainly due to human activities, as is the case in North Macedonia, or due to the overall degradation of biotopes as a result of lacking energy resources and unplanned human activities as in Albania, or due to the decline of specific traditional human activities, as in Greece (Society for the Protection of Prespa (SPP) et al., 2005). Further threats to the biodiversity are the inadequate water quantity and quality, with water pollution originating mainly from agricultural, urban and industrial waste causing eutrophication, uncontrolled dumping and building waste in the riverbeds, invasion of non-native species and unsustainable fishing practices that pose a threat to the fishing population of the lake (Koutseri, 2012).

How it is tackled in the lake region

Recognising the ecological and biodiversity importance of the Prespa lakes area, the three neighbouring countries took actions to maintain its richness and improve its situation. Each country has therefore declared the protection of the area through a number of conventions and legislations.

- Greece declared the area as a National Park since 1974. A large part of the park was also included in the NATURA 2000 network. A management body (Prespa National Park Management Body) was established in 2003 in the village of Agios Germanos. The body is a legal entity of private law and aims to contribute to the management of the protected area. The same year, the lake Mikri Prespa was included in the 10 Greek wetlands of international importance, when ratifying the Ramsar Convention. Greece, as member of the European Union has also adopted the Water Framework Directive in 2000. . In 2018 Greece adopted a law on protected area management bodies, the role of which extends to cover all NATURA 2000 areas improving the previous scheme (Society for the Protection of Prespa, 2018). At a more local level, the project PoliPrespa aims at coordinating local actors for actions on environment, economy and society. It aims at promoting actions fro agricultural development that take into account the nature protection (<https://www.poliprespa.com/perivallon>).
- North Macedonia has also declared the area an area of ecological importance, establishing in total three national parks, the Galicica National Park, established in 1958, for the protection of the area's ecosystem, the Pelister National Park, established in 1948, to protect the area's forest ecosystem (Pelister is home to the Balkan pine) and the Ezerani Strictly Protected Reserve, established in 1996 to protect the migratory and other aquatic bird species.
- Albania has also established a Prespa National Park in 1999 to protect the land and water ecosystems (SPP, n.d.), with support from the German NGO EuroNatur and the development agency GIZ (PrespaNet, 2017).

The transnational protection of the lake was initiated with the establishment of a transboundary agreement on the Prespa park which was signed in 2010. The park provides now for joint initiatives and projects in the field of environmental protection as well as a common branding umbrella for nature tourism.

Protection and valorisation of cultural and natural heritage around the lake (6.1)

Description of the issue

The Prespa area has a rich cultural heritage, with natural characteristics and archaeological sites and different monuments, small villages and sites of ecological interest. However, tourism in the region is rather under-exploited or unknown (e.g. in the Greek part), lacks due to limited infrastructure (e.g. in Albania) or it is expected to change but only seasonally (e.g. North Macedonia). Cultural values in the area regard prehistoric settlements and monuments from the Ancient and Byzantine periods, while there is a wealth in local traditions, architecture, and art forms. The protection and promotion of these cultural sites are necessary for the future. (Society for the Protection of Prespa (SPP) et al., 2005)

The area is listed as UNESCO world heritage centre, for the following (Permanent Delegation of Greece to UNESCO, 2014):

- Archaeological sites. There are numerous archaeological sites and ancient finds from the Neolithic Age to the Byzantine and Post-Byzantine period.
- Architecture. Another important feature of the area is the domestic architecture, i.e. many houses have been built until the early 20th century from natural materials such as stone, wood, clay and reeds is an important area feature.
- Continuous cultural heritage. The archaeological record shows that people have lived in the Prespa valley for over six thousand years. The cultural and natural environment determined human activity, while historical conditions led to the area receiving various cultural influences, which it assimilated and modified dynamically, resulting in the creation of important monuments, witnesses to the wealth of human ingenuity.
- Byzantine cultural heritage. The area contains a great number of monuments, mostly of the Byzantine and Post-Byzantine period (see criterion II) and villages such as Agios Germanos, Laimos, Miliona and Psarades, built during the 19th and early 20th century.
- Prespa National Park. With its mixed but unified ecosystem, it forms both terrestrial (mountains) and aquatic (Lakes Mikri and Megali Prespa) areas preserving a large number and variety of ecological, geomorphological and cultural elements.
- Habitat diversity. The altitude range, from wetland habitat (altitude 850-853m) to alpine meadows (altitude over 2000m), has given rise to a species assemblage that is unique by international standards.

How it is tackled in the lake region

The protection of cultural heritage has been first an initiative promoted on the Greek side before it was used a common denominator for crossborder cooperation.

Greek stakeholders were active in promoting the protection of the regional cultural heritage. Besides the Ministry of Culture in Greece, there is also a regional service of the ministry in the region, at management level, responsible for the local monuments and whose staff also works on archaeological research. There is also an NGO, the Cultural Triangle of Prespa, situated at the Greek side of the borders of all three countries, supporting local actors, the youth and civil society and promoting culture.

Albania and North Macedonia shores of Prespa are included in the Ohrid-Prespa UNESCO Transboundary biosphere reserve that was designated in 2014. For its part, Greece has enlisted the Prespa area as a UNESCO cultural heritage site in 2014.

The continuous historical presence in the region has created shared opportunities to cooperate on cultural heritage issues. Some cooperation efforts through Interreg IPA CBC programmes have bear fruit and take place. Besides Interreg IPA programmes, an archaeological project between Greece and Albania, the Maligrad Project, also took place and started in 2008, where Greek and Albanian archaeological missions research the area of the Maligrad island in Prespes.

10.4 Cooperation initiatives around the lake

Name of cooperation initiative

Prespa Park Area

Historical background of the cooperation

In 2000, the joint declaration by the Prime Ministers of Greece, Albania and FYROM established the Prespa park as the first transnational park in southeast Europe. It was followed, in 2010, by the signature of the international Agreement for the Protection and Sustainable Development of the Prespa Park Region' by the Ministers of the Environment of the three neighbouring countries. The agreement recognizes the lake protection as a shared responsibility. It reflects the wish to enhance cooperation among the authorities to protect the ecological values of the area (Minister Konstantina Birbili et al., 2010). It contributes to on-going cooperation efforts on the water management of the Prespa lakes, to prevent reduce and control water pollution, to conserve the biodiversity of the area, protect the soil erosion and pollution, control the use of resources, prevent the introduction and breeding of alien species, effectively regulate the activities (Minister Konstantina Birbili et al., 2010). The agreement is made effective through integrated management plans, coherent strategies, and applications of environmental standards.

Members of the agreement are countries. It is supported by a 10 member committee, comprised by members of the ministries of environment, local government, NGOs from the three countries and a permanent observer of the Ramsar convention (latest reported in the Society for the Protection of Prespa website was 2007).. (Society for protection of Prespa, n.d.) Although the cooperation action was taken forward and formalised top-down (through a high-level political agreement), cooperation has taken place at different levels, including local and regional authorities, as well as NGOs in the three countries. A next step in the cooperation would be to declare the national designated areas of the lakes as part of a trilateral transboundary Ramsar site (Convention on Wetlands, 2017).

The transboundary Prespa Park is a key cooperation framework for the protection of the ecosystem of the Prespa Lakes. Nevertheless, further cross-border frameworks have supported the protection of lakes in the region, such as the Pont trust, i.e. the Prespa Ohrid trust with support from the MAVA foundation and the German Ministry for Economic Cooperation and Development, founded in 2015 to support conservation efforts with funding (<https://www.pont.org/about-prespa-ohrid-nature-trust-pont/>).

