VISION FOR THE PROTECTION, REVITALISATION AND TOURISM INTEGRATION OF STUDENCHISHTE MARSH, LAKE OHRID’S VITAL COASTLINE WETLAND

Submitted to Mayor Stojanoski of Ohrid Municipality

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PREFACE

This project proposal has been developed in order to recommend an appropriate management concept for Studenchishte Marsh\(^1\) as both a protected area and tourism attraction.

The permanent protection of Studenchishte Marsh and revitalization of areas in which it has been degraded are the only reasonable direction for long-term care of the Ohrid region, implying not only recognition, but appreciation of existing ecosystem services. Besides being of nature, ecosystem services are the cheapest way to ensure sustainable management of the Ohrid region in a wider sense, and, as such, offer a greater guarantee for maintenance of Lake Ohrid’s quality into the future.

For successful implementation, this project proposal offers many ideas through the establishment of Studenchishte Marsh as a protected area; its renewal with minimal human impact; the unveiling of its potential for education; awareness-raising of both its value and that of wetlands in general; research; and, most importantly, tourism development that would have a positive socio-economic impact on the region.

In addition, various ways to fund the protection and restoration of the wetland are provided, whose full effectiveness can only be realised within a professional, sustainable management plan. Finally, there is also an action plan with guidelines for successful accomplishment of the project.

The protection of Studenchishte Marsh is not just a matter of preference, but rather a multidimensional issue with far-reaching consequences for the viability of local water-based ecosystems and tourism development of the Ohrid region as natural World Heritage. Its proper management will contribute to tourism development, whose economic returns will in turn fuel improved sustainability in an upward spiral of protection and prosperity.

\(^{1}\) Studenchishte Marsh is a wetland to the east of the city of Ohrid on the shores of ancient Lake Ohrid in the Republic of Macedonia, consisting of several habitat kinds including alkaline marshes and fens, wet meadows and others. Its peatlands are 5 metres deep and may be as much as 5,000m years old. Alongside supporting Lake Ohrid’s water quality, Studenchishte significantly contributes to the biodiversity of a region that is already one of the most species rich in the entire continent of Europe. Relict plants and endemic invertebrates are among its most specialized flora and fauna.
STUDENCHISHTER MARSH: BACKGROUND

According to the General Urban Plan for the Municipality of Ohrid (Figure 1 in the Appendix), the Studencishta district is divided into four numbered sections with the following areas: 1) 70.53 ha; 2) 19.38 ha; 3) 17.30 ha; and 4) 4.45 ha. Remnants of Studenchishte Marsh can be found in sections 2 and 3, but its largest extent is in section 1.

Studenchishte’s boundaries are delineated by Studenchishta River (now Studenchishta Channel) to the north; Racha River to the south; the Lake Ohrid shore to the west; and the regional road Ohrid - Sv. Naum on the east; and, in the map in the Appendix, by the lettered markers: h - Hydrobiological Institute; r - road Ohrid - Sv. Naum; s - Biljana Springs Sports Center; and t – Raca village and tourist settlement (coloured violet).

Studenchishte Marsh is the last significant preserved wetland ecosystem on the Macedonian coast of Lake Ohrid. According to satellite imagery and a 2012 expert study\(^2\), its surface area is about 63.97 ha (Figure 2 in Appendix), although, in the past, it was much larger. Part of the current area is also occupied by construction and other types of waste, agricultural land that has largely been usurped from the wetland, and buildings (for example, a plant nursery, the headquarters of Public Enterprise Ohridski Komunalec, the Macedonian Navy and the lake police).

Nonetheless, despite partial drainage and compaction, Studenchishte has largely preserved its original character and is an integral part of Lake Ohrid’s hydrological ecosystem. Therefore, its characteristics and functions should be considered in the wider context of the lake.

Indeed, Studenchishte Marsh directly influences Lake Ohrid’s water quality and thus the oligotrophic status that determines the latter’s biological diversity with over 200 endemic species. Despite these well-known qualities and functions, the wetland has not yet received the status of a protected area, although the proposal for its proclamation as a Monument of Nature is decades old. On the contrary, recent times have witnessed attempts at its complete destruction, which would mean a loss of its provisioning, regulating, supporting and cultural functions.

There is also large unrealized potential of Studenchishte for tourism.

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ECOSYSTEM SERVICES: THE NECESSITY TO PROTECT STUDENCHISTE MARSH AS A PROVISIONER

Wetland ecosystems are estimated to be among the planet's most productive, precisely because of the critical role they perform (Ramsar, 2012), i.e. their economic value. Although in Macedonia, for the most part, their services have not yet been quantified, their functions are already scientifically established.

For illustration, according to the only economic evaluation of ecosystem services in the country, calculated for the Ezerani wetland near Lake Prespa, revenues over the 20 years from the wetland’s renewal were expected to be 6.5 to 9 times higher than the cost of its protection and revitalization (Ceroni, 2013). The Republic of Macedonia’s Fifth National Report to the Convention on Biological Diversity further emphasizes that the benefits of ecosystems are already known to exceed the costs associated with their protection (MoEPP, 2014).

