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de les Illes Balears

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**TOURISM AND WATER RESOURCES:
INTERRELATIONSHIPS AND CONSEQUENCES.
THE CASE OF KAZAKHSTAN.**

Makhabbat Ramazanova



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Doctoral Programme of Tourism

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RESUME IN ENGLISH

Water is one of the most critical and scarce resources for the tourism activity. Water resources (i.e., fresh water, beaches, coastal resources, lakes, rivers, etc.) are one of the key attractions for tourists and, at the same time, tourism activity is one of the most important water consumers and determinants of degradation of water resources. Thus, it is crucial to examine and understand the interrelationships existing between tourism and water, as well as its consequences. Basing on this approach, the present thesis is designed in order to accomplish three main objectives. In particular, first, to examine the possible impacts of tourism activity on water resources (lakes water environment); second, to understand the main drivers that can explain the behaviour of water consumption within the tourism lodging sector; and finally, to analyse the importance of water as a part of a lake destination image, as well as the behavioural intentions of visitors in a lake destination. All these objectives are focus in our study area, the Shchuchinsk-Burabay resort area, located in Akmola region of the Northern Kazakhstan.

The results obtained in our research indicate that the lakes of the region are facing environmental issues in terms of surface area decline and water quality deterioration. One of the possible determinants of this phenomenon can be the significant growth observed in the tourism lodging facilities in the study area. In this sense, our findings reveal that the lodging sector is responsible for a considerable part of water consumption within tourism industry in the area. We analysed which are the factors that determine the levels of water consumption at the lodging facilities, including both their physical and management characteristics. The results conclude that the size of the facilities and the pools constitute significant variables. The number of meals served, is also a significant variable to explain water consumption. Finally, the study concludes that sanatoriums are those types of accommodation with higher levels of water consumption (probably due to the nature of health and wellbeing services included in these facilities), while guesthouses are those with lower levels. Therefore, it is advisable to target them in efficient water use practices, which in turn will result to reduce sewage and protect lake water from

pollution. Our study also reveals that the introduction of water saving measures, however their reduced implantation, constitutes an effective tool to reduce the levels of water consumption.

With regard to the visitors' perceptions on the lakes and the lake destination, our study finds a significant impact of water quality on satisfaction with lakes. However, it is interesting to note, that water quality was the only dimension that did not have a significant impact on satisfaction with the entire lake destination, despite its high influence on satisfaction with the lake. This last finding corroborates, in some way, with previous specific studies where polluted lakes did not prevent people from visiting lake destinations (Ryan et al., 2010). Nevertheless, in the case of our study area, it is certainly of value to improve water quality of the lakes, as the motivations of the visitors related to relaxing and health improvement as well as socialising and being active have a significant impact on this dimension of the lake image and the lake destination image. Thus, the success and sustainability of tourism activity requires ensuring a good water quality level of the lakes. Thus, due to the relevance of water quality, along with the lake environment and facilities and services across the destination, these three components should receive greater focus in the promotion of lake destinations.

The research area of water and tourism nexus is relatively new and with an important gap in the literature. Thus, more contributions are needed in order to a better understand of the interrelationships between tourism and water, as well as its consequences. Nevertheless, this thesis provides insights into the importance of water resources for the tourism activity, the tourism water consumption, the tourism impacts on water resources, and the attractiveness of water resources attributes for tourism activity. Based on the research findings, theoretical and practical implications were drawn for policymakers, local authorities, lake destination and accommodation business managers.

RESUME EN CASTELLANO

El agua es uno de los recursos más críticos y escasos para la actividad turística. Los recursos hídricos (agua fresca, playas, recursos costeros, lagos, ríos, etc.) son uno de los atractivos clave para los turistas y al mismo tiempo la actividad turística es una de las que más agua consume, siendo determinante en la degradación de los recursos hídricos. Por lo tanto, es crucial examinar y comprender las interrelaciones existentes entre el turismo y el agua, así como sus consecuencias. Basándose en este enfoque, la presente tesis está diseñada para cumplir tres objetivos principales. En concreto, el primero es examinar los posibles impactos de la actividad turística en los recursos hídricos (en el medio ambiente lacustre); en segundo lugar, comprender los principales factores que pueden explicar el comportamiento del consumo de agua dentro del sector de alojamiento turístico; y, finalmente, analizar la importancia del agua como parte de la imagen del destino del lago y definir las intenciones de comportamiento de los visitantes. Todos estos objetivos se centran en nuestra área de estudio, la zona turística de Shchuchinsk-Burabay, ubicada en la región de Akmola, en el norte de Kazajstán.

Los resultados obtenidos en esta investigación indican que los lagos de la región afrontan problemas ambientales en términos de disminución de la superficie y deterioro de la calidad del agua. Uno de los posibles determinantes de este fenómeno puede ser el crecimiento significativo observado en las instalaciones de alojamiento turístico del área de estudio. En este sentido, nuestros resultados revelan que el sector de alojamiento es responsable de una parte considerable del consumo de agua dentro de la industria turística de la zona. Analizamos cuáles son los factores que determinan los niveles de consumo de agua en las instalaciones de alojamiento, incluidas las características físicas y de gestión de dichas instalaciones. Los resultados concluyen que el tamaño de los establecimientos y las piscinas constituyen variables significativas para explicar el consumo de agua, así como también lo es el número de comidas servidas. Finalmente, el estudio también concluye que los sanatorios son aquellos tipos de alojamiento con mayores niveles de consumo de agua (probablemente debido a la naturaleza de los servicios de salud y bienestar incluidos en estos establecimientos) mientras que las casas de huéspedes son aquellas que

tienen niveles más bajos. Por lo tanto, es recomendable orientarlos en prácticas de uso eficiente del agua, lo que a su vez dará como resultado una reducción de las aguas residuales y la protección del agua del lago de la contaminación. Finalmente, nuestro estudio también revela que la introducción de medidas de ahorro de agua a pesar de su implantación reducida constituye una herramienta eficaz para reducir los niveles de consumo de la misma. Con respecto a las percepciones de los visitantes sobre los lagos y el destino de estos, nuestro estudio encuentra un impacto significativo en la relación entre la calidad del agua y la satisfacción con los referidos lagos. Sin embargo, es interesante observar que la calidad del agua fue la única dimensión que no tuvo un impacto significativo en la satisfacción con todo el destino lacustre, a pesar de la alta influencia de la calidad del agua en la satisfacción con el lago mismo. Este último hallazgo es de alguna manera corroborado por estudios específicos previos en los que los lagos contaminados no impidieron que las personas visitaran los destinos donde aquellos se encontraban (Ryan et al., 2010). Sin embargo, en el caso de nuestro área de estudio, resulta ciertamente valiosa la mejora de la calidad del agua, ya que las motivaciones de los visitantes relacionadas con la relajación y el bienestar así como la socialización y la actividad tienen un impacto significativo tanto sobre la imagen del lago como sobre la imagen del propio destino del lago. Por lo tanto, el éxito y la sostenibilidad de la actividad turística requiere asegurar un buen nivel de calidad del agua en los lagos. Por lo tanto, la relevancia de la calidad del agua junto con el entorno del lago y las instalaciones y servicios de todo el destino en sí deben recibir una mayor atención en la promoción de los destinos lacustres.

El área de investigación del agua y su relación con el turismo es relativamente nuevo, abriéndose de este modo un campo importante en la bibliografía. Así, se necesitan más contribuciones para comprender mejor las interrelaciones entre el turismo y el agua, así como sus consecuencias. Sin embargo, esta tesis proporciona información sobre la importancia de los recursos hídricos para la actividad turística, así como el consumo de agua en esta industria, los impactos del turismo en los recursos hídricos y el atractivo de los atributos de los recursos hídricos para la actividad turística. Sobre la base de los resultados de la investigación, se elaboraron implicaciones teóricas y prácticas para los responsables de la formulación de políticas, así como para las autoridades locales y los administradores de destinos lacustres y de alojamiento.

RESUME EN CATALÀ

L'aigua és un dels recursos més crítics i escassos per a l'activitat turística. Els recursos hídrics (és a dir, aigua fresca, platges, recursos costaners, llacs, rius, etc.) són un dels atractius clau per als turistes i, al mateix temps, l'activitat turística és un dels consumidors d'aigua més importants i determinants de la degradació dels recursos hídrics. Per tant, és crucial examinar i comprendre les interrelacions existents entre el turisme i l'aigua, així com les seves conseqüències. Basant-se en aquest enfocament, la present tesi està dissenyada per a complir tres objectius principals. En particular, primer, examinar els possibles impactes de l'activitat turística en els recursos hídrics (medi ambient dels llacs); en segon lloc, comprendre els principals factors que poden explicar el comportament del consum d'aigua dins del sector d'allotjament turístic; i, finalment, analitzar la importància de l'aigua com a part de la imatge de la destinació del llac i definir les intencions de comportament dels visitants. Tots aquests objectius se centren en la nostra àrea d'estudi, la zona turística de Shchuchinsk-Burabay, situada a la regió de Akmola en el nord de Kazakhstan.