Actions and achievements

In the field of the protection of lake-specific biodiversity, the Prespa transboundary park supports enhanced cooperation in the area, through projects. A few examples regarding the biodiversity protection are presented below (information based on Ministry of Environment, Energy and climate change and Special Secretariat for water, 2012).

- 'Strategic Action Plan for the Sustainable Development of the Prespa Park' which provided a first step towards a common vision for the conservation and sustainable development of the basin.

- Programme Development Facility (2004-2005). This is a fund granted from GEF after the efforts of the Prespa Park Coordination Committee. It was used to prepare the ground for stronger cooperation, share information, and set the prerequisites for a future GEF project. In 2005 it led to the submission of a cooperation project 'Integrated Ecosystem Management in the Prespa Lakes Basin in Albania, FYROM and Greece', which began in 2006.
- Integrated Ecosystem Management in the Prespa Lakes Basin in Albania, FYROM and Greece, which functioned as an umbrella for several studies and analysis.

The water pollution issue has also been addressed in the joint agreement for the creation of the Prespa Park Area. A number of actions derive from this agreement, which has been the setting stone for projects and initiatives in general.

- Transboundary Water Management. The project was under the umbrella of the UNDP-GEF Prespa regional project. Its main outcome was the report 'Enhancing Transboundary Cooperation in Water Management in the Prespa Lakes Basin'.
- Protection and sustainable use of biodiversity in the territory of lakes: Ohrid, Prespa and Shkodra (2011-2014). The project was funded by the German Federal Ministry for Economic Cooperation and Development and worked on linking the protection measures of the lakes with the Water Framework Directive, implementation of protection measures etc.

Involved partners		
Name	Status	
Countries: Albania, Greece, North Macedonia	Declaration Parties	
Ministries of environment	Committee members	
Local governments	Committee members	
NGOs	Committee members	
Permanent observer of the Ramsar convention	Committee members	
Thematic scope		
Water management	M	M: major x: minor
Ecosystem management	M	
Food production	x	
Demography, labour market and attractiveness		
Tourism		
Cultural and natural heritage	M	
Transport		
Spatial planning	x	

Name of cooperation initiative	
PrespaNet	
Historical background of the cooperation	
Prespanet (since 2013). One can argue that the NGO network in the area comprised of three NGOs one from each littoral country is an indirect outcome from the Prespa Park agreement . The network, is formed by three NGOs,. The NGOs were active in the region and in 2013 they formed the network.	
Actions and achievements	
Since 2013, NGOs of the network collaborated closely, worked to exchange knowledge and good practices, support the local actors with voluntary actions, develop a good example of transnational cooperation for the biodiversity protection. water management, conservation strategy for Prespa, joint biodiversity monitoring efforts, raising awareness. Since 2018 the network has been working on the project 'Strengthening NGO-led Conservation in the Transboundary Prespa Basin (2018-2021)', funded by the Prespa Ohrid Trust. And Aage V. Jensen Charity Foundation (Society for the Protection of Prespa, 2018) and working on conservation activities of the area, studies and awareness raising activities. The same year (2018) it published a first position paper.	
Involved partners	
Name	Status
NGOs: SPP located in Aghios Germanos (Greece), PPNEA in Tirana (Albania) and MES in Skopje and Recen (North Macedonia)	Members

Thematic scope		
Water management	M	M: major x: minor
Ecosystem management	M	
Food production		
Demography, labour and market and attractivity		
Tourism		
Cultural and natural heritage	M	
Transport		
Spatial planning		

Name of cooperation initiative

Crossborder projects for water monitoring

Historical background of the cooperation

The political agreement has set the ground for more cooperation actions in the region. Different projects took part in each of the three countries for improved water management. In addition, efforts have been made to monitor, among others, the water resources in the area. In Greece for instance, the monitoring of basic water parameters, started in 1991, measuring the water level and water temperature. Further actions regard the quick assessment of water and sediment quality in the Prespa Lakes (2012-2013), the eutrophication assessment of the lakes, the establishment of the Wetland Management Committee and the study for determination of the fluctuation of the water level of Mikri Prespa, among others, funded by international funds and foundations. North Macedonia has been engaged in actions regarding a one-year surveillance water monitoring (2010-2011), the Prespa Lake Watershed management plan and Council (2009-2012), the construction of wastewater treatment facilities in Nakolec and Resen, a project on reducing environmental impacts of agriculture (running in parallel also in Albania), the extension of solid waste management service in the rural Prespa communities and biodegradable waste, among others. Albania has been engaged in actions regarding national water monitoring (since 2012), the Prespa River basin management plan, the improvement of integrated solid waste management of south-east Albania, among others (PrespaNet, 2017).

Actions and achievements

TRABOREMA (2004-2007). This has been an important research project on water quality and ecological status of the water bodies of Prespa lakes, which has shown increased phosphorus levels (Perennou et al., 2009). The project was funded under the 6th Framework Programme and . A monitoring system has been proposed based on modelling and available data and systems in the countries (Perennou et al., 2009). The cooperation on this takes place at rather national level, where national legislations and approvals on monitoring need to take place, while public authorities, towns in the three countries and monitoring institutions have been considered for the development of the monitoring system. At local / regional levels also integrated land use plans have been established to maintain the ecosystem. Difficulties are mainly seen due to differences in legislations in the three countries (UNDP, 2009). However local authorities could be more aware and engaged in the issue (PrespaNet, 2017).

Development of a transboundary environmental monitoring system (2007-2011). Designed under the Integrated Ecosystem Management in the Prespa Basin in Albania, FYROM and Greece. The project was supported by funds from the Global Environment Facility and the Swiss Development aid for Albania and FYROM, governments and organisations of the three countries. Greece participated with parallel financing. The project was divided in three phases and a number of guidelines were developed, different studies and technical reports and a pilot phase concluded the project. (Ministry of Environment, Energy and climate change and Special Secretariat for water, 2012) The monitoring system was designed in the framework of the Integrated Ecosystem Management of the Prespa basin project (IEMP), was however not actually continued due to logistical, financial and legal reasons. Nevertheless, the monitoring that took place in the framework of the project collected valuable information for a better knowledge on water issues in the area (PrespaNet, 2017).

Involved partners

Name	Status
Universities: University of Leoben, Austria; Institute of Geological Research, Tirana, Albania; Aristotle University Thessaloniki, Greece; Pompeu Fabra University Barcelona, Spain; University Skopje, FYROM	Partners (TRABOREMA)
UNDP Offices in FYROM and Albania	

State and deconcentrated State: Ministries of Environment of FYROM and Albania, Prefecture of Florina, Operation of Prespa National Park National Body (GR)		
Regional authority of Western Macedonia		
Thematic scope		
Water management	M	M: major x: minor
Ecosystem management		
Food production		
Demography, labour market and attractiveness		
Tourism		
Cultural and natural heritage		
Transport		
Spatial planning		

Name of cooperation initiative

Interreg-IPA CBC Programmes and funded projects

Historical background of the cooperation

Cross-border Interreg-IPA programmes have taken place in the region since early 2000s through Interreg IIIA programmes: between Greece and Albania on the one hand and between Greece and North Macedonia on the other hand. Some of the projects supported by the programmes targeted environmental protection or better use of local resources around the lake. In the framework of the Interreg IPA CBC programmes, the cooperation has set objectives, mainly at local and regional level, including other players and respecting multi-level governance. The examples below show a few of these cooperation initiatives. At the moment, there is no transnational Interreg IPA programme in the region, covering all three riparian states.