Studenchishte Marsh, although degraded over the years, still contributes significantly to ecosystem services in the region. Its most important function is filtering water by purifying groundwater and buffering nutrients (Kovacevic, 2015), which directly impacts Lake Ohrid’s water quality and clarity, and reduces the risk of eutrophication that is already evident in the littoral zone.

Studenchishte’s other significant function is the maintenance of biodiversity. Contributing to species richness at one of the most biodiverse and oldest lakes in the world, the wetland is extremely valuable. Moreover, disturbance of complex ecosystems like these leads to a gradual reduction in their capacity to carry out services.

Studenchishte also contributes to regulation of the microclimate, and, very importantly, controls the concentration of carbon dioxide in the air, which correlates directly to the climate change processes to which the region is estimated to be especially sensitive.

Increasing temperatures as a result of climate change are related to the eutrophication process. Hence, to keep Lake Ohrid in its existing oligotrophic state, phosphorus inputs should be reduced by 50% over the next few years (Matzinger et al, 2006). Costs related to eutrophication are extremely high, associated with loss of fish stock, water pollution, tourism industry declines and the devaluation of real estate etcetera (McCrackin et al, 2017). In such a context, the power of Studenchishte Marsh, which is dependent on its size, becomes far more significant.

Wetland ecosystems are sensitive and vulnerable areas, as attested by the serious degradation of Studenchishte Marsh and the drastic reduction in its surface area. Larger surfaces perform larger functions and provide space for many species, determining biological diversity. More importantly, wider areas make wetland systems more resistant to external influences, i.e. deterioration. It must be borne in mind that the size of the protected area will play a significant role in how much and whether Studenchishte Marsh can function and survive at all.
Therefore, it is indisputable not only that the existing wetland area should be placed under protection, but also that those parts of Studenchishte which have been lost should be renewed. According to established methodology for protection of natural areas, borders have been decided for graded management zones at Studenchishte—Zone of Strict Protection; Zone of Active Management; and Zone of Sustainable Use—as shown in the 2012 Integrated Study by Spirovska et al (Figure 2 in Annex). However, the designation does not account for a buffer zone.

Due to the importance of ecosystem services and their correlation with wetland surface area, in some countries, wetland habitats are being extended beyond their natural boundaries and new wetlands are additionally being created. In this context, failing to rehabilitate Studenchishte and placing only a small portion under protection, far reduced from its former natural borders, would mean mere formal protection and paradoxically expose the wetland to a greater danger than it currently endures. That too would mean the Municipality of Ohrid’s continuing neglect of both basic principles of sustainable management and planning with clear, long-term goals to develop the region without sacrificing its nature.

Tourism provisioning is one service by Studenchishte Marsh that has so far been completely overlooked, which is to say that, to date, its ecosystem services are totally neglected in the plans and activities of the local government. If the area is not protected to a minimum of the estimated boundaries provided in the 2012 expert evaluation (Figure 2, Appendix), the economic benefits of the natural processes it currently executes and potential tourism development opportunities will be steadily and permanently lost.

Moreover, the economic cost associated with the loss of ecosystem services will constantly accumulate alongside a reduction in possibilities for monetization, because destruction of Studenchishte Marsh is a danger with multiple consequences, whose scope is far wider than their origin. Specifically, it would led to increased costs of drinking water purification; higher revitalization costs, i.e. to compensate for biodiversity losses; accelerated effects of climate change; and foregone tourism revenue as deterioration in the clarity and quality of lake waters will reduce the market value of Ohrid as a tourist destination (Keeler et al, 2015).

Research also indicates that destinations with greater biodiversity are more attractive to visitors (Freytag & Vietze, 2009). Here, Ohrid enjoys an underutilized advantage to which Studenchishte contributes strongly. Therefore, the wetland’s economic input must not be ignored even if it remains unused for direct tourism purposes.

Below are the steps are required to implement Studenchishte’s protection and revitalization:

- A permanent urbanization ban for the entire area
- Waste removal
- Relocation of the Rasadnik plant nursery and Public Enterprise Ohridski Komunalec, as well as other buildings
- Reconnection and cleansing of water channels between Studenchishte Marsh and Lake Ohrid;
- Rejuvenate natural springs
- Prohibition of agricultural activities
- Limitation of beach capacity from Studencishta Channel to River Raca
- Banning the placement of platforms in the lake, sand blasting, concreting or paving the coast, and removing the natural substrate
- Prevention of reed removal
- Regulation of motor vehicle access
- Recovery of destroyed marshlands and coastal revitalization including reed belts.