Els resultats obtinguts en la nostra recerca indiquen que els llacs de la regió enfronten problemes ambientals en termes de disminució de la superfície i deterioració de la qualitat de l'aigua. Un dels possibles determinants d'aquest fenomen pot ser el creixement significatiu observat en les instal·lacions d'allotjament turístic en l'àrea d'estudi. En aquest sentit, els nostres resultats revelen que el sector d'allotjament és responsable d'una part considerable del consum d'aigua dins de la indústria del turisme en la zona. Analitzem quins són els factors que determinen els nivells de consum d'aigua en les instal·lacions d'allotjament, incloses les característiques físiques i de gestió de les instal·lacions d'allotjament. Els resultats conclouen que la grandària dels establiments i les piscines constitueixen variables significatives. El nombre de menjars servits, també és una variable significativa per a explicar el consum d'aigua. Finalment, l'estudi també conclou que els sanatoris són aquells tipus d'allotjament amb majors nivells de consum d'aigua (probablement a causa de la naturalesa dels serveis de salut i benestar inclosos en aquestes establiments), mentre que les cases d'hostes són aquelles amb nivells més baixos. Per tant, és recomanable

orientar-los en pràctiques d'ús eficient de l'aigua, la qual cosa al seu torn resultarà a reduir les aigües residuals i protegir l'aigua del llac de la contaminació. Finalment, el nostre estudi també revela que la introducció de mesures d'estalvi d'aigua, no obstant això, la seva implantació reduïda, constitueix una eina eficaç per a reduir els nivells de consum d'aigua.

Respecte a les percepcions dels visitants sobre els llacs i la destinació del llac, el nostre estudi troba un impacte significatiu de la qualitat de l'aigua en la satisfacció amb els llacs. No obstant això, és interessant observar que la qualitat de l'aigua va ser l'única dimensió que no va tenir un impacte significatiu en la satisfacció amb tota la destinació del llac, malgrat la seva alta influència en la satisfacció amb el llac. Aquesta última troballa corrobora, d'alguna manera, amb estudis específics previs on els llacs contaminats no van impedir que les persones visitessin les destinacions del llac (Ryan et al., 2010). No obstant això, en el cas de la nostra àrea d'estudi, és certament valuós millorar la qualitat de l'aigua, ja que les motivacions dels visitants relacionades amb la relaxació i el benestar, així com la socialització i l'activitat tenen un impacte significatiu en aquesta dimensió de l'imatge del llac i la imatge de la destinació del llac. Per tant, l'èxit i la sostenibilitat de l'activitat turística requereix assegurar un bon nivell de qualitat de l'aigua en els llacs. Per tant, a causa de la rellevància de la qualitat de l'aigua, juntament amb l'entorn del llac i les instal·lacions i serveis en tota la destinació, aquests tres components han de rebre un major enfocament en la promoció de les destinacions del llac.

L'àrea de recerca d'aigua i nexa entre el turisme és relativament nou i amb un buit important en la literatura. Per tant, es necessiten més contribucions per a comprendre millor les interrelacions entre el turisme i l'aigua, així com les seves conseqüències. No obstant això, aquesta tesi proporciona informació sobre la importància dels recursos hídrics per a l'activitat turística, el consum d'aigua per turisme, els impactes del turisme en els recursos hídrics i l'atractiu dels atributs dels recursos hídrics per a l'activitat turística. Sobre la base dels resultats de la recerca, es van elaborar implicacions teòriques i pràctiques per als responsables de la formulació de polítiques, les autoritats locals, els administradors de destinacions de llac i d'allotjament.

“When the well is dry, we know the worth of water”

— Benjamin Franklin

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*I dedicate this PhD thesis
to my beloved parents
for their unconditional love and care.*

I love you dearly.

Осы халықаралық докторлық диссертация менің ата-анама арналады!

Рамазанов Ағыбай, Рамазанова Айнагүл!

Құрметті Әкем мен Анашым!!!

Мені осы өмірге әкеліп, ақ сүт беріп, аялап өсіріп, осы күнге жеткізгендеріңіз үшін алдарыңызда мәңгі қарыздармын.

Бүкіл өмірін балаларына арнап, ардақты ата-ана болып, бүгінде Әмірхан немерелерінің сүйікті Ата - Әжесі болып отырған, Әкем мен Анашыма зор алғысымды білдіремін!

Сіздерге зор денсаулық, ұзақ ғұмыр тілеймін, біздердің ортамызда күліп-ойнап, шаттыққа кенеліп, бақытқа бөленіп жүре беріңіздер!

Мен сіздерді жақсы көремін!

***Құрметпен,
Қыздарыңыз, Махаббат,
Пальма де Майорка, Испания, 2019 жыл***

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CHAPTER 1: THESIS INTRODUCTION

1.1 WATER AND TOURISM

Water is one of the most critical natural resources in the world (Shiklomanov, 1998; Sulnu, 2003). While water makes up about 70% of the Earth's surface, the estimated global volume of freshwater is only 2.5% (Shiklomanov, 1993). Freshwater has a fundamental role in supporting the environment, society and the economy (Shiklomanov, 1998; UNEP, 2017). A significant body of evidences suggests that humanity's water consumption practices are unsustainable (Gleik & Palaniappan, 2010; Gössling et al., 2015). Thus, understanding global water consumption patterns is essential, as water resources availability in the future will depend on how these resources are conserved and managed today (Baoying & Yuanqing, 2007). According to the World Resources Institute (WRI, 2008), global demand for water resources increased sixfold in the last century and almost a half of the world's population lives in water scarcity today. It is estimated that if present water consumption patterns continue, two of every three humans worldwide will be living under water stressed conditions by 2025.

The availability of freshwater is a major concern in many parts of the world (Eurostat, 2009) and the challenges related to water scarcity have been identified all around the globe (Gössling et al., 2015). These problems usually relate to water quantity or water quality or both (Kasim et al., 2014). In this sense, Kasim et al. (2014) argue that it is important to understand the complexity and variation of water problems on a geographical scale. The authors clearly explain and provide examples of water challenges around the globe. Whereas in East Asia water problems are related to accessibility, in the South water quality is of great concern. Central Asia is facing political conflicts in sharing water resources, leading to inaccessibility, while water supply and scarcity problems have been noted in the Mediterranean regions due to the high density of population, dry climate and tourism growth. This emphasizes the importance of taking water resources issues seriously and developing effective water management practices.

Water is an essential resource for the planet and its availability (both in terms of quantity and quality), affects all economic sectors. Among the different sectors,

agriculture is globally the largest freshwater consumer with a 70% share of all withdrawals, followed by industry (19%), while household consumption is responsible for the remaining 11% (FAO, 2014). That 11% household consumption usually includes water consumption by the tourism industry, as tourism-related water consumption statistics are usually combined with 'urban' water consumption statistics (Tortella & Tirado, 2011). Research of Gössling et al. (2012) shows that the share of tourism related water use within domestic use is increasing in many Asian countries, particularly in Indonesia (8%), India (7.6%) and Thailand (6%). Additionally Hadjikakou et al. (2015) empirically revealed that tourism water consumption was directly and indirectly responsible for around 10% of the total water use in Cyprus in 2007. In this context, tourism is clearly also one of the economic sectors highly dependent on quantity and quality of water resources. According to Becken and colleagues (2013), "Many forms of tourism are dependent on water directly and indirectly" (p.16).