Actions and achievements

Several projects funded by the consecutive generations of Interreg IPA programmes were targeting lake-related issues.

On the preservation of the lake from water pollution:

- **Municipal sewage Prespa.** Supported by the Interreg IIIA Greece-Albania (2005-2008), the project aimed at the creation of a modern sewage system, building upon extensions on the existing networks of Greek municipalities in the region.
- **Municipal water Prespa.** Supported by the Interreg IIIA Greece Albania (2005-2008) the project dealt with the replacement and extensions of the old water network.
- **SmartWaterSave.** Supported by the Interreg IPA CBC project between Greece and North Macedonia started in June 2018 and aims at addressing water loss problems due to deterioration of pipe networks. Based on the idea of a Supervisory Control and Data Acquisition system with real time flow and pressure monitoring sensors it aims to reduce the water leakage. (Interreg IPA CBC Greece-North Macedonia, 2018). It is implemented by a consortium of municipalities, municipal enterprise and universities (research centres).

On strategic measures to support demographic attractiveness:

- **Green Point Mob.** Supported by the Interreg-IPA CBC Greece-Albania (2014-2020), the project aims at improving the management of recyclable waste in the remote areas in this cross-border territory. It is implemented by municipalities and NGOs.
- **Holywater.** Supported by the Interreg IPA CBC Greece-North Macedonia (2014-2020), the project aims at improving the attractiveness of the area to promote tourism and enhance employment in the sector. It started in 2019. The project provides cultural, environmental and touristic information with the help of technology and reinforce the touristic product in the area. Objectives entail for instance the development of thematic paths, creation of environmental tourism, local products promotion, electronically 'restoring' different monuments. (Interreg IPA CBC Greece-North Macedonia, 2019) It is implemented by a consortium of municipalities, regional cultural institutions and NGOs.

Involved partners

Name	Status
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Municipalities		Project partners
Municipal enterprises		Project partners
Environmental and local development NGOs		Project partners
Universities		Project partners
Regional cultural institutions		Project partners
Thematic scope		
Water management	M	M: major x: minor
Ecosystem management		
Food production		
Demography, labour market and attractivity	M	
Tourism	M	
Cultural and natural heritage		
Transport		
Spatial planning		

11 Lough Neagh

11.1 Introduction

Lough Neagh is located in a comparatively sparsely populated rural region. There is no standard definition of a Lough Neagh region. The four local government districts bordering the lake have an estimated total population of approximately 654,000 (2019 figures) spread across a total area of 4241 sq km, giving an average population density of 154 persons per sq km (Northern Ireland Statistics and Research Agency, 2020). Lough Neagh itself covers 396 sq km or 9.3% of the total area. The population of the region has grown by 19.3% between 2001 and 2019, a substantial increase, and significantly higher than for Northern Ireland as a whole (12.1%).

Population is concentrated in a number of urban centres, the largest of which include the following: Lurgan (25,069 inh. In 2011), Antrim (23,375 inh.), Portadown (22,000 inh.), Banbridge (16,637 inh.), Craigavon (16,000 inh.), Armagh (14,777 inh.), Dungannon (14,340 inh.), Cookstown (11,599 inh.), Magherafelt (8,805 inh.) (source: (Northern Ireland Statistics and Research Agency, 2015).

Belfast City (population approx. 340,000), the capital city of Northern Ireland and focal point of the NI economy is located approximately 30 km from Lough Neagh. The Lough Neagh region is structurally weak in economic terms. In 2011 over one third (34.5%) of the region's population was employed in public administration (incl. education, healthcare and social work), 18% in wholesale and retail and almost 16.7% in the services sector of the economy (private and business services) (Northern Ireland Statistics and Research Agency, 2014). Tourism accounts for less than 5% of employment, agriculture and fisheries for less than 3%. These figures are broadly similar to those for NI as a whole. The relatively high level of public sector dependence reflects structural weaknesses in the NI economy, a legacy of the decades of armed conflict (1970s - 1990s). Despite the low numbers employed in agriculture, farming is an important and highly visible impact on the landscape of the Lough Neagh region. Major economic disparities are not found within the region. It may be noted, however, that majority ownership of the bed, soil and accreted foreshore of the lake lies with a single landowner, Shaftsbury Estate of Lough Neagh Ltd., represented by the Earl of Shaftsbury (Lough Neagh Cross Departmental Working Group, 2014)

A general East-West divide may be noted, however in NI with the East focussed on the Belfast city-region more urbanised and industrialised whereas the West has a largely rural character. Lough Neagh is located in the East, but outside of the Belfast city-region.

The lake overlaps with multiple administrative districts. The lake itself is divided among the following four local government districts (Antrim and Newtonabbey, Lisburn and Castlereagh, Armagh City, Banbridge and Craigavon and Mid-Ulster). These administrative boundaries were first introduced in 2015 following a reform of local government in NI, which saw a reduction in the number of districts from 26 to 11. Historically, Lough Neagh has formed the meeting point of the boundaries of multiple counties. The functions of local government in NI are limited. They include planning and building control, local economic and cultural development and leisure and community services (Knox, Colin, and Carmichael, Paul, 2015). Opportunities for direct cooperation among district council are limited and not strongly incentivised. Administrative fragmentation at the local government level is, however, not a major factor in the management of Lough Neagh as many of the issues to be addressed fall outside the formal competences of the local government and require other, less formal governance structures.

Note: official population figures are taken from the Census of Population, conducted once every 10 years. The most recent Census was conducted in 2011.

11.2 Synthesis of the lake-related multi-level governance framework

Around Lough Neagh, four relevant lake-related issues were identified: Ecosystem Management: Management of the lake shoreline to protect wetland habitats and biodiversity (2.1), Promotion and Branding of Lough Neagh to promote tourism (5.1), Protection of Natural and Cultural Heritage around Lough Neagh (6.1), Protection of the quality of waters (1.2).

Lake-related cooperation around Lough Neagh is organised by a non-profit company (Lough Neagh Partnership Ltd.) steered by a wide variety of riparian actors (multi-level governance) and by a daughter organisation (Lough Neagh Landscape Partnership) aimed at funding projects related to the protection of cultural and natural heritage and the promotion of tourism. The Lough Neagh Partnership Ltd. was founded in 2003 and, since then, was awarded increasing competences. The governance around the lake is strongly influenced by the ownership structure of the waterbody: The bed of Lough Neagh being owned by the Estate of the Earl of Shaftsbury, an absentee landlord resident in Dorset, England.