Protection of the full Studenchishte wetland area is especially important from another aspect: Coastal urbanization at Lake Ohrid is unplanned, accelerating and out of control. Construction activities are common in the protected 50m green belt along the lakeshore, and the legalization of previously non-legal buildings is a constant practice. This is why the 2014 World Heritage Outlook from the International Union for the Conservation of Nature (IUCN) concludes that uncontrolled construction is the most serious threat to the coast.

In another guise, the IUCN also serves as an advisory body to UNESCO and was part of the April 2017 Reactive Monitoring Mission to the Natural and Cultural Heritage of the Ohrid Region. In 2017, it released another World Heritage Outlook report that evaluates the current situation at Ohrid as of “significant concern” and again highlights that land use regulation is not consistently applied. Unsurprisingly, it also identifies restoration of wetland ecosystems as a potential site need.

Until recently, Studenchishte Marsh was in danger of complete urbanization. However, as explained above, proposals for protection of only a very small surface area would not differ significantly from total urbanization. Unequivocally, partial protection would also mean partial urbanization and the small protected area would not compensate for the harmful effects of drainage and construction in the rest. According to the conclusions of the 2015 Strategic Environmental Assessment (SEA) conducted to assess draft amendments to the General Urban Plan (GUP) for Ohrid no measure except non-implementation could reduce the direct effects of urbanization upon Studenchishte Marsh and the indirect effects upon Lake Ohrid.

Therefore, the only reasonable solution for Studenchishte Marsh is tourism built on the principles of sustainability, i.e. tourism which “makes optimal use of environmental resources that constitute a key element in tourism development, maintaining essential ecological processes and helping to conserve natural heritage and biodiversity (UNWTO).”

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3 Reactive Monitoring is defined in Paragraph 169 of the Operational Guidelines for the implementation of the World Heritage Convention as being "the reporting by the World Heritage Centre, other sectors of UNESCO and the Advisory Bodies to the World Heritage Committee on the state of conservation of specific World Heritage properties that are under threat".

4 The draft amendments were intended to presage drainage of Studenchishte Marsh and reuse of the area for luxury apartments, a sports centre and other recreational facilities.
Harmonization between nature protection and economic gains is undoubtedly possible as outlined in our proposal below.

**STUDENCHISHTHE MARSH: PROTECTION AND UTILIZATION FOR TOURISM AND EDUCATION**

Wetlands are becoming increasingly important to tourism, as confirmed by Ramsar, an international convention for protection of wetlands of international importance, which, in partnership with the World Tourism Organization (UNWTO), formally established focus on the connection between the visitor industry and wetland habitats in 2012.

Wetlands offer enormous opportunities for tourism and contribute to the local economy in developing countries (Ramsar, 2012). In 2012, Ramsar presented **14 examples** of sustainable tourism practices in and around protected wetlands that show what kind of impact they can make to nature conservation, poverty reduction, regional and national economies, and in support to local culture. Conversely, if tourism is not developed sustainably, the risks are very high.

In addition to aforementioned ecosystem services, Studenchishte has vast, unlocked tourism potential: It can activate eco- and alternative tourism niches towards which the Ohrid region should strive. To ensure the development of sustainable tourism, however, it is necessary to build a ‘wise use’ approach to management. In that sense, appropriate infrastructure must be installed that can have the least possible impact on the natural environment and establish mechanisms for reaffirmation of this impaired natural treasure.

In fact, revitalization of Studenchishte Marsh would have multiple applications:

**1. Promotion**

Given Studenchishte Marsh’s close proximity to the city of Ohrid and Lake Ohrid, its development as a tourist attraction would be easily achievable, not only in the sphere of ecotourism, but also in scientific tourism, especially since it is the only preserved wetland on Lake Ohrid’s Macedonian coast. This would enrich the tourist map of Ohrid with another natural phenomenon.

Combined with other activities in which the Municipality of Ohrid must engage towards ecology and responsible living, protection of Studenchishte would have a manifold effect in the development of tourism. Impacts would manifest directly in employment related to Studenchishte, and, indirectly, through the increased tourism offer. The wetland could very well be used for promotional goals, both as part of the region’s tourism product and also in the direction of (re)branding Ohrid.

Ohrd still has the opportunity to establish itself on the destination map as a small, hidden paradise where the community has dedicated itself to wellbeing and sustainability. This could be of huge promotional value to the region, especially given the growing...
environmental awareness across the world, especially among young people. Such an image can be particularly strengthened with implementation of ideas proposed in Ohrid SOS’s Green Platform.

2. Education

Studenchishte Marsh exhibits exceptional educational qualities, which could bring knowledge to both tourists and the local population, through familiarizing with the wetland’s biological diversity and the ecosystem services it performs. The wetland can also be used as a regular “open classroom” for nature education by schools in the region and beyond. Learning opportunities should be kept in mind for tourism purposes too.

Another educational aspect of Studenchishte Marsh relates exclusively to local residents, and that is in terms of regional history, traditional knowledge, and identity. If protected, it could restore the people’s connection to their ancient past and mutual dependence on nature which, unfortunately, has been neglected in classical education.