Despite the growing importance of the tourism industry for many countries (many of them in a situation of development), and the fact that tourism sustainability is dependent on an adequate water supply, there is little research on the significance of water for tourism development (Cole, 2014; Essex et al., 2004; Gössling et al., 2015). A possible explanation for this could be a complex and multifactorial relationship between tourism and water (Tapper et al., 2011). Nevertheless, the importance of sustainable management of water resources for the tourism sector has been recognised by official organisations, which have issued a number of programmes aiming to address water challenges (UNEP, 2017; UNWTO, 2013). For example, in 2013, the United Nations World Tourism Organisation organised its World Tourism Day programme under the theme "*Tourism and Water: Protecting our Common Future*" (UNWTO, 2013). The program calls to bring greater attention to tourism's potential role in more sustainable water management practices. UNWTO (2013) emphasized that, "In tourism, water is both a critical resource and an asset for most destinations". This is in agreement with Lehmann's (2009) point that the role of water in tourism is based on consumptive or non-consumptive water uses and direct and indirect uses approaches. Water can be considered as a consumptive

resource or as an integral part of the environment that is enjoyed but not consumed. Furthermore, defining the differences between those two approaches facilitates analysis of tourism impacts on water resources. Thus, the interrelationship between tourism and water outlined above highlights the importance of understanding the way in which and how water is used in tourism, and how tourism can affect water resources.

Previous literature related to water and tourism is predominantly concerned with determining whether tourism has a considerable impact on either water quality, water quantity or both (De Stefano, 2004; Lehmann, 2009). For example, research in the Mediterranean area and islands destinations is usually concerned with water consumption issues (Gössling, 2001; Essex et al., 2004), while other literature focus on regions with more abundant water resources and tend to discuss the water quality challenges rising from tourism development, such the case of Quebec in Canada (Priskin, 2008). However, to our knowledge, research that brings together multiple effects (direct, indirect) of tourism industry on water resources (water quality and quantity) remains very limited. One of the explanations is the fact that quantitative data related to water consumption in the tourism industry is often scarce and incomplete in many countries (Eurostat, 2009; Gössling et al., 2012; Tapper et al., 2011), as mentioned above tourism-related water consumption statistics are generally combined with 'urban' water consumption statistics (Tortella & Tirado, 2011). In this context, Gössling (2001) concludes that there is insufficient data for many tourism destinations on overall water consumption that limits defining its association with tourism. Another explanation can be the highly heterogeneous character of the tourism industry, offering a variety of products, with different water use implications (Hadjikakou et al., 2013). As a result, difficulties arise in monitoring and producing tourism – related water consumption statistics. Consequently, these statistical difficulties do not allow us to determine the impacts of tourism activities on water resources.

Nevertheless, researchers have recognised a causal relationship between tourism and a range of water issues, including water shortages, the degradation of water

supplies, depletion of underground water resources, as well as an increase in the production of wastewater (De Stefano, 2004). Gössling et al. (2012) also argue that tourism growth leads to over consumption of groundwater at the destinations, which in turn generates salt-water intrusion, land subsidence and water quality deterioration. In addition, a recent book by Gössling et al. (2015) provides an overview of the relationship between tourism and water, with a large number of good examples of water issues from a broad geographic spread and scale.

At the same time, water and tourism issues are becoming more important, particularly if we take into consideration that availability and quality of water resources are essential for the attractiveness of a destination. This is mostly the case for destinations focused on ecotourism, nature-based tourism and other water – related forms of tourism (lake tourism, coastal tourism), where water is a key element for people’s holiday experience. Tourism’s negative impacts on water resources can reduce an overall gaze and viability of a tourism destination (Kelly & Williams, 2007) and lower tourists’ desire to re-visit that destination. Thus, it is becoming important to understand tourists’ behaviour in a destination, as well as their perceptions, satisfaction levels and loyalty.

Summarising, we can state that the availability and quality of freshwater have now become important issue in planning and development the tourism industry worldwide. Despite a complex interrelationship between tourism and water, the above discussion indicates that close attention must be paid to the efficient management and conservation of water resources. Therefore, in order to guarantee efficient management of the resource, it is crucial to understand the consequences of tourism development on water resources.

1.2 AIM AND OBJECTIVES OF THE RESEARCH

Considering all the aforementioned facts, the current thesis is addressed at examining the interrelationship and consequences of tourism and water in the case of Kazakhstan, as one of the water scarcest countries in Central Asia (UNDP, 2004). The study area of the thesis is the Shchuchinsk - Burabay resort area, located in the Akmola region of the Northern Kazakhstan. This region is one of the most important tourist destinations of the country, and accumulates a relevant number of lakes, that constitute the main tourist attraction of the region. As such, the current thesis extends this relatively new research area in a broader geographical context.

Tourism and water is a relatively new research area, and is characterised by a significant and complex number of different, and sometimes bidirectional, interrelationships. Water resources (i.e., fresh water, beaches, coastal resources, lakes, rivers, etc.) are one of the most important attractions for tourist activity and, at the same time, tourism activity is one of the most important consumers of water resources. Thus, the success, viability and sustainability of tourism destinations requires research that analyses this bilateral relationship existing between water and tourism. However, and like in many other countries, in Kazakhstan there is an important lack of research in this field. Thus, the development of new research in this field becomes crucial for the sustainability of the resources and the destination.

In addition, the report of UNDP (2004) emphasizes the lack of studies on water consumers' demand in Kazakhstan, enhancing the importance to develop theoretical and empirical studies in this field.

Therefore, the overall aim of this thesis is to analyse the relation between water resources and tourism activity, and its consequences in the case of the Shchuchinsk - Burabay resort area, located in the Akmola region of the Northern Kazakhstan. The intention is to make such analysis from several points of view: the importance of water resources for the tourism activity, the evaluation of tourism impacts on lakes water environment, the identification of the main determinants of water consumption at the lodging sector, and the analysis of visitors' perceptions on lake

destination attributes (with a particular focus on water quality dimension), and their influence on satisfaction and future travel behaviours of visitors.

Following the overall aim defined above, the thesis is divided into the following series of objectives, which are presented in the three main chapters (4,5,6) of the thesis:

1. Examine the possible impacts of tourism activity on water resources (lakes water environment), with the intention to understand the consequences arising from the growth of tourism activity on water-based and lake destinations.
2. Understand the main drivers that can explain the behaviour of water consumption in the lodging sector, as the highest water consumer within tourism industry.
3. Analyse the importance of water as a part of a lake destination image, as well as the behavioural intentions of visitors in a lake destination (relationship between lake destination image, motivations, satisfaction and loyalty).

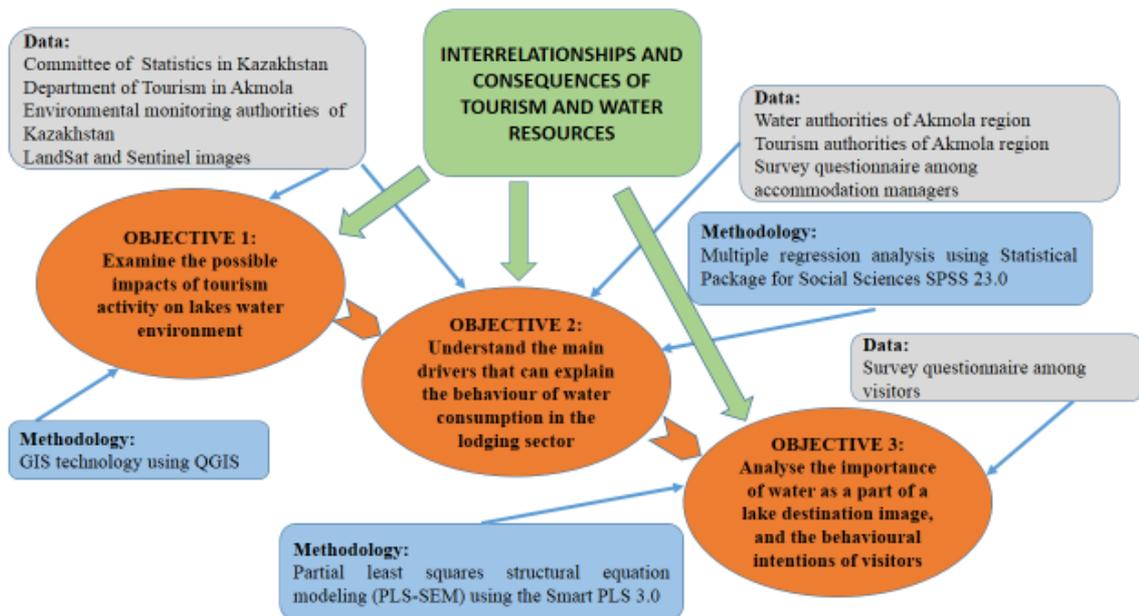


Figure 1.1. Conceptual diagram of the three main objectives of the thesis

The figure 1.1 shows how different data and methodology are used to meet each of the objectives listed above.

In the next sections, an overview of the three main chapters of the thesis and the relevant academic literature related to each, as well as their general aim, specific objectives and methodology applied are provided. Finally, the structure of the thesis and findings of the chapters are presented.