Lough Neagh region stands out for

- its peculiar ownership structure and the leading role given to private actors or private structures in the governance.
- a double focus on water quality / ecological protection and on natural heritage / promotion of tourism, using rural development and agricultural practices as key assets.
- multiple streams of funding sources (Heritage lottery, NI Department of Agriculture, Environment and Rural Affairs)

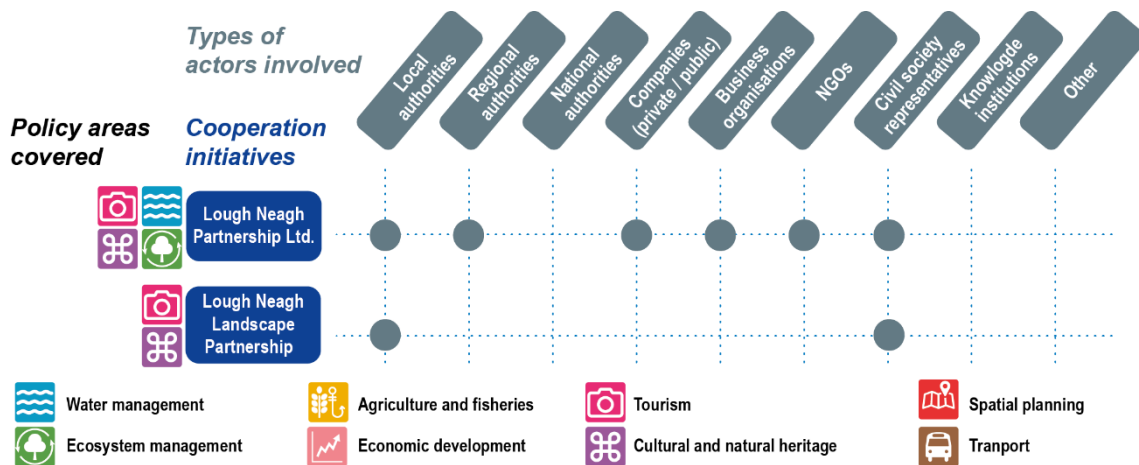


Figure 11-1 Main cooperation and institutional arrangements around Lough Neagh

11.3 Lake-related issues

Ecosystem Management: Management of the lake shoreline to protect wetland habitats and biodiversity (2.1)

Description of the issue

The Lough Neagh shore requires careful management to protect the ecological integrity of the lake and lakeshore (wetland) ecosystems.

Critical issues include:

- 1) Continued loss of important wet grassland habitat for breeding waders around the shoreline of the lough, and a range of rare plants and invertebrates as a result of the encroachment of invasive rush and scrub. Threat factors include under-grazing, drainage, intensification of agriculture and over-regulation of lake water levels.
- 2) Peatland loss due to extraction, drainage, illegal dumping and other activities.
- 3) Water quality: Lough Neagh as high levels of phosphate and nitrate nutrients, coming from agricultural waste and fertilise, as well as sewage runoff. This results in algal bloom, impacting severely on lake ecology.

(Lough Neagh Partnership Ltd, Kane Ecology, 2019)(Lough Neagh Partnership Limited, 2017b)(Friends of the Earth UK, n.d.)

How it is tackled in the lake region

A Shoreline Management Plan has been adopted by Lough Neagh Partnership Ltd in 2016 and updated in 2019. Management requires cooperation between the public sector, private landowners and farmers and NGOs. The preparation of the management plan was funded by the Northern Ireland Environment Agency through the Department of Environment Natural Environment Fund.

Lough Neagh Partnership Ltd., a registered charity and non-profit company, formed in 2003 has responsibility for the management of the lake and shoreline. Lough Neagh Partnership has a small staff (secretariat, rangers) and

a board comprised of local elected and civil society representatives. Lough Neagh Partnership is reliant on public funding (by local councils and project-based funding). The Lough Neagh Partnership is a partnership of statutory/voluntary and business interests linked to the local community sector with input from recreational users and conservation groups (NGOs). Work is conducted with the support of local Councils, Government bodies, the Heritage Lottery Fund and any other funders with an interest in the Companies objects.

Shoreline management is conducted primarily through engagement with local farmers and other landowners who are encouraged to improve their practices, in part through incentives. Over 140 local farmers have joined Environmental Farm Group Schemes, enabling them to apply for funding from the NI Department of Agriculture, Environment and Rural Affairs. Assistance under this scheme amounts to approx. £750 per hectare (Farming Life, 2019). To date there has been no funding available for integrated catchment management or to address ecosystem-based issues in an integrated manner through a single statutory body.

Promotion and Branding of Lough Neagh to promote tourism (5.1)

Description of the issue

Lough Neagh is considered to have considerable potential for development as a tourism destination. It is claimed to be a “paradise just waiting to be discovered”, According to the Discover Lough Neagh promotional website “Lough Neagh captivates visitors with its tranquil atmosphere, un-spoilt scenery, secluded bays and skyward views. Lough Neagh is a haven for wildlife with many viewpoints around the shoreline” (Lough Neagh Partnership Limited, 2017a). Promotional material describes Lough Neagh in terms of both unspoilt natural landscapes and as a place of mythology and history. There is an apparent contradiction here between the promotional branding emphasising unspoilt natural landscapes and the real concerns regarding the ecology of the lake and wetlands. The relatively low level of tourism activity may, in part, be attributed to the past history of violent conflict in Northern Ireland and its impact on the promotion of the region as a tourist destination. Lough Neagh, however, has a low profile compared to other tourism destinations in Northern Ireland.

How it is tackled in the lake region

In 2012, Lough Neagh was officially recognized as a tourism destination. Lough Neagh Partnership developed a Tourism Destination Management Plan with product development, promotion and branding, skills development of tourism promoters and networking as the four central themes (Lough Neagh Partnership Limited, 2017b).

Ongoing work focusses on raising awareness among the local population of the lake region of the tourism potential of the area, coordinating the tourism strategies of the local authorities within the region and fostering the development and marketing of specific activities. This work is also supported by the Lough Neagh Landscape Partnership programme.

Protection of Natural and Cultural Heritage around Lough Neagh (6.1)

Description of the issue

There is an evident need and perceived benefit to building on local’s and visitor’s appreciation of the landscape of the lake region to generate awareness regarding conservation issues relating to the natural and cultural landscape. This work links efforts to promote tourism to conservation and heritage protection work.

How it is tackled in the lake region

A “whole landscape approach” that brings together the built, cultural, historical and natural features and assets of Lough Neagh is adopted. Lough Neagh’s heritage is understood to comprise the “inherited resources which people value for reasons beyond mere utility” (Lough Neagh Partnership Limited, 2017b)

This objective is pursued via the Lough Neagh Landscape Partnership (2017-2022). The core principle of the work undertaken is the fostering of dialogue and successful partnerships among a wide range of stakeholders (community, business, local government, government departments).

Projects under the Lough Neagh Landscape Partnership include the following:

- Saving Nature around Lough Neagh (natural heritage)
- Lough Neagh Barn Owl Project (natural heritage)
- Lough Neagh Archaeology (material cultural heritage)
- Litterless Lough (Natural heritage)

- Antrim Lough Shore Park Heritage (Cultural Landscape heritage)
- A Song from the Lough Shore (immaterial cultural heritage)
- Toome Lough House and Sand Quay (cultural heritage, community based)

Site specific projects are on public lands.

Source: (Lough Neagh Landscape Partnership, 2018)

Protection of the quality of waters (1.2)

Description of the issue

Sand dredging for commercial purposes continues to pose a major challenge to water quality and the ecological integrity of the lake. The bed of Lough Neagh is owned by the Estate of the Earl of Shaftsbury, an absentee landlord resident in Dorset, England. Licences to extract sand and minerals have been granted to a number of private companies (Development Trusts Northern Ireland, 2016). Their legal entitlement to dredge the lake was recently confirmed in court, despite known negative impact on biodiversity and water quality. The NI government has given permission for 1.5 tonnes to be extracted per year. Environmental NGOs are strongly opposed to this activity (Kula, Adam, 2021).