Furthermore, through visiting and various activities such as indicated later in this document, the wetland can play a role in advancing knowledge about the importance of ecosystems and maintaining their interconnection and wholeness. For Lake Ohrid, this would encourage a more concerned attitude towards natural values and would help to raise the responsibility of future generations towards the environment in which their community lives, i.e. citizens who fully understand the concept of sustainable development.

All of this would have a direct impact on the socio-economic progress of the region.

3. Strengthening of Ecological Awareness

Related to education, the strengthening of knowledge about the importance of wetland ecosystems will directly affect awareness of the need to protect and nurture them among locals and tourists, but also local businesses. It is precisely the knowledge deficit that has led to a serious degradation of Studenchishte Marsh in recent times, not to mention the presumed loss of endemic species in the Ohrid region5.

Revitalization of Studenchishte can serve as an explicit example and confirmation that the protection and promotion of wetland ecosystems together with appropriate management measures can result in greater economic benefits. Such an example would significantly contribute to a better understanding of sustainable development and empower ecological awareness with positive long-term effects.

The tourism industry is currently witness to the growing uptake of environmental issues, which are already mainstream in the developed world. Revitalization of Studenchishte Marsh and its corresponding promotion would attract more international visitors with an established awareness of nature protection and who therefore know how to appreciate it.

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5 Spirovska et al (2012) also note local extinction of relict flora at Studenchishte Marsh.
This can generate word-of-mouth promotion, which is well-known to offer an incomparably greater return-on-investment than other marketing techniques.

**MEASURES FOR INCREASING THE TOURISM VALUE OF STUDENCHISHTÉ MARSH**

Described below are proposals to develop and utilize the Studenchishte wetland for tourism. They are presented as concepts that can be improved and implemented relatively easily and have been conceived to prompt an interactive relationship with nature, which can refresh classical, passive modes of tourism, especially with the application of digital and internet technology. As such, the area could strengthen its attractiveness among diverse visitor demographics and animate younger generations.

Certainly, the level of success will depend on the quality of implementation, dedicated management and development, methods and channels of promotion, integration activities within a cohesive whole, and synchronization with the existing tourism offer etcetera.

**VISITOR CENTER**

The Visitor Center will be the starting point for the Studenchishte Marsh attraction. Diminutive and wooden, it will be designed to minimize obstruction of the landscape. It will serve as an information centre, souvenir shop, ticket office and hotspot for educational resources.

**WALKWAYS**

Raised paths for the exploration of nature are already standard in projects that adapt wetland habitats for tourism (Figure 3 in the Appendix). These would be made of wood and looped through certain parts of Studenchishte Marsh. The network of paths would be designed by experts and determined according to the ecology of the area. With that, they could also be occasionally closed, depending on the season, to avoid disturbing flora and fauna or exposing it to danger. For security reasons, time limitations on entrance would be applied.

Besides the wooden paths, tourism needs can be fulfilled by further small adaptations. Described in the following sections, these can become one of the main tourist attractions of the region.

**OPEN-AIR MUSEUM**

The walkways are envisaged to incorporate an open-air museum under the concept *A Journey Through Time*, which will reveal the shared history of people and wetlands, showing how, in many parts of the world, wetlands were the first locations where people transitioned into permanent settlements from a nomadic lifestyle.
Concretely, it will also tell the story of Studenchishte, in whose vicinity is a sacred site where pre-Christian water worship was performed, which later became an early Christian basilica. A key element of this journey through the past, this basilica will capture the rich history of civilizations in the Ohrid region, as well as the way in which society changed under the influence of Christianity. In order maximize attractiveness and intrigue, the story should be as locally oriented and individualized as possible.

In parallel with human history, the open-air museum will also reveal the natural history of Studenchishte Marsh, answering questions about its age; the mystery of its relict plants, which have disappeared elsewhere; and how Macedonia looked thousands of years ago. In fact, wetland habitats were very prevalent then, but, as a consequence of various natural and human factors, they are very rare today.

Throughout, Studenchishte Marsh has survived to convey the story of the past. And one of the reasons for its survival is Lake Ohrid...

**NATURE APPRECIATION**

Revitalization of Studenchishte Marsh in fact means restoration of the ecosystem that supports the biodiversity of Lake Ohrid, which, as natural World Heritage, is a primary attraction of the Ohrid region. Therefore, it is extremely important for visitors and locals alike to understand Studenchishte’s significance and value. Appropriate infrastructure, staff training and tourism promotion are crucial to this aim and emphasis will be placed on defining the recreation offer, feature diversification, and innovative approaches to presentation and marketing, which, alongside conservation, will combine into commercial viability.

To achieve these goals, the following steps can be taken:

1. **Daily Species Tables**: In Macedonian and English, info boards will display the names of animals and birds that have been spotted that day. They will be positioned in various locations and will require regular maintenance including daily data updates.