1.2.1 Effects of tourism development on lakes' water environment

Benjamin Franklin said 'When the well is dry, we know the worth of water'. Local resources such as springs, lakes, rivers, ponds, glaciers, oceans, groundwater, or precipitation are suppliers of water to a destination (Kelly & Williams, 2007). Thus, maintaining quality and availability of these natural resources is crucial for the sustainability of the destinations and for the tourism industry.

Nowadays tourist resort areas tend to be situated in environmentally sensitive areas (such as coastal zones, islands, national parks, etc.), which are vulnerable due to water scarcity issues, pollution and can lead to conflicts among users (Moyle et al., 2010). The attractiveness of water-based destinations has led to a rapid growth of marine and coastal tourism in terms of number of visitors (Sulnu, 2003; UNWTO, 2013), and lake tourism has also become popular and more recently has been discussed in tourism literature (Hall & Härkönen, 2006; Rodrigues et al., 2015). In these studies, a special attention has been paid to lakes, as the key element of a destination. The lakes are one of the main natural attractions of a destination, and play a special role in generating tourism demand. Examples of this are: Lake Balaton in Hungary, the Great Lakes in the USA, Lombardian lakes in Northern Italy, Finnish Lakeland, the Lake District in the UK, etc. (Cooper, 2006).

Unfortunately, the rapid growth of the tourism industry and high concentrations of tourist activities at lake destinations can generate negative externalities on a lake's water quantity and quality. Considering this, some authors affirm that lakes are one

of the most sensitive and vulnerable providers of water for many tourist destinations, which are suffering from increased pressure arising from tourism (Hall & Härkönen, 2006). David et al. (2012) also express concern regarding the lakes, saying that though the majority of the planet's freshwater resources are stored in lakes, in general a high decrease regarding both their extent and the volume of water has been observed. The disturbances of the lake environment as consequences of tourism development are diverse and heterogeneous. Tourism activities can directly affect lake water and shorelines, or indirectly lakes' catchment areas, in both quantity and quality (Dokulil, 2014). However, given the high heterogeneity of the tourism services and activities, it is complicated to measure its impact on water resources in general and particularly on lake environment. A possible explanation for this could be the observed profound lack of tourism statistics, especially for some recreational activities on and around coastal areas that are of great importance (Gladstone et al., 2013). For example, Kurleto (2013) considers that the objective assessment of the influence of the tourism industry on the lake ecosystem is quite complicated even for a country like New Zealand, which is famous for its high number of lakes, a key tourist attraction for this destination.

Nevertheless, the increasing population, the industrial use of water and the growing needs of agriculture are putting extraordinary pressure on lakes all over the world, inducing an urgent examination of lake environments. This is even more important in coastal areas, since the tourism industry is well known for its over-consumption of water, which has resulted in conflicts with local communities (Cole, 2014), and other industries. Along with the environmental changes due to antropogenic impacts, lake water is also becoming vulnerable to climate change. Thus, recent research has shown that the main stressors determining declines in water level should be examined as a combination of climatic and anthropogenic factors (Cai et al., 2009). In this context, even tourism is considered as a less water demanding sector in comparison with other sectors, which can result in significant negative influences on water resources. For example, the rapid and uncontrolled development of tourism in Bali has led to mismanagement of water resources, provoking negative impacts on local communities. Of course, water crisis in Bali is explained by a complex of inter-

related factors and tourism is only one of them, however this industry will be the most seriously impacted by the water crisis (Cole, 2014).

In the context of lake destinations, the operation of tourism services and activities on and around lake environments generates sewage and wastewater discharge, which may contain pollutants that result in a significant decrease in water quality. Moreover, tourism occurs in small areas and can contribute to relatively large amounts of sewage water (Gössling et al., 2015). In addition, practicing water – based activities on and around lakes can lead to decreasing water quality. This is the case of Québec, where many of the lakes are actively used by tourism and recreational activities, which led to algal blooms in the lakes (Priskin, 2008). Thus, nowadays water quality of the lakes in Québec is of bigger concern rather than water availability. Water quality has been recognised as an essential part of a holiday (Gössling et al., 2015). This is supported by other researchers, arguing that decreasing water quality is already a barrier for development of tourism industry in some regions (Schernewski et al., 2001).

The degradation of a lake environment can also be caused by over-consumption of water resources by the tourism accommodation sector (use of water by tourists within their rooms, hotel facilities and services, like swimming pools and spa centres, gardens, golf courses etc.). This leads to water shortages and degradation of water supplies, as well as generating a great volume of wastewater. The fact that freshwater availability is crucial for survival and development of all societies requires adequate consumption and management of the resources (Cooper, 2006).

As discussed above, the consequences from tourist services and activities on water resources can be diverse. Since lake tourism is a popular and preferable type of tourism among holidaymakers in some countries (like Kazakhstan), as well as an emerging and less investigated area for researchers, we aim to contribute to the understanding of the effects arising from tourism development in a lake destination in northern Kazakhstan.

In general, fourth chapter of this thesis aims to examine the changes in lakes' surface area during the last 30 years and discuss the possible influence of tourism development upon it. Specifically, the objectives of the chapter are to reveal the changes in the lake surface area during the 1987–2017 period; to analyse the evolution of the tourism industry in the region during 2003-2017; to discuss the variation of the lake surface area and tourism growth nexus based on GIS technology outputs; and consider climatic and other anthropogenic causes of the decreasing lakes surface area in recent years. Finally, recommendations for water management policymakers will be drawn, as basis for future management plans. Based on the findings and limitations of the chapter 4, the following chapter 5 of the thesis attempts to understand water consumption patterns in the Kazakh tourism sector, particularly to develop more comprehensive frameworks for quantifying water consumption in the tourism lodging sector of the studied region.

1.2.2 Water consumption in the tourism lodging sector

There is an ever-increasing demand for water, as well as climate change effects on water resources, in many parts of the world, particularly in coastal destinations (Tapper et al., 2011). In dry and hot regions (like the Mediterranean Sea, the Caribbean region, or southeast Asian destinations), the issue of water scarcity is of high concern, as water is already limited and becoming scarce during the dry summer months (Tapper et al., 2011). The authors also point out that water issues are a major and growing problem in the Caribbean, Mediterranean, and North Africa regions and the tourism industry consumes a significant amount of water resources in these regions. In the Middle East, availability of water resources is likely to become one of the key issues for many regions (Hamdy & Liuzzi, 2004). Moreover, the tourism industry during high season could compete with other industries at the destination. In this sense, Eurostat (2009) notes that, in some Mediterranean countries, conflicts exist between hydro-electricity production, agriculture and tourism industry during summer and the priority is sometimes given to the tourism accommodation sector. Since tourism is a key tool generating income

for many destinations, maintaining water quantity and quality is crucial (Mangion, 2013). The potential influence of the tourism industry on water availability should be taken into consideration, keeping in mind the suggestion of the United Nations Water Report, that global water demand will increase by 55% by 2050 due to the growing demand of various industries and domestic uses (Connor, 2015).

In fact, the accommodation sector is considered the most important component of tourism activity, and presents the highest levels of water consumption. Development of accommodation facilities increases the levels of freshwater consumption and wastewater discharge, especially during peak tourist season. In addition, tourists consume more water resources when on holiday than they would usually do at home (Bohdanowicz & Martinac, 2007; Essex et al., 2004; Gössling et al., 2012; Kasim et al., 2014; Tortella & Tirado, 2011).

Within the tourism, this research area had mostly focused on direct water consumption in accommodation facilities (Charara et al., 2011; Tortella & Tirado, 2011), referring to water use for drinking, shower, toilet flushing and undertaking recreational activities. However, the total water consumption of the tourism industry is more complex, if we take into account all the water required to maintain the industry. Tourism requires water for simple basic needs such as drinking, hygiene, cleaning, food provision, fuel, transportation, aesthetic, recreational activities and other services (Becken, 2014). In this context, recent research outlines direct and indirect dimensions of water use (Gössling et al., 2012). The estimated direct and indirect water use per tourist per day is presented in the table 1.1.

Nevertheless, a very limited number of studies have estimated total (direct and indirect) water consumption (Hadjikakou et al., 2015; Zhang et al., 2017). These studies have criticised the approach considering only direct water consumption in tourism, arguing that this kind of research revealed only partial conclusions. Thus, there is an urgent need to develop specialised frameworks for quantifying total (direct and indirect) tourism water consumption, which would allow to make comparisons between various tourism products (Hadjikakou, 2014). Given tourism's

global extent and complexity, some authors have also pointed out the importance of looking beyond direct water consumption (Gössling et al., 2012).