How it is tackled in the lake region

There have been a number of attempts to resolve this issue. Conservation stakeholders perceive a need for a statutory governing body for the lake, such as a National Park and advocate for the transfer of the ownership of the bed and soil of the lake to the state (Development Trusts Northern Ireland, 2016) (Lough Neagh Cross Departmental Working Group, 2014). To date, these efforts have been unsuccessful. The cost of purchasing the lake bed and its long-term management are hindering factors.

11.4 Cooperation initiatives around the lake

Name of cooperation initiative

Lough Neagh Partnership Ltd.

Historical background of the cooperation

Lough Neagh Partnership (LNP) was established in 2003, initially for the purpose of administering rural development grant funding. It is a non-profit making company limited by guarantee with directors representing the five district councils that surround the lough, the private sector, community sector and special interest groups such as Lough Neagh Fishermen's Co-operative, Lough Neagh Sandtraders, The Shaftesbury Estate and Shooting and Conservation Clubs.

In 2011, the remit of LNP was extended. It assumed wider range of lake-related responsibilities including integrated management, marketing and development of activities relating to tourism, recreation, the environment, heritage and culture. LNP has no responsibility for navigation and the lake continues to lack a navigation authority. Please note that there is no joint spatial plan or concept for Lough Neagh. Any developments in this direction have been opposed by one of the two dominant political parties (interview source).

The partners listed below are listed as Directors of LNP (as of April 2017).

Source: (Lough Neagh Partnership Limited, 2017b).

Actions and achievements

In the field of eco-system management, the initiative has worked on Shoreline Management Plan (adopted in 2016 and updated in 2019), employment of rangers, and the establishment of a stakeholder forum (Lough Neagh Farmers, Landowners and Shooting Clubs), 2016.

In the field of the promotion and branding of Lough Neagh to promote tourism, the initiative has worked on the Launch of Discover Lough Neagh tourism website (2017) (Lough Neagh Partnership Limited, 2017a), on the recognition of Lough Neagh as an official tourism destination (2012) and on training activities for tourism businesses and community groups.

In the field of the protection of cultural and natural heritage, the initiative has worked on the establishment of Lough Neagh Landscape Partnership (2017)

Involved partners		
Name	Status	
Local authorities (Mid-Ulster Council, Antrim & Newtonabbey Council, Lisburn & Castlereagh City Council, Mid- and East Antrim Borough Council)	Directors	
Government departments (Dept. Agriculture, Environment and Rural Affairs (Northern Ireland), Dept. for Infrastructure (Northern Ireland))	Directors	
NGOs (Balinderry Rivers Trust, Inland Waterways Association of Ireland)	Directors	
Rural community networks (Cookstown and Western Shores Area Network, Tada Rural Network)	Directors	
Business representative organisation (Lough Neagh Fishermen's Co-operative Society)	Directors	
Social economy actors (TABBDA Company Ltd.)	Directors	
Private businesses or landowners (Norman Emerson & Sons Ltd., Shaftsbury Estate, Shanes Castle Estates)	Directors	
Thematic scope		
Water management	x	M: major x: minor
Ecosystem management	M	
Food production		
Demography, labour market and attractivity		
Tourism	M	
Cultural and natural heritage	M	
Transport		
Spatial planning		

Name of cooperation initiative		
Lough Neagh Landscape Partnership		
Historical background of the cooperation		
Lough Neagh Landscape Partnership was founded in 2017 following receipt of funding from the Heritage Lottery Fund. It was initiated by the Lough Neagh Partnership Ltd. The programme comprises 27 individual projects focussed on both natural and cultural heritage. Funding is limited to the period 2017-2022 but it is aimed to continue the work through further project development / funding applications.		
Actions and achievements		
<p>In the field of the protection of cultural and natural heritage, the LNLP has worked on cultural heritage and nature conservation and education and training through volunteer placements etc. (Lough Neagh Landscape Partnership, 2018).</p> <p>In the field of Development and networking of the tourism industry, LNLP has worked with and supports small businesses and community organisations engaged in tourism communities. It serves a networking function, bringing diverse organisations together through joint projects.</p> <p>Besides, Lough Neagh Landscape Partnership has worked with Lough Neagh Partnership Ltd, to promote the branding of the lake as a tourism destination, focussing in particular on generating awareness of the lake region's natural and cultural heritage, and raising the quality of the tourism offer.</p>		
Involved partners		
Name	Status	
Local authorities (Mid-Ulster Council, Antrim & Newtonabbey Council, Mid- and East Antrim Borough Council, Lisburn & Castlereagh City Council, Armagh City, Banbridge and Craigavon Borough Council)	Members	
Lough Neagh Partnership Ltd.	Member (parent organisation)	
Community groups	Members	
Thematic scope		
Water management		M: major

Ecosystem management		x: minor
Food production		
Demography, labour market and attractivity		
Tourism	M	
Cultural and natural heritage	M	
Transport		
Spatial planning		

12 Etang de Berre

12.1 Introduction

Étang de Berre is a 155 km² saltwater lagoon located within the Aix-Marseille metropolitan area. The Lake is fed with fresh water by the rivers Arc, Touloubre and Cadière and – since 1966 – by the Durance Canal. It includes a subcomponent the Étang de Bolmon, which is separated from the rest of the lake by a dune ridge (“Lido du Jaï”). Water in the Étang de Bolmon is less salty than in the Étang de Berre proper. The connection to the Sea was lost around 7,000 BCE, and reestablished by the Romans by the opening of the Caronte canal in the 1st century BCE. As a result, the Étang de Berre went from being a freshwater lake to a saltwater lagoon. The construction of the hydropower station of Saint-Chamas greatly increased quantities of freshwater that flow into the lagoon from 1966. As a result, freshwater tends to concentrate in higher levels of the lagoon, and salt water in the lower levels. This limits diffusion of oxygen to the bottom of the lake. Oxygen levels are also limited by high nutrient levels (nitrogen and phosphorous).

The surrounding of the lake is essentially a heavily industrialised area, in which the state has played a major role as promoter of industrial development (Steenhuysse, 2018). The area includes oil refineries, a petroleum port with petroleum storage facilities, heavy industries including steel production and chemical industries. The airport of Marseille Provence is also located partly on the lake. Intensive production of fruits and vegetables has also been developed in the neighbouring “Plaine de Berre”.

From the 1970, demographic growth in the lake region was intense, as a result of the economic development. This growth has since stagnated. To accommodate the industrial workforce, the area has hosted extensive planned communities, that were developed between 1973 and 2001 (year of dissolution of EPAREB (Etablissement public d’aménagement des rives de l’Étang de Berre)³².

Improved water quality also made it possible to develop tourism. Bathing water quality is monitored since 2005 (GIPREB, 2021). Water quality is mostly good. However, closure of some beaches occasionally occurs. Tourism is promoted in the area³³, but suffering from a very negative image as a result of the presence of chemical and petroleum industries.

Ecosystems of the lake are heavily affected by human activities. As a consequence of industrial development, the lake has been heavily polluted, first by industries and then by sewage from surrounding cities. Health authorities are concerned about the possible impacts of pollution on the health of inhabitants in the lake area, especially around Fos-sur-Mer. Many epidemiological studies have been carried out. Some have generated extensive media attention, and triggered methodological studies. (Santé publique France, 2018). A number of manufacturing plants generating hazards are located around the lake. Eutrophication heavily affects the lake ecosystems. Four Natura 2000 sites have been designated in the lake to protect marchlands, salt marches, and scrubland around the lake.

A current major issue is the inflow of large quantities of freshwater into the lake from the Saint-Chamas hydropower station. Its severe ecological implications, and the absence of political will to discontinue operations in this power station, make it challenging to mobilise institutions and actors in the lake region around a project for a “new start” (Steenhuysse, 2018).