2. **Gamification**: Educational info boards will guide visitors to recognize different species. Each species will carry a certain number of points according to its local rarity, for example, 1 point for a tree sparrow and 5 points for a Macedonian marmot etcetera. This will transform visits to Studenchishte Marsh into a kind of game or competition, especially for the children and families, and the lists will also vary by season, depending on species' representation. All information should be available on a website and later as part of a dedicated mobile application.

3. **Citizen Science**: Visitors will be encouraged to photograph birds, animals and plants they have observed and forward them to a database. On one hand, this will engage them directly in exploration of the marsh; on the other, it will establish a relationship between nature, visitors, and science. In each season, different topics will be
defined, such as dragonflies and butterflies for the summer months. This activity can be linked to Facebook, Twitter Instagram and others through both visitor profiles and Studencheshte Marsh’s own social media accounts as well as further supported by the official profiles of relevant national institutions, websites and social media for national tourism promotion. Putting visitors in the role of active researchers will raise excitement, leave a stronger impression and generate a robust attachment with the wetland.

4. **Live Streaming**: Video material can incorporate many modes and forms:

   a) Charismatic species such as otter can be selected and filmed during their lifecycle, and the videos transmitted live online. The nests of certain migratory birds, which can only be spotted at certain periods offer similar possibilities.

   b) Cameratraps can be placed in different locations across the marsh to run on a regular basis, broadcasting the landscape, its cycles and changes, and the visitors from the natural world that occasionally drop by.

   c) Video records can chart the process of revitalization at given locations so that viewers follow the rehabilitation process. Short time-lapse videos upon this theme can highlight the renewal more tangibly. The entire process can establish documentary material to approach world-class media like National Geographic etcetera.

Social networks are an excellent channel for such audio-visual media and presentations of wildlife are increasingly popular on the internet, serving as superb promotional tools and valuable marketing content. They can also be used for educational and research purposes.

5. **Charismatic Species**: On the basis of recorded species, a logo can be created or even developed to popularize a certain animal, a mascot of a kind that is endemic or uncommon elsewhere. This may generate commercialization opportunities. After a period of time, when certain species have become symbolic of Studencheshte, an additional idea would be to organize elections for ambassadors of the marsh with a choice of one representative from various types of flora and fauna: birds, butterflies, amphibians, dragonflies, plants etcetera. Such activities would create an excellent framework for children to develop a more active relationship to nature. To this end, online visitor competitions for visual documentation of chosen species or artworks inspired by them can also be designed.

6. **Hides**: Observation spots for birds will be erected, and watching activities for other species such as fireflies, bats or butterflies can also be established. Realization of the latter does not require infrastructure and facilities, but it should be devised by experts and guided by trained professionals who can teach visitors how to read the many signs of nature: differentiating species; recognizing sounds; identifying nests according to shape or location; and verifying bird or animal tracks etcetera.

7. **Events**: Beyond routine activities, greater attendance can be encouraged by hosting events, especially on nature-related days such as World Wetlands Day, the Day of
the Lake\textsuperscript{6}, and World Water Day (combined with Biljana Springs) etcetera. Some new themes can be introduced, like Dragonfly Month, for example. Again, such events have large educational potential.

8. **Natural and Cultural Heritage:** A visit to Studenchishte Marsh can also be connected with Biljana Springs and the aforementioned early-Christian basilica, which offers some of the best views of the wetland. Combining natural and cultural phenomena, such a plan will also finally put the monumental archaeological site of the basilica into use. Constructed extra muros, it is located where ancient pre-Christian cults worshipped water as life-force, as confirmed by its position near one of Lake Ohrid’s most plentiful springs. Dating back to end of 5\textsuperscript{th} and the first half of the 6\textsuperscript{th} century (Snovli, 2013) BCE, it was established during a consolidated, stable and prosperous period of Byzantine history, which culminated during the glorious reign of Byzantine Emperor Justinian I (527-565). Thus, it has unique characteristics\textsuperscript{7} pointing to the exciting tourism potential of this locality. Potentially, the natural habitats of Mazija and others in close proximity to Studenchishte can be incorporated, transforming all these aspects into a rounded story to explore the wetland from multiple perspectives.

9. **Scientific tourism:** The revitalization of Studenchishte Marsh is itself a science project for human wellbeing. Given its exceptional importance for the quality of the waters at one of the oldest and most species rich lakes in the world, the wetland is extremely suitable for research, yet despite its scientific value, the marsh is still insufficiently explored. Ecosystem services for one have not been quantified in economic terms. This situation marks a large opportunity to attract scientists from around the world and engage financial resources aimed at research, whose return would be a share in the development of Macedonian science through increased know-how and new findings etcetera. At the same, it establishes another channel for regional tourism promotion.