The heterogeneity of the tourism industry, the lack of statistics, make it difficult to determine total water consumption by tourism (Priskin, 2008). It is even more complicated by the fact that water embodied in food and fuel should also be considered (Gössling et al., 2015). Perhaps all these factors explain the limited number of studies estimating total water consumption.

Table 1.1. Water use categories and estimated use per tourist per day

Direct	
Water use category	L per tourist per day
Accommodation types	Between 84 and 2000 Campsites: 84 - 145 1 star hotel: 174 2 star hotel: 194 Guesthouses: 248 3 star hotel: 287 4 star hotel: 361 - 1000 5 star hotel: 500- 2000
Tourism activities	10-30
Indirect	
Water use category	L per tourist per day
Infrastructure	n.a.
Fossil fuels	750 (per 1000 km by air/car)
Biofuels	2500 (per 1 L)
Food	2000-5000
Total per tourist per day	Estimated range: 2000-7500

Sources: Gössling et al. (2012)

As mentioned above, most tourist destinations are nowadays concerned (in a higher or lower level) with direct water consumption in accommodation facilities, due to direct water use being the most observable and tangible component of total water footprint (Gössling et al., 2015). Although those empirical studies have been done mostly at European and North American locations, some research centred on dry areas of Australia (Cruse, 2010) and in the Mediterranean regions (Rico-Amoros et

al., 2011). The Asia-Pacific context has been systematically investigated in the recent years (McLennan et al., 2017). According to the previous studies, direct water consumption (at accommodation) ranges from 84 and 2,425 L per guest per day, including water consumption in rooms, for laundry services, irrigation of pools and gardens. Indeed, water consumption varies greatly across countries and seasons (Gössling et al., 2012). A number of factors such as different climate conditions, geographical location, situation of lodging facilities (urban or rural), their structure and type influence levels of water consumption.

Nevertheless, on international level, the value of average water consumption has been estimated to be 350 L per guest per night (Gössling et al., 2015). In the case of island destinations and coastal areas, the direct tourism-related water consumption accounted for more than 10% of the national water supply (Sun & Hsu, 2018). On a global level, the direct use of water by the tourism industry accounts for less than 1% (Gössling et al., 2012). However, this can be a serious issue for small tourism areas and islands, since the tourism industry is mostly based on a cluster approach and concentrated in dry or small areas and island destinations.

In the literature we can find several studies that have analysed water consumption in the accommodation sector, especially in hotels (Charara et al., 2011; Deng & Burnett, 2002; Gössling et al., 2012; Tortella & Tirado, 2011). Most of these studies try to determine the level of water consumption of tourists at accommodation facilities and the key variables that influence this consumption, applying different methodologies in different world regions. For instance, Gössling (2001) found that the average water consumption by tourists in accommodation business in Zanzibar (Tanzania), accounts for 685 litres per person and day, which is 15 times higher than a local resident's consumption. Mangion (2013) pointed out that in Malta the average water consumption by tourists at hotels was 296 litres per person and day, whereas the average water consumption by local residents was 150 litres per person and day. These studies demonstrate that water consumed by tourists when on holiday tends to be higher comparing with their consumption at home (Essex et al., 2004; Gössling et al., 2012; Kasim et al., 2014). Other studies obtain similar conclusions. With

regards to the variables that influence water consumption in the accommodation sector, some studies reveal that water consumption at these establishments usually depends on different factors such as hotel size, type of accommodation, tourist's length of stay, number of meal arrangements or geographical location.

Based on the knowledge of previous studies developed worldwide, chapter 5 of the thesis aims to analyse water consumption in the lodging sector at the Shchuchinsk - Burabay resort area, in the Akmola region of Kazakhstan. As in many other destinations, there is a lack of research related to the water consumption in the tourism accommodation sector. Thus, this research tries to fill in this gap and expand the geographical scale of the relatively recent topic that is water use in tourism. More concretely, the objectives of the present chapter are to identify water consumption indicators in various accommodation types, and determine the main drivers that affect water consumption in the accommodation sector of the Shchuchinsk – Burabay resort area. A model has been developed which includes a set of potential variables to explain water consumption at the lodging facilities. The model has been empirically tested through the multiple regression methodology on a representative sample of the accommodation business of the area.

Despite the relatively recent character of the tourism water nexus, the above-mentioned evidence suggests that freshwater scarcity and deterioration can be a key problem limiting development of the tourism industry. Given this context, Zhang et al. (2014) argue that the image and reputation of a tourism destination would be seriously affected by water shortages and challenges. The tourists need available freshwater resources, but also demand a high quality of drinking water and of water bodies. A poor image of a destination would negatively influence the visitors' perceptions and consequently their future behaviour such as intention to return to a destination or recommend it to others. Thus, the issues related to an attractive image of a destination, satisfaction and loyalty of the visitors should be essential for destination managers and tourism marketers.

Based on this, we consider that along with analysing the issues related to defining tourism's effects on the water environment and tourism related water consumption, a great importance on the image of a destination, satisfaction levels of the visitors and their loyalty should also be attached. This is the objective of the chapter 6 of the thesis.

1.2.3 Lake destination image: antecedents and consequences

Water is a key issue in the competitiveness of any tourism destination. In this sense, Paul F. Wilkinson points out that "Open any travel marketing brochure or website and water is an integral element of most of the holidays offered and destination images" (Gössling et al., 2015; Wilkinson, 2015, p. 91). This expression highlights the power of water as a key attraction and an important resource for people's holiday. In this context, water has been recognised as a key resource upon which the attractiveness of a destination may depend (Eurostat, 2009) and a main element for destinations where lakes, rivers, coastlines are places for tourism and recreation (UNWTO, 2013). Water-related tourism is the most popular and attractive for a people, water being used as a powerful tool in generating visits to a destination. Therefore, the importance of an image created by the individuals in a water-based destination is important, as their future travel behaviours will depend upon it. Tourists create an image of a destination they travel to, and water is a key element in the "tourist gaze" (Kozak & Kozak, 2011). This can also be the case with the lake destinations.

Although lake tourism and lake destinations are comparatively less studied, this type of destinations remains attractive for visitors. Thus, examination of their perceptions towards a lake destination is essential. In addition, it arouses the interest among lake tourism marketers (Rodrigues et al., 2017).

Despite this lack of academic literature examining the lake destination image and its formation (Rodrigues et al., 2015, 2017; Tuohino & Pitkänen, 2004), the importance of lakes in tourism has been recognised in the literature (Hall & Härkönen, 2006).

Lakes are not only a natural element of a destination, they are also main attraction for a visitors. As stated by Ryan et al. (2010), the lakes are the centre of the tourist experience in lakeside tourist destinations. Thus, lake image is one of the most important dimensions in assessing lake destinations and can affect visitors' future behaviour. Within the different components that determine a lake's image, water quality is considered as one of the key components and as an important factor influencing destination selection decision (Cooper, 2006). Since lake destinations are perceived by the tourists in terms of having clean water, the individual's attitudes might be changed if the lakes' water quality do not meet their expectations.

In addition, the lake environment is an important resource for tourism with its pleasant nature and attractive landscape (Tuohino & Pitkänen, 2004). Thus, the attributes such as the lake itself, water quality, the environment surrounding the lakes should be considered as an integral part of lake destination image.

Besides the lake itself, lake destinations are characterised by other elements surrounding the lakes, such as tourism facilities and services, natural and cultural heritage, that may also influence the image of this kind of destinations. Moreover, according to UNWTO (2007) any destination should contain basic elements such as natural and cultural attractions, along with public and private amenities. In addition, natural and scenic resources, cultural resources, services and infrastructure, security, accessibility and entertainment are revealed as important attributes used in the measurement of the destination image construct in tourism literature (Bigné et al., 2001; Kladou & Mavragani, 2015; San Martín & Del Bosque, 2008).

Along with examination of destination image itself, it is important to examine the consequences of it, as its influence on destination selection, satisfaction, and post-purchase behaviour can be relevant (Bigné et al., 2001; Chen & Tsai, 2007; Chi & Qu, 2008; Echtner & Ritchie, 1991). It can be stated that many tourism researchers are in agreement that travel satisfaction is crucial for successful destination business, products, marketing and to promote a willingness to revisit the destination (Yoon & Uysal, 2005). There is substantial empirical evidence testing the relationship among

destination image, satisfaction and behavioural intentions (Chi & Qu, 2008; Jin et al., 2015). The authors found that the more positive the destination image, the higher the satisfaction level of tourists is likely to be. Also, the positive influence of satisfaction on behavioural intentions (intention to revisit and willingness to recommend) have also been examined and empirically confirmed (Chi & Qu, 2008; Kozak, 2001; Wang & Hsu, 2010).