The lake has a very limited horizontal fragmentation as it is included in the territory the Aix-Marseille-Provence metropolitan area (urban intermunicipal cooperation) which was established on 1st January 2016. It includes all shores of the Étang de Berre. One of its responsibilities is the “Management of aquatic environments and flood prevention” (“Gestion des milieux aquatiques et prévention des inondations” – GEMAPI). However, this competence is exerted through six intermunicipal cooperation bodies that were established before the metropolitan area (Mission d’information sur la réhabilitation de l’étang de Berre, 2020). The 11

³² La Gazette des Communes, 08/01/2002, <https://www.lagazettedescommunes.com/22819/la-mort-annoncee-de-le-pareb-desormais-une-realite/>

³³ See for example : Martigues tourisme, « Etang de Berre », <https://www.martigues-tourisme.com/etang-de-berre.html>

riparian municipalities belong to five different intermunicipal cooperation bodies. Coordination of water and sanitation policies is therefore limited.

The “Groupement d’intérêt public pour la réhabilitation de l’étang de Berre” (GIPREB) was established in 1999, as part of the “Contrat de Plan” between the State and the Region for 2000-2006. In 2006, it was prolonged until 2010. In 2013, a “Lake contract” was signed between the State (i.e. the prefect of the PACA region), The Rhône Méditerranée Corsica water agency, the PACA region (NUTS 2), the Bouches-du-Rhône département (NUTS 3) and 27 bodies with the responsibility for implementing concrete measures. The contract is managed by GIPREB.

The French National Assembly organised a consultation on the “rehabilitation of the Étang de Berre” between January and March 2020. The information report (Mission d’information sur la réhabilitation de l’étang de Berre, 2020) focuses on solutions to limit freshwater emissions from the hydropower plant, developing new economic activities (e.g. shellfish and mussel production, production of plastic from algae), stabilising lake ecosystems. It also explores perspectives for a renewed governance of the lake, e.g. by transferring the competence on “Management of aquatic environments and flood prevention” (“GEMAPI”) to GIPREB or to a dedicated intermunicipal cooperation body, by elaborating a water planning and management scheme (“SAGE”) focusing specifically on the Etang de Berre.

12.2 Synthesis of the lake-related multi-level governance framework

Around Etang de Berre, four relevant lake-related issues were identified: Regulation of the quality of lake water, limiting water pollution (1.2), Protection of lake-specific ecosystems (2.1), support to lake-based fisheries (3.2), and strategic measures for demographic attractivity (4.1).

Lake-related cooperation is concentrated on a “local union” (syndicat mixte), the GIPREB. Although entrusted with a wide array of thematic missions, the GIPREB remains a consultative and research-oriented entity. Therefore, It does not manage to solve the major issues of ecological protection of the lake and to trigger a regional development process centred on the lake. The governance framework of the lake region has been described as dysfunctional in a recent parliamentary report (Mission d’information sur la réhabilitation de l’étang de Berre, 2020) . In recent years, progress have mainly been observed in the field of shore-line management and tourism promotion. The cooperation landscape is affected by conflicting views over operations of the hydroelectrical plant of Saint-Chamas. National level actors (authorities and electricity company) highlight involved economic interests, while local level actors (mayors, NGOs) see it as an obstacle to restauration of the ecological status of the lake and to endogenous lake-centred local development. Prominent actors for the lake-related cooperation are riparian municipalities, and regional authorities. Gathered in the GIPREB they advocate for a alternative to freshwater discharge in the lake.

Etang de Berre area stands out for the weak multi-level governance framework in place, in a context of limited horizontal fragmentation (the lake is embedded in one country, one region, one intermunicipal body), and high vertical inter-level fragmentation (local vs. national). Etang de Berre shows that resources provided by large lakes can be subject to multi-level ownership conflicts. The strong “community of intent” identified at local level does not offset economic national industrial interests.

The following figure only grasps the cooperation landscape. Actors involved in GIPREB all have their own competences on specific policy areas and/or territory around the lake.

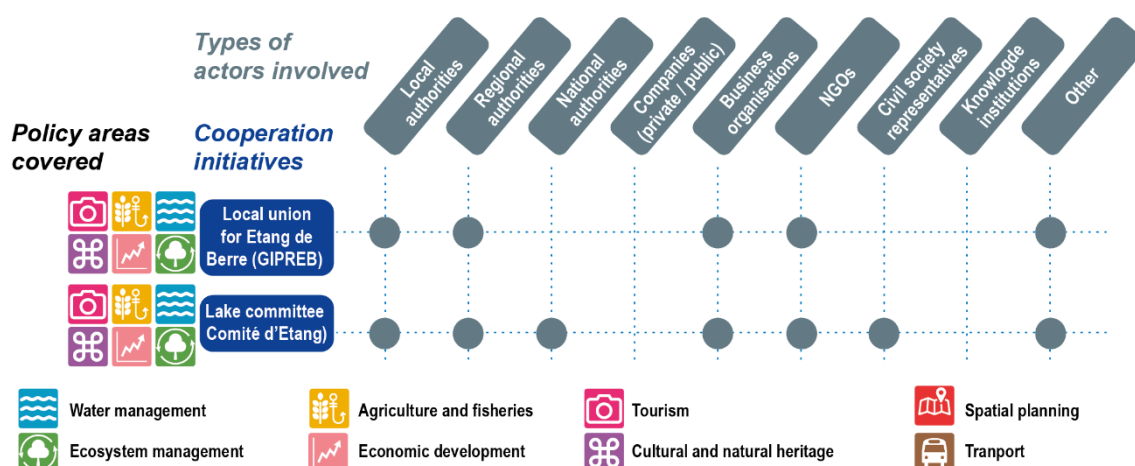


Figure 12-1 Main cooperation and institutional arrangements around Étang de Berre

12.3 Lake-related issues

Regulation of the quality of lake water, limiting water pollution (1.2)

Description of the issue

Being a saltwater lagoon, the quality of water of the Etang de Berre is highly dependent from water input and climatic conditions. In this regard, Etang de Berre receives large quantity of fresh water and silt from the Saint-Chamas hydroelectric plant, which results in a substantial variability in salinity throughout the year, a strong vertical stratification in the lagoon, and peaks of eutrophication.

In Etang de Berre, the question of the management of water quality of lagoon specific ecosystems takes the 1920s and 1930s as **reference years**. This corresponds to times when salinity was relatively high (Rove tunnel open, hydropower plant not already built).

Since 1960s, the continuous inflow of freshwater from the Saint-Chamas hydroelectric plant led to degradation of water quality, exacerbating haline stratification and unstable environment for fauna and flora. This in turn created the condition for eutrophication observable until today through algae bloom and absence of oxygen at the bottom of the lagoon.

Regulation of water discharge from the Saint Chamas hydropower plant since 2004 has improved the situation. However, a major ecological crisis occurred in 2018, as a result of high volumes of freshwater channelled into the lagoon by the hydropower station, high temperatures and extensive periods of sunshine. This led to an accentuated eutrophication. Benthic or soil macrofauna organisms (i.e. at least one millimetre in length) disappeared completely in 7 out of 10 monitoring stations. The ecological status of the lake reverted to levels of the 2000s. Observations made in 2019 do not make it possible to firmly establish whether this ecological crisis is temporary or can be overcome in coming years. (GIPREB, 2020).