10. **Targeted Tourism Narratives:** Wetland rehabilitation can also be directed towards targeting certain countries or interest-groups by focusing on species that have a special significance for them, thereby bringing points of attraction to consumer attention. Specific narratives of the natural world can further suffuse the tourism offer to create an exceptional visitor experience, emphasizing uniqueness and individualizing the attraction (for example, a given phenomenon that can only be seen in August, on a certain number of days in the year, or even once every few years etcetera). Such adventures leave deeper impressions, which visitors are more likely to share with others.

\textsuperscript{6} The Day of the Lake is dedicated to Lake Ohrid and held in the Ohrid region annually.
\textsuperscript{7} A unique feature of this early Christian basilica is the complicated system of annexes on the west side of the naos and the special complex of annexes for baptism on its south side, which is typical of the Ohrid-Prespa region (Bitrakova-Grozdanova & Pupaleski, 1989).
EXPANDING TOURISM BENEFITS: REGIONAL INTEGRATION

1. Studenchishte Marsh could be incorporated within a "passport program" for the Lake Ohrid region as is current practice in other protected areas globally. Under such a scheme, tourists could receive stamps at selected spots around the lake. This would be more effective with supplementation from locations on the Albanian side of Lake Ohrid and National Park Galichica, thereby creating a more complete and valuable experience.

Locations chosen for the passport should be carefully selected to control the flow of visitors, i.e. less sensitive spots that nonetheless exhibit the geological, natural and cultural history of the Ohrid region. The stamps themselves should display micro-local features such as characteristic species, for example wild cat at Mount Galichica, Ohrid sponge at Ljubanishta and so on. These would serve as symbols for given localities. Passport holders would qualify for discounts on public transportation and bike rentals to reduce pressure on roads and the negative consequences of car travel.

In collecting stamps, visitors would also be creating their own personalized souvenirs from Ohrid-Prespa. Instead of passports in the form of a book, other objects could play the role too. For example, at Mount Fuji in Japan, wooden hiking sticks are used, and the stamps are branded upon them with an individual mark for resting points at different altitudes. Thus, someone who has climbed the entire mountain has gradually engraved his or her hiking stick along the journey, thereby symbolizing their achievement and creating a trophy to take away and share with loved ones. In that way, the journey becomes more authentic; its impressions are much stronger; and the trip transforms into a personal achievement and inspiration for others.

For Ohrid, a locally made souvenir could perform this function and a small, fixed fee could be charged for the stamps. The right to issue them would be strictly regulated and granted to firms as a mechanism of attracting visitors. Amounts collected would be contributed to a regional fund for nature conservation as explained later and visitors who collected predetermined numbers of stamps, e.g. 10, 20, 30 and so on, would trigger special offers from companies who entered the scheme. Those with a full set of stamps would receive a special gift, for example a symbolic key to Ohrid-Prespa. However, collecting all the stamps would be relatively difficult to complete and unachievable in just a few days. Hence, the accomplishment would gain importance, and encourage longer, deeper and repeat visits to the region.

2. In the context of the UNESCO Ohrid-Prespa Transboundary Biosphere Reserve, special tours can be structured around its mini-hotspots of biological diversity: Studenchishte Marsh and Ezerani Nature Park. By designating Lake Ohrid as a Ramsar Site\(^8\), this tour would constitute visiting two wetland ecosystems of international importance in one day and would serve as a brand new tourist product. For reference, in Greece, 15% to 20% of visitors to Prespa National Park participate in tours that include a visit to wetlands.

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\(^8\) Efforts are currently being made to establish Lake Ohrid and Studenchishte Marsh as Macedonia’s third Ramsar Site.
INFRASTRUCTURAL NECESSITIES FOR PROPOSED ACTIVITIES

The following tourism infrastructure provisions will be needed for Studenchishte Marsh:

1. Design and construction of a visitor centre and wetland walkways.

2. Standard information boards, maps and drawings that will tell the story of the wetland. Here, sponsorship from local companies should be considered.

3. Digital files for internet downloads, such as podcasts that visitors can listen to while walking around. These could cover a variety of topics in Macedonian and other languages. Visitors would be charged a certain amount for the materials or they would be free at more basic levels with payment for access to more detailed information.

4. QR codes at different locations would enable access to "extra secret topics" so as to personalize the Studenchishte experience.

5. Short-term exhibitions on various topics could be held within Studenchishte Marsh so that return attendance is rewarded with new attractions and visitation from consumers whose primary interest is not wetlands can be secured.

6. The Studenchishte Marsh walkway could incorporate works of art to increase its uniqueness. As such, attention should be paid to the aesthetics of information boards, which could be developed in cooperation with local artists or designers.

7. In the future, applications for augmented reality may enable a more vivid retelling of the site’s history. Seasonal limitations can also be circumvented.

8. Specially trained tour guides must be equipped with deeper information than that typically available to the public. These should also have a passion for nature protection.

9. Wildlife observation courses could be guided by experts who will teach others insights such as how to identify birds by flight and song; recognition of species from traces in the field; and understanding of animal behaviour etcetera.