In the case of lake destinations, there is an absence of empirical works on the causal relationship between lake destination image, motivation, satisfaction and loyalty.

Considering all aforementioned, the chapter 6 of the thesis focuses to overcome the gap on lake destination image. The specific objectives of this chapter are to determine the concepts of lake image and lake destination image based on the previous research on destination image, lake tourism, lake destination image; examine the motivations of individuals to visit the lake destination and assess the influence of motivation on lake destination image, and finally to analyse the influence of lake destination image on overall satisfaction with the lakes and lake destination, and its effects on loyalty, in order to analyse future behavioural intentions of the visitors. A structural equation model is used to examine the relationship between lake destination image and its antecedents (such as motivation) and consequences (overall satisfaction and lake destination loyalty). Finally, a discussion of the obtained results provided, following with the most important theoretical contributions, practical implications, limitations and suggestions for further research.

1.3 THESIS STRUCTURE

The thesis is structured in seven chapters. Following this introduction chapter, Chapter 2 provides information on the state of water resources in Kazakhstan, outlining the Shchuchinsk-Burabay resort area, located in Akmola region, as a case study area.

In Chapter 3, we expose the particularities of the tourism industry, along with its evolution in Kazakhstan and Akmola region, with particular attention paid on accommodation sector in the case study area. Chapters 4, 5 and 6 have their own research focus and applied methodologies.

Chapter 4 sets out the issues related to the ecological state of the main lakes in the area, such as water quality and quantity, understanding of interrelationships between tourism growth and changes in lake water environment, mostly based on previous peer-review publications. As a methodology, the abilities of GIS technologies were used to examine the surface area of the main lakes and allocation of accommodation businesses around the lakes in the case study area.

The results of GIS indicate that the main surface water resources of the studied area have been facing environmental challenges during the last 30 years. Key findings outline that the surface area of the main lakes have reduced during last decades and tourism is one of the responsible factors upon these changes. Furthermore, its responsibility increases when combined with other anthropogenic and climatic factors. The chapter concludes with some recommendations, discussion of their implications and suggestions for future research.

Chapter 5 aims to analyse water consumption patterns in the tourism, specifically in the lodging sector. An extensive review of the academic literature on water consumption in tourism, factors determining consumption of resources along with measures to reduce it are provided. The chapter presents methodology (multiple regression analysis), survey design and data collection methods.

As key findings of this chapter, we define the following: firstly, water consumption indicator (water use per guest per night) was defined for different accommodation types (sanatoriums, hotels, guesthouses). Based on that, we revealed accommodation businesses with high and low water consumption levels. A regression analysis revealed that total area, the area of pools, accommodation type (sanatorium), type of board and measures of water savings constitute the major drivers of water consumption in those facilities. The chapter concludes with some recommendations and suggestions to policymakers and accommodation business managers.

Chapter 6 aims to develop and test a structural model, that illustrates relationships between motivations, lake destination image, satisfaction and loyalty. The data were analysed and the model was tested using partial least squares structural equation modeling (PLS-SEM). The results supported the proposed lake destination image model. Visitors' motivations positively influence lake destination image, while lake destination image is a direct antecedent of overall satisfaction with the lakes and with the destination. In turn, overall satisfaction with both lakes and destination has a positive impact on loyalty. Interesting results were obtained regarding the lakes' water quality dimension. Water quality has a positive influence on satisfaction with the lakes, but of the hypothesis of its influence on satisfaction with the lake destination has not been confirmed. Possible reasons and explanations are presented. Based on the research findings, theoretical and practical implications were drawn and recommendations of future research were proposed.

To conclude, Chapter 7 provides a synthesis of the key findings of the thesis, and their potential implications and limitations. The chapter discusses suggestions for future research and the contribution of the thesis.

The purpose of this introduction chapter is to provide the reader with an overview of current research in the field (state of art). The general structure of the thesis is presented in Figure 1.2.

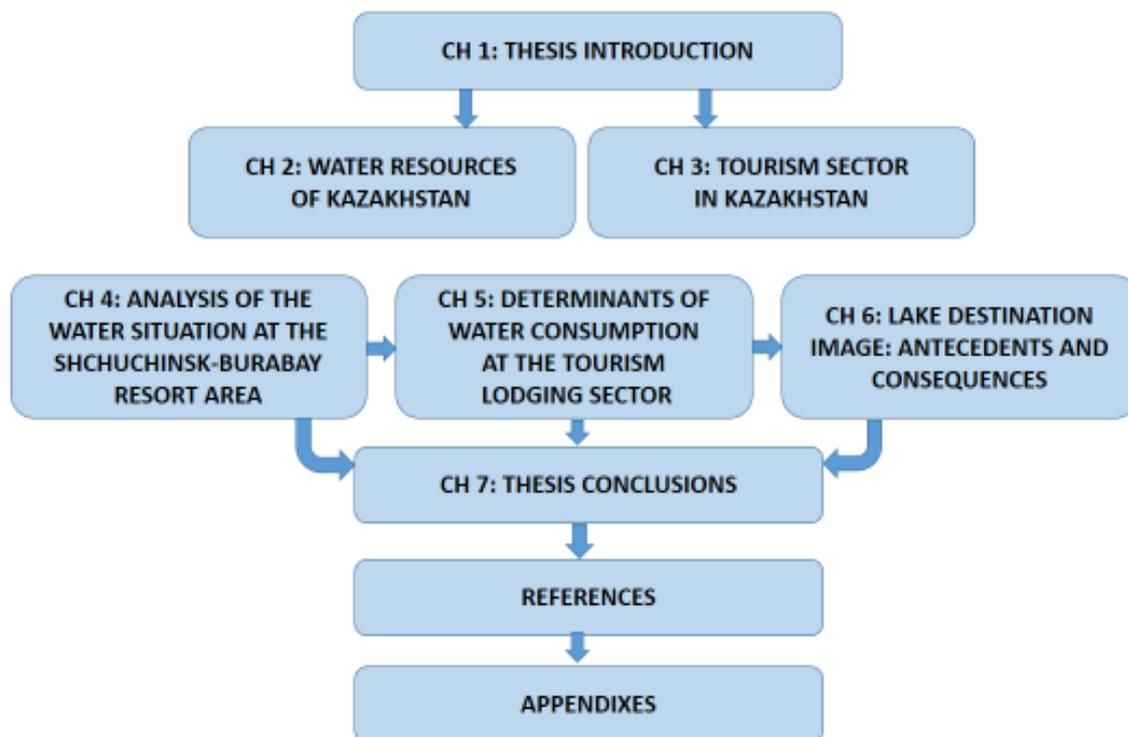


Figure 1.2. Thesis structure, showing all chapters of the thesis

CHAPTER 2: WATER RESOURCES OF KAZAKHSTAN

2.1 WATER RESOURCES OF KAZAKHSTAN

2.1.1 Geographical location

The Republic of Kazakhstan is located in Central Asia, in the heart of the Eurasian continent. Its territory is around 2,724 million square kilometers (the ninth biggest country in the world), and stretches from west to east over 3,000 kilometers and from north to south about 1,600 kilometers. In the west, northwest and north, Kazakhstan borders with Russia; in the south and southwest with the Central Asian republics, such as Turkmenistan, Uzbekistan and Kyrgyzstan; and in the south-east and east, with China (Figure 2.1). The total length of the borders of Kazakhstan is 12,187 km, with Russia is 6,467 km, with Uzbekistan is 2,300 km, with China is 1,460 km, with Kyrgyzstan is 980 km, and with Turkmenistan is 380 km. The length of the Kazakhstan part of the Aral Sea coast is 1,015 km, the Caspian Sea is 2,340 km. The highest point in Kazakhstan is Khan-Tengri (6,995 m above sea level), and the lowest point is the Karagiye Depression (132 m below sea level).