Discharge from sewage treatment plants, rain water and leaching of agricultural soils also contribute to a lesser extent to the excess of nutrient in the lake.

The recent improvement of the quality of bathing waters has enabled to develop tourism.

How it is tackled in the lake region

1) The regulation of water discharge from the Saint-Chamas hydroelectric plant is a conflicted issue with diverging interests involved, with the electricity provider (EDF) on the one hand and local authorities and environmental NGOs on the other.

-Main regulation measures have been taken after a 2004 judgement of the European Court of Justice that recognized the freshwater discharge as a massive pollution source for the lagoon and forced French public authorities to take measures. Since then **freshwater and silt discharges have been capped** with annual and weekly thresholds (e.g. 1,200 millions of cubic meters of freshwater per year) in order to secure minimal salinity levels in the lake. Local actors (GIPREB) requires that water inflow be limited to 600 000 millions of m³ per year (GIPREB, 2020). This did not solve the issue of annual and inter-annual variability of discharge. Additional technical measures to limit eutrophication and restore salinity could include: the derivation of freshwater discharge through a channel into the Rhône, the opening of the Rove tunnel that connects the lake to the Sea (pending project), further collection and treatment of rain waters

2) Coordination of actions for improving water quality are taken (among others) through a “**lake contract**” (Contrat d'Étang) which gathers actions foreseen and channels available funding. The contract is implemented by the GIPREB and has been in force during the period 2012-2018. The monitoring of actions under the contract is limited and the coordination with the waterbasin strategic scheme (SDAGE) and other local waterbasin schemes is weak. Not all funded or foreseen actions have been implemented.

3) The management of water quality suffers from a **deficient governance** with a lack of clear distribution of roles and responsibilities (Mission d'information sur la réhabilitation de l'étang de Berre, 2020). Several national authorities or agencies are involved: the Préfecture coordinates actions of the State, the Water Agency Rhône-Mediterranean-Corsica supports projects to improve water quality in the water basin of the Etang de Berre through the implementation of the water basin strategic scheme (SDAGE); the conservatoire du littoral owns and manages the Etang de Bolmon (subpart of the lake), the Port authorities of Marseille is in charge of dredging operations in the channel and of the maintenance of the Rove tunnel. Several local authorities are also involved in managing water quality: the **GIPREB** as a research and deliberating body dedicated to the Etang de Berre; the Aix Marseille Provence Metropole is responsible for implementing the “Management of aquatic environments and flood prevention” (GEMAPI), however this is delegated to the five riparian intermunicipal cooperation entities. Therefore, water sewage treatment and measures to reduce pollution from agricultural source appear fragmented and sub-optimal.

Protection of lake-specific ecosystems (marchland, forests) (2.1)

Description of the issue

Lagoon specific ecosystems is based on the following key elements: shallow depth, brackish water, irregular exchange between the lagoon and its water basin, the sea and the atmosphere.

This leads to irregular levels of salinity and concentration of nutrients. In Berre, preservation of ecosystems is strongly related to the management of water quality (see above).

According to GIPREB (2020), remarkable habitats include:

- coastal mediterranean lagoon: it features eelgrass beds growing in shallow parts of the lake and considered as “hotspot of marine biodiversity”.
- Mediterranean salt steppe: it features glasswort and is home to several bird species
- temporary ponds: fast changing seasonal environment, that hosts several amphibian species
- reedbeds: humid areas where phragmites (reed) allow bird and mammal species to thrive.

How it is tackled in the lake region

Protection of ecosystems on and around the lake is based on protected areas under different regimes (1) coordinated actions at water basin level (2) and punctual actions supported through the lake contract (Contrat d'Étang) (3).

(1) Areas and habitats are protected through Natura 2000 sites focusing on wetland and habitats for bird species and through the National Coastal Conservatory. Four Natura 2000 sites have been designated in the lake³⁴: Salines de l'Étang de Berre, focusing on the preservation of bird habitats in the salt marshes; Marais et zones humides liés à l'étang de Berre, mainly wetland, in four sub-units: Bolmon Lake and Jaï sand ridge, Salines de Berre, Petite Camargue, Parc de la Poudrière; Garrigues de Lançon et chaînes alentour: varied habitats; Lakes between Istres and Fos: natural areas surrounded by industrial sites and settlement areas. Each of these protected area is placed **under the umbrella of GIPREB** or the **Metropole Aix-Marseille-Méditerranée**. The **National Coastal conservatory** also protects 7 sites around the lake, partially overlapping with Natura 2000: l'Étang de Bolmon au sud, le plateau de Vitrolles, les marais de la Tête Noire à Rognac, la Petite Camargue et la poudrière de Saint Chamas au nord-ouest, les sites de Citis Pourra et des Collines de Cadéraou-Figuerolles au sud. In the context of high demographic densities and industrial activities, the challenge is to protect interstices that endogenous fauna and flora use as refuge.

(2) Coordinated actions at waterbasin level are implemented through the applicable Rhône-Mediterranean water basin strategic scheme (SDAGE 2016-2021) that is supporting the progressive compliance of the lagoon water with the Water framework Directive. The fundamental orientations of the SDAGE and their provisions are opposable to administrative decisions in the field of water management. The SDAGE and the programme of measures

³⁴ <https://etangdeberre.org/natura-2000/n2000-autour-de-letang/les-sites-natura-2000/>

are based on public consultation. Actions taken for the protection of ecosystems (excl. water quality) around Etang de Berre includes: infrastructure work to restore ecological continuity, actions to restore shoreline morphology and taking public control over wetland areas to better protect them.

(3) actions supported by the “lake contract Etang de Berre” contribute to the implementation of the SDAGE. It is a technical and financial agreement between actors for sustainable management of a water body. It is a programme of actions structured for a period of 6 years with financial and contractual commitment. It is meant to be a multi-level governance soft tool to implement actions at the level of the lake. However, in the case of Etang de Berre, the coordination provided by GIPREB remains limited, with no coercion mechanisms in case an action is not or not fully implemented. The first priority (out of 4) of the lake contract is focussed on restoring aquatic ecosystems, and more specifically on recovering benthic parts of the lake with a complex biocenosis and allowing for the return and densification of eelgrass beds. It supports mostly municipalities and intermunicipal bodies for the construction or modernisation of water sewage treatment plant. The restoration of terrestrial ecosystems is the third priority. It mostly relies on actions coordinated by the National Coastal Conservatory. The first season (2013-2015) of the lake contract had a budget of 35 M€ (63% committed) and the second season (2016-2019) had a budget of 88 M€.

In conclusion, as noted for the management of water quality, the fragmentation of the jurisdiction over the management of water (GEMAPI) into five intermunicipal cooperation bodies is an obstacle to coordinated actions at the level of the lake in favour of the protection of lake ecosystems. The “lake contract – “Etang de Berre” is a tool for channelling fund and fostering multi-level debate and actions but remains weak compared to the needs.

Regulation of fish catches / support to lake-based fisheries (3.2)

Description of the issue

Fishing activities are rooted in the history of the lake. Main species to be captured are mullet, eel, seabream, sea bass, as well as shellfish. Fishing activities are strongly seasonal (almost no activity in winter, eel fishing forbidden during several weeks in the summer). In 1900 300 fishermen were living of this activity. Following the installation of industrial activities in the lake surroundings (in the 1930s) and related pollution, fishing activities were banned from the 1957 to the 1994. It was officially re-authorized in 1994. Since then fishing activities have grown: from 35 fishing businesses in 1999, to 51 in 2011 and 65 in 2017. Catches from professional fishing activities amounted to 557t of mullet, 213t of eel, 95t of seabreams. Seabream catches from leisure fishing is estimated between 338t and 770t in 2017 which is 5 to 10 times the catches from professional fishing. The development of the shellfish and mussel farming sector is seen as a promising economic sector (Mission d’information sur la réhabilitation de l’étang de Berre, 2020).