10. Fixed telescopes without glass (longitudinal cylinders for directional view), placed at appropriate locations, would direct the visitor's line of sight to signs of animals, nests, plants or other points of interest. This has already been successfully applied in other wetland areas9.

11. Telescopes would allow observation of wildlife, landscapes and wilderness areas of Mount Galichica and Lake Ohrid etcetera.

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9 See Hong Kong Wetland Park, for example.
12. To exploit commercial opportunities from charismatic species, local craft items could be manufactured alongside digital stickers that would be free to download in applications like WhatsApp, Viber, Line, WeChat, Snapchat, Facebook Messenger etcetera.

13. Visibility of Studenchishte Marsh as a primary regional attraction should be ensured via social media.

PRIVATE LAND-OWNERSHIP: SOLUTIONS

It is essential to know the role played by Studenchishte Marsh in the wider ecosystem of Lake Ohrid. This wetland is a key element of the region’s natural capital that is either irreplaceable or the cost of reimbursal for its benefits would be extraordinarily high. Guaranteeing Studenchishte’s remaining extent is therefore of national interest and resolving the land-ownership issues should be approached with this in mind.

Based upon the national cadastre and the protected area zoning outlined in the Integrated Study by Spirovsk et al in 2012, the proposed Zone of Strict Protection is entirely and Zone of Active Management is almost entirely under state ownership for Studenchishte. As such, only parts of the envisaged Zone of Sustainable Use are private land. However, in line with intentions not just to protect the wetland but also to ensure its revitalization, these areas should be bought out by the state. In parallel, the question of whether individual plots of land are legitimately owned or have been illegally appropriated must also be answered. For latter cases or when ownership has been established through use, the land can be bought for a lower price.

If nationalization of the area cannot be achieved due to land-owner opposition, continued private ownership could be facilitated, provided that land-use was conducted sustainably. Inconvenience caused by restrictions on use would then be compensated through a portion of revenues generated by entrance fees, organized tours, souvenirs and scientific visits etcetera.

Nonetheless, the ideal solution would be for all the proposed zones of a Studenchishte Marsh protected area to be owned by the state in entirety.
FUNDING MEASURES

Financing for Studenchishte Marsh could be secured from a number of sources. The greatest share of expenses would be in the initial phase to build the required infrastructure and revitalize the degraded part of the wetland, as well as for the possible purchase of privately owned land. Part of these expenses should be financed from the budget of the Republic of Macedonia. For the purpose of revitalization and infrastructure, resources could also be secured through the programs of the UNDP, GEF, KfW Bank, PONT, Ramsar, UNESCO, and the EU etcetera.

In the later phases, for more sizeable plans, it would be advisable to apply to the EU Life project, which funds revitalization of larger regions, usually rivers and flood plains, and for which part of the resources are dedicated to research. Crowdfunding would be another financing option, whereby contributions would be collected globally (e.g. via IndieGoGo, Kickstarter etc.). This approach could be used for specific larger projects, such as rehabilitation of habitats or other similar enterprises.

Ongoing finance for management is also very important and input from the private sector would be required here. The following section contains related ideas.

ADDITIONAL MEASURES

The correlation between both clean water and biodiversity on one hand and income from tourism on the other is already established. The attractiveness of nature in such terms is already well known too. On the other hand, carbon capture will play an essential role in reducing the expenses associated with changing climate patterns in the upcoming years.

Studenchishte Marsh provides all of these ecosystem services for the Ohrid region. For that reason, it is appropriate that the expense for their maintenance is calculated in the costs of local businesses, especially in the initial phase when the conditions for development of this area into a tourist attraction are still being established.

In addition:

1. An entrance fee would be charged for visitors, but waived for residents of the Ohrid-Prespa region. Additional fees would be instituted for certain activities such as photo sessions, filming, recording commercials etcetera.

2. A portion of revenues from goods purchased at the airport could contribute to a Wetland Fund, which would mitigate the harm of carbon dioxide emitted from international flights by supporting Studenchishte’s peatlands. This practice could be implemented in collaboration with airline companies like Wizz Air. Voluntary contributions could be tested, whereby the customer chooses to pay a little more when purchasing an airline ticket, making a donation for the preservation of the
wetland. This is already a familiar practice with some airline companies such as Cebu Pacific from the Philippines in partnership with WWF.

A second well-established practice from elsewhere in the world would be to place a box for leftover currency at Ohrid airport. Visitors with Denars remaining from their trip to Ohrid could then place this unneeded cash in the box, the proceeds from which would contribute to protection of Studenchishte Marsh.

3. Another option would be charging non-resident vehicles a toll fee for using the lake’s coastline roads in the summer months. (Local residents, taxi vehicles and public transport will not fall into this category.) That would promote the use of public transport and reduce pressure on the existing Ohrid-St. Naum roadway.