Figure 2.1. Map of the Republic of Kazakhstan and neighboring countries

A unique feature of the territory of Kazakhstan is that, being landlocked, it is connected to the closed drainage basin of the Caspian and Aral Seas, Balkhash, Tengiz and Alakol lakes that do not have outfall to the ocean. In this regard, on the lower reaches of the transboundary rivers located in the country, there is a significant accumulation of pollutants that are transported by river flow, that fall with precipitation, and that arrive in the form of emissions from industrial and municipal waste. As a result, management of water resources and its quality is becoming an essential issue in the country. Another complicating factor for Kazakhstan's water supply is determined by the fact that almost half of the stored water resources in the country are formed outside its boundaries. Consequently, it results to high dependence of the Republic of Kazakhstan on neighboring countries in terms of water supply. Underground waters are also distributed unevenly across the territory, and their quality and quantity vary from location to location (Meyer & Lundy, 2014; UNDP, 2004).

2.1.2 Water Fund and management

The water legislation of Kazakhstan is based on the Constitution of the Republic of Kazakhstan and consists of the Water Code and other regulatory legal acts. The water fund of Kazakhstan includes all water reserves within the territory of the country, such as lakes, glaciers, river flows, water reservoirs, and groundwater, and is estimated at an amount of 524 km³ (Figure 2.2) (Meyer & Lundy, 2014; Water Resources Committee of Kazakhstan, 2015).

The official number of lakes recorded in the country is 48,262, with a total surface area of 45,002 square kilometers. The distribution of lakes is somewhat uneven, with North Kazakhstan accounting for 45% of all lakes, Central and Southern Kazakhstan making up 36%, and other regions only 19%. The largest lakes in the country are Caspian and Aral Seas, the lakes Balkash, Tengiz, Alakol, Sasykol, Zaisan, and Markakol. The largest number of the lakes are located in the Northern Kazakhstan. The total volume of water contained in these reservoirs is 190 km³.

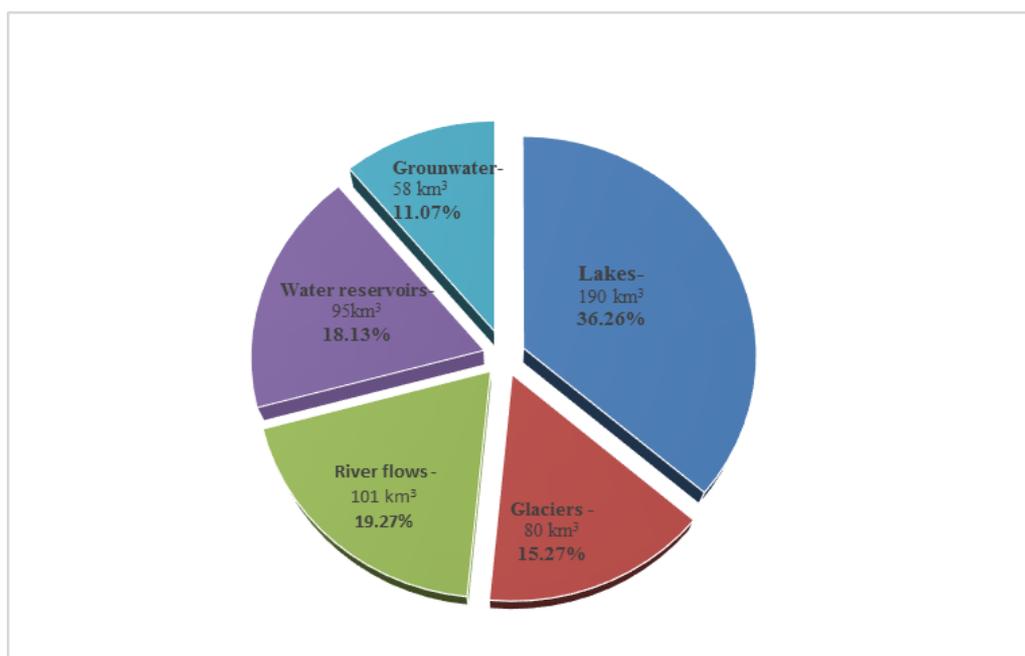


Figure 2.2. Freshwater reserves in Kazakhstan, in km³

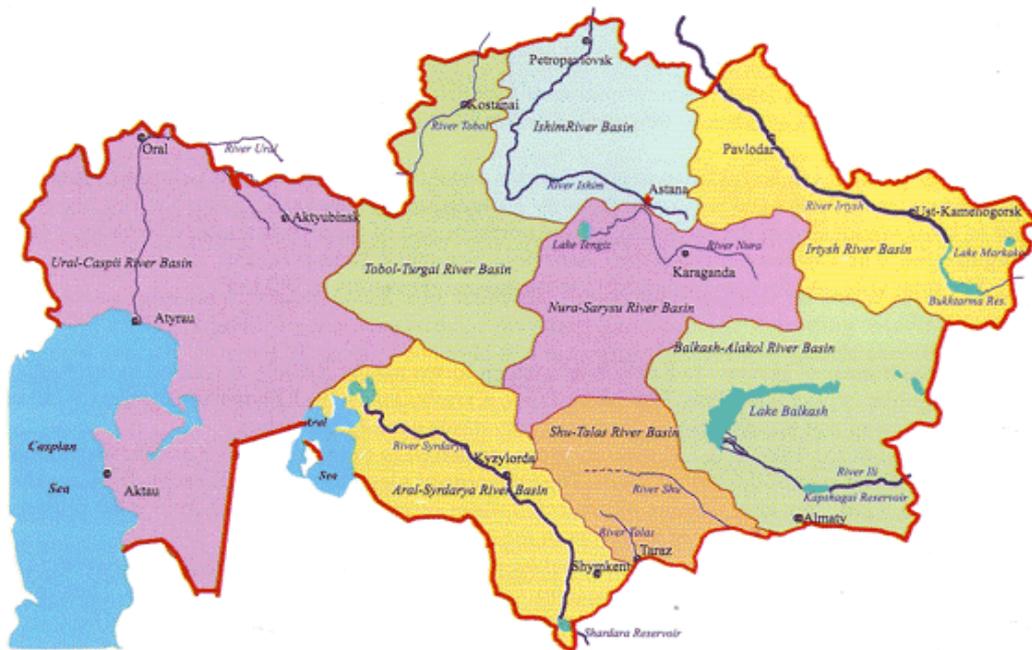
Sources: Water Resources Committee of Kazakhstan (2015)

There are about 39,000 rivers and temporary streams, where 7,000 of them are more than 10 kilometers long. The river network is distributed unevenly as well, with most of the rivers belonging to the closed basins of the Caspian and Aral seas, and Lakes Balkhash and Tengiz. The total volume of water in the rivers is 101 km³.

The majority of Kazakhstan's glaciers are from a huge ice belt located in the south and east of the country, especially in the mountains of Tien Shan - Talas, Trans-Ili, Kyrgyz, Kungey and Terskey Alatau, Jungar Alatau, and Kazakhstan Altai with altitudes of more than 4,000 meters above the sea level. Furthermore, the country has more than 200 reservoirs with a total capacity of more than 95 km³. Groundwater reserves account for 58 km³ and exist in all mountainous regions of the country, however their distribution is extremely uneven.

Kazakhstan is rich enough in mineral waters. In the territory of the country, 45 deposits of mineral water have been explored, and are conditionally classified into five balneological groups according to their chemical composition, balneological and medicinal properties: iodine-bromide (5 deposits), silicon (4), and radon (7), ferric (2) and without specific components (27) (UNDP, 2004).

With regard to Water Management in the country, the Water Resource Committee of the Republic of Kazakhstan is responsible for regulatory, implementation and control functions in use and protection of water resources. The Committee has eight basins of water management such as Aral-SyrDarya basin, Balkhash-Alakol basin, Irtysh basin, Ural-Caspian basin, Ishim basin, Nura-Sarysu basin, Shu-Talas basin, Tobol-Turgai basin (Figure 2.3). Hydro-meteorological and environmental monitoring of water resources in Kazakhstan is conducted by Kazhydromet.



Source: Water Resource Committee of the Republic of Kazakhstan

Figure 2.3. Map of main river basins and rivers in Kazakhstan

2.1.3 Main water issues of the country

Numerous water-related problems have been observed in the country over the last decade. The fact that the country does not have outfall to the ocean led to water quality issues, while the fact that the half of stored water resources are formed outside its boundaries led to complexity of water supply issues.

Water quality in almost all water bodies of the country needs to be improved. Kazakhstan's water bodies are polluted by the mining, metallurgical, and chemical industries, and by sewage water from the cities and towns. Furthermore, the bulk of the water withdrawn for domestic needs poses a real environmental threat. Research has shown that the deterioration of the quality of groundwater is reflected in increasing total mineralisation, the content of nitrogen, chloride, and heavy metals, and the appearance of oil products, phenols, and malodorous and easily oxidised organic substances in the water. The most polluted rivers in the country are the Irtysh, Nura, Syrdarya, Ili, and Balkhash Lake (Ministry of Natural Resources and Environmental Protection of Kazakhstan, 2001).

The main water consumer in the country is agriculture, accounting for 75% of total water consumption, followed by industry (18-22 %), and domestic needs, which account for 7 % of total water consumption (Figure 2.4) (UNDP, 2004; Meyer & Lundy, 2014).

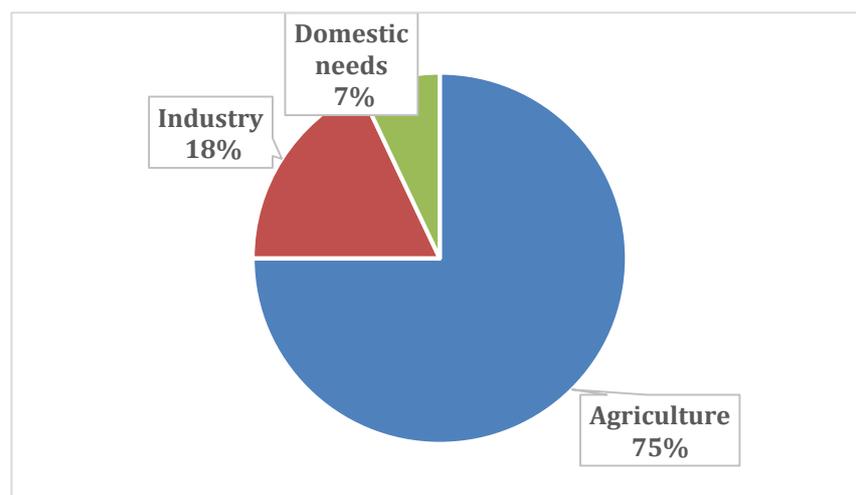


Figure 2.4. The main water consumers in Kazakhstan (%), 2014

It should be noted, that in the beginning of 2000, a reduction in total water

consumption has been observed in all major water consumer sectors of the country, compared to 1990. Nevertheless, domestic and industrial water consumption in the country increased by 3% in 2002 in comparison with 2001.

According to recent research, industrial water consumption already shows an increasing tendency (Meyer & Lundy, 2014). Moreover, the inefficient water consumption by all water consuming industries accelerates the concern of water loss. Forty percent of water losses occur within the irrigation network and in the fields, about 20-30% losses are explained by poor condition of the centralised water supply systems (UNDP, 2004).

Main source of water is groundwater for the population of the country. Centralised water systems provide water for the 70-75% of the population, decentralised water sources are used by 15-18%, open reservoirs are the sources of water for 12-15% of the population.

However, the quality of groundwater intended for human consumption is lower than the State regulatory standards. Around 28.5% of water supply pipelines are below of the sanitary requirements. In some regions, this figure increases even up to 89%, which is highly concerning. Moreover, the urban water supply systems in the country are unsatisfactory and with expiration of service period. The water distribution network is technically in a poor condition and their sanitary level is very low. In the case of rural population, small towns and villages suffer from a lack of centralised water supply and need to extract water from wells, and sometimes use surface water resources. The contamination of underground water and poor conditions of supply can lead to a serious health problem in the population. Thus, to ensure access of clean drinking water to the population, urgent measures must be taken to prevent reduction in quality of water resources (UNDP, 2004).

Water scarcity in Kazakhstan can negatively effect on development of country's economy and its sustainable development (Meyer & Lundy, 2014; UNDP, 2004).

Therefore, we can state that, critical water issues in the country require urgent measures and practices to efficient water management. More details about water issues in Kazakhstan are provided in the publication, *“Water Resources of Kazakhstan in the New Millennium”* (UNDP, 2004), which discusses in detail all aspects of the rational use and protection of water resources, the transboundary water issues. Furthermore, it provides information of the current status and environmental state of water resources, along with assessment of the water supply of different regions.

Since Shchuchinsk-Burabay resort area, located in Akmola region of the Northern Kazakhstan, is of particular interest for current research, an examination of its water resources and water issues is needed and is provided in the next section.

2.2 WATER RESOURCES AND ISSUES IN AKMOLA REGION: SHCHUCHINSK-BURABAY RESORT AREA

The hydrological resources of the Akmola region include surface and ground waters (lakes, rivers, and reservoirs) and belong to the Ishim River basin. The basin occupies 245,000 square kilometers in the territory of Kazakhstan. Its population is 1.9 million inhabitants, where 57% of the total (1.09 million) lives in rural areas. The large majority of water reserves of the country are accumulated in this basin. The water reserve of this basin accounts for 5.34 cubic kilometers. The large part of these reserves (55%) are contained in lakes, with river flow accounting for 34% and only 7% of the water resources of this area are collected in water storage. Ground water reserves comprise 4% of the water balance of the basin; that is the lowest in the country, representing only 0.19 cubic kilometers (30 times less than in the Balkhash-Alakol basin) (UNDP, 2004).

The main store of water resources is formed from precipitations in autumn and winter, which account for about 30% of the annual rate. Summer precipitation mostly comes as cloudburst, sliding down on high inclines of the relief into streams and lakes, and through soil saturated with water and evaporation. In the forests, summer precipitation is involved in moisture saturation of the aeration zone, which somewhat reduces the consumption of underground water for transpiration. (Sevkaznedra, 2014).

The largest rivers of the region are the Ishim, Koluton, Zhabay, Celety, Nura, Chaglinka, Kylshakty, and Ters-Akkan. There are about 4,000 lakes, of which about 90% have an area of up to 1 square km. The largest lakes are Tengiz, Korgalzhino, Maybalik, Zerenda, Shortandy, Ulken and Kishi Shabakty, Burabay. Most of the lakes of the region already have a negative water balance, where the water outfall is much higher than the water inflow. This unstable condition of its water resources provokes great concern.

However, the ecological status of the Shchuchinsk-Burabay resort area is currently very challenging due to the increase in water consumption and wastewater discharge, especially in the summer season. The water quality in the reservoirs and lakes is getting worse in the area every year, due to pollution from agriculture, industries, construction of houses and hotel complexes in the shore of the lakes, extraction of water from the lakes for drinking and industrial needs, and using the lakes to provide drinking water for animals. Continued use of underground water withdrawal will enhance the processes of exhaustion of natural reserves and reduce their share in supplying lakes (Ministry of Natural Resources and Environmental Protection, 2001). As a result of the reduction of lakes, the water mass should be expected to fall further, reducing the water area and the atmospheric supply, as well as growth of water loss due to evaporation and anthropogenic pressure (Sevkaznedra, 2014).

As discussed previously, Kazakhstan, and Akmola region especially, present a significant potential for tourism growth. However, the development of the tourism industry requires fresh water resources, both in quantity and quality (Tortella & Tirado, 2011). Thus, the improvement and protection of natural resources of the Akmola will constitute a key point for the success of the tourism industry of the region.

**CHAPTER 3:
THE TOURISM SECTOR IN KAZAKHSTAN**

3.1 THE TOURISM SECTOR IN KAZAKHSTAN

Tourism is one of the world's largest industries and one of the fastest growing economic sectors over the last six decades. Tourism is currently one of the main instruments for regional development for many countries (especially developing countries), and stimulates a significant number of new economic activities. Some figures can illustrate this evolution. The international number of inbound tourists has grown up from 25 million in 1950 to 1,326 million in 2017, and international inbound tourism revenues have increased from US\$ 2b in 1950 to US\$ 1,340b in 2017. Thanks to this exponential evolution, some estimations consider that the tourism sector accounts for 10% of world GDP (UNWTO, 2018). Tourism is an extensive and heterogeneous industry, including a diverse array of sub-sectors (i.e., accommodation, transportation, gastronomy, travel agencies, incoming services, theme parks, F&B companies, tour companies, etc.) (Hadjikakou et al., 2013).

Tourism activity also constitutes actually one of the largest employment sectors, and accounts for 10% of total jobs in the world (UNWTO, 2018). In this sense, the level of professionalisation has been growing up during the last decades, and actually requires professionals and specialists in different areas, such as experts related with the tourism intermediation, transport, new technologies applied to the tourism sector, accommodation management, or entertainment companies (Essex et al., 2004; Payne & White, 2014).

Furthermore, an important contribution of tourism to GDP, employment, export and investments is forecasted to increase in the future. Thus, the role of tourism in the economic development of countries worldwide is far too important to ignore. Moreover, tourism's