In conclusion, fishing activities and amount of catches on the lake are vulnerable to pollution episodes (due to discharge from industrial activities) and to anoxic episodes that kill fauna and flora (last episodes in 2006 and 2018). On the other hand, fish stocks are quickly renewed because of the direct connection to the Mediterranean Sea. Therefore regulation of fish stock is less of an issue compared to freshwater lakes.

How it is tackled in the lake region

Pollution of the lake has resulted in a fishing ban imposed by the national legislator from 1957 to 1994. Since then management of fishing resources is:

- regulated at national level by minimal sizes for fish catches (cf. Ministerial decree from 12 October 2012)
- regulated by deconcentrated state at regional level (Préfet) on specific exceptional matters: (e.g. prefectural decree from 28 April 2000 that forbids fishing activities in the Bolan part of the lake prefectural decree Palourde in 2000 that regulate leisure and professional shell-fishing; prefectural decree fom 2017 that regulates eel-fishing).
- self-regulated by professional organisations, i.e the “Regional committee for maritime fishing and sea farming in Provence-Alpes Côte d’Azur” and, at local level, the “prud’homie de Martigues” (local fishing business union that covers Etang de Berre).
- analysed by the local lake union (GIPREB) that produced a study on fishing activities (both professional and leisure) in 2019.

Strategic measures for (demographic) attractivity (4.1)

Description of the issue

Since 1930s the lake and its surroundings have been considered as a spatial receptacle for industrial activities and domestic pollution effluents. The lake has long suffered this image of a polluted repulsive area. Since 1990s riparian municipalities have tried to trigger a process of “space requalification” that would make local population more aware and receptive of the values of the lake.

The recent improvement of water quality allowed for the creation of new supervised beaches and the take-off of water activities (wind-surfing, paddles, etc). The growth of fishing activities on the lake also sends a positive signal of the on-going renewal.

How it is tackled in the lake region

The **lake contract** (2013-2018) is the main tool highlights the need to develop new activities and new images related to the lake. This is meant to support a comprehensive requalification of the lake. Therefore, through the lake contract coordinated efforts are made to develop small scale bathing, sailing and hiking infrastructures (new activities) as well as cultural events, printed material and movies (new images) that support the renewed identity of the lake. The GIPREB is at the forefront of implementation together with municipalities for this part of the lake contract. Although it contributes to tourism development, the main aim is to change lake-related images for the local population.

With regards to effectively supporting requalification projects, expectations from local actors (municipality mainly) towards the State are high. Municipalities tend to consider that lake has long suffered spatial planning decisions that benefitted the whole country. They would like the State to clearly support (through financial and non-financial means) the territorial building effort. However, the diversity of municipalities around the lake makes the formulation of a common territorial project uncertain, e.g. tourism activities are still promoted mostly by individual municipalities.

12.4 Cooperation initiatives around the lake

Name of cooperation initiative

Public interest group for the restoration of Etang de Berre (GIPREB)

Historical background of the cooperation

The “Groupement d’intérêt public pour la réhabilitation de l’étang de Berre” (GIPREB) was established in 1999, as part of the “Contrat de Plan” between the State and the Region for 2000-2006. In 2006, it was prolonged until 2010. The number of members was reduced from 60 to 10.

In 2013, a “Lake contract” was signed between the State (i.e. the prefect of the PACA region), The Rhône Méditerranée Corsica water agency, the PACA region (NUTS 2), the Bouches-du-Rhône département (NUTS 3) and 27 bodies with the responsibility for implementing concrete measures, including municipalities, urban agglomerations, chambers of commerce, port authorities, Electricité de France, some other companies and charities. The contract is managed by GIPREB.

Actions and achievements

In the field of regulation of water quality, the GIPREB promote solution for the reduction of freshwater emissions from hydropower plant. In particular, It commissioned studies on impacts and potential solutions. It launched legal actions against the French State for “inaction” (to the European Commission, in relation to the Water Directive).

In the field of protection of lake specific ecosystems, it coordinates actions under the umbrella of the Lake contract. It implements activities in relation to some of the Natura 2000 sites in the area (especially “Salines de l’Etang de Berre” and “Marais et zones humides liés à l’étang de Berre”). It organises awareness raising actions: the GIPREB websites provides structured information on lake ecosystems.

In the field of support to lake-based fisheries, it commissioned a study on lake-based fisheries and fish catches (2019). It also organises awareness raising actions: the GIPREB websites provides structured information on lake ecosystems.

In the field of regional development and attractivity, it implements cultural, editorial and communication projects on the lake. It also commissioned an opinion survey on the role and visibility of the lake.

Involved partners

Name	Status
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Regional authorities: Région Provence Alpes Côte d'Azur, Département des Bouches du Rhône	Member	
Local authorities: all riparian municipalities (Berre l'Etang, Châteauneuf-ées-Martigues, Istres, Marignanne, Martigues, Miramas, Rognac, Sain-Chamas, Saint-Mitre les Remparts, Vitrolles.	Member	
Professional chambers: Chamber of Agriculture (Bouches du Rhône), Chamber of Industry and Trade Marseille-Provence.	Member	
Professional organisation: Martigues fisher union	Associated member	
Aix-Marseille Metropolis	Associated member	
Environmental NGOs	Associated members	
Local unions for the management of river basins: local union for the management of Bassin de l'Arc (SABA), for Touloubre (SIAT), for vallée de la Durance (SMAVD).	Associated members	
Thematic scope		
Water management	M	M: major x: minor
Ecosystem management	M	
Food production	x	
Demography, labour market and attractivity	M	
Tourism	M	
Cultural and natural heritage	M	
Transport		
Spatial planning		

Name of cooperation initiative		
<i>Lake committee (Comité d'Etang)</i>		
Historical background of the cooperation		
In 2008, the prefect of the Region Provence-Alpes-Côte d'Azur has established the Lake Committee. The Committee is a consultative body meant to foster dialog among territorial stakeholders involved or affected by the Lake contract. It oversees activities of the GIPREB.		
Actions and achievements		
The Lake committee monitors actions of the GIPREB in relation to the Lake contract. It aims at a larger involvement of local and regional stakeholders.		
Involved partners		
Name	Status	
College "state representatives": deconcentrated State representatives (Prefects), ministries and national agencies (for Forests, for Waters, for Coastal zones, for Biodiversity, for Environment and Energy, etc)	Members	
College "local and regional representatives": regional authorities (PACA, Bouches de Rhône), local authorities (riparian mayors), intermunicipal bodies ("Conseil de Territoires"), local union for the management of inflowing affluents.	Members	
College "users and professional representatives": Chamber of Commerce, Chamber of Agriculture, local fishing unions, leisure fishing association, sports associations, environmental NGOs.	Members	
Qualified experts: Director of the GIPREB, president of the GIPREB scientific council.	Members	
Thematic scope		
Water management	M	M: major x: minor
Ecosystem management	M	
Food production	x	
Demography, labour market and attractivity	M	
Tourism	M	

Cultural and natural heritage	M	
Transport		
Spatial planning		

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