4. In the Ohrid SOS Platform for a Green and Modern Ohrid, we proposed introduction of a Green Ohrid Certificate (title for illustration purposes only). Local businesses, especially in but not limited to the field of tourism, would have the opportunity to contribute voluntarily to a regional fund for the protection of nature, which would include Studenchishte Marsh. In exchange, they would receive the green certificate. The Green Ohrid Certificate would then be widely promoted in order to build a brand recognized by locals and visitors alike. Promotion would utilize mainstream media, internet channels, and official promotional tools on a local and national level (brochures, catalogues, web pages, materials for attracting foreign investment, and airline magazines etcetera). In this manner, local business will have a tool for promotion, be encouraged to show greater care for the environment, and be recognized as socially responsible entrepreneurs. This will attract more companies to participate.

5. Another alternative to consider could be adding a small sum to the price of accommodation, which would not only be clearly expressed, but also widely promoted, and which would contribute to the fund for protection. This approach could be justified simply by the fact that the natural environment, including Studenchishte Marsh, is an essential component of a happy vacation for visitors, and its maintenance is necessary, especially considering the negative impact that tourism has upon the environment. Informed visitors will have more appreciation for what they enjoy. Promoting this visitor contribution would enhance the awareness of the region’s value as World Heritage and would improve Ohrid’s image as a place that takes nature protection seriously.

6. A voluntary fund to which visitors could contribute donations to the maintenance and lasting protection of Studenchishte Marsh can also be considered. In order to motivate visitors to donate, they should receive clear information about how important their contribution is for the maintenance of the water ecosystem as a whole and how they can become active preservers of the oldest lake in Europe or
one of the oldest lakes in the world. Alternatively, donations could be graded by amount to offer visitors an appropriate recognition for their support, for example, a “Friend of the Lake” stamp for a small donation; a badge or trinket with an endemic species for a more generous contribution; or discounts at selected Green Certificate businesses at a higher level.

7. Financial resources could be collected via the issuance of stamps in the passport program (elaborated in the section titled Expanding Tourism Benefits: Regional Integration).

8. Sponsorships for events, information-boards and other content material at the open-air museum could develop another line of revenue.

As an additional tool for promotion and encouraging greater support, a transparent overview of the income flow from each and all of these sources should be available to the public at all times. In the framework of this scheme, the aforementioned possibility for compensation of owners with property in the protected zones should also be considered.
ACTION PLAN

This Action Plan outlines the basic steps to establish Studenchishte Marsh in the dual functions of protected area and tourism attraction:

1. Formation of a managing committee consisting of a) two environmental experts (in the field of natural sciences) of which at least one would come from the Hydrobiological Institute in Ohrid; b) one representative from the Municipality of Ohrid; c) one representative of land owners in the protected area (as applicable); and d) two representatives from the environmental NGO sector, including one from the citizen initiative, Ohrid SOS.

2. Development of a management plan for Studenchishte Marsh which would define the long-term direction and strategies for maintenance and improvement of this asset.

3. Establishment of a detailed business plan which would include a calculation of the necessary expenses (including maintenance costs) and potential income sources. Expenses could be covered through commercial activities, international funds for nature protection, but also through additional approaches (as described in the Additional Measures section).

4. Creation of a separate fund for the protection of nature in which resources would be collected for the management of Studenchishte Marsh as a protected area and the organization of educative events etcetera. This fund could in fact be dedicated to a number of objectives in relation to ecology and conservation, one of which would be Studenchishte Marsh.\textsuperscript{10}

5. Development of a draft design for a visitors’ center and walkways that fully respects ecologically sensitive areas, developed by domestic and international experts with proven experience in the rehabilitation of wetland ecosystems. This design would also be subject to a Strategic Environmental Assessment.

6. Definition of programs for wetland rehabilitation.

7. Designation of species and locations for internet promotion such as live-streaming.

8. Investigation of possibilities for citizen science projects (in which members of the public contribute to data collection) with an emphasis on international visitors.

9. Design and initiation of training programs for guides and visitor center employees.

\textsuperscript{10} Various ideas in this direction are listed in the Ohrid SOS \textit{Platform for a Green and Modern Ohrid}. 
10. Commencement of construction of walking paths, observatories and info-boards etcetera.

11. Opening social media channels through which the process of wetland restoration at Studenchishte would be covered from the very start, as well as establishing access to the popular platforms of organizations, groups, influential bloggers and eco-activists etcetera.
CONSULTED LITERATURE

Macedonian


English


APPENDIX

Figure 1: Map of the Studenchishta district, according to the General Urban Plan of the Municipality of Ohrid
Figure 2: Proposal for a protected area — Studenchishte Marsh — according to the Integrated Study on the State of the Remains of Studenchishte Marsh and Measures for its Revitalization by Spirovksa et al 2012 (The lightest green overlay denotes the Zone of Sustainable Use; the intermediate green overlay denotes the Zone of Active Management; and the darkest green overlay denotes the Zone of Strict Protection.)

Figures 3 and 4: Examples of wetland walkways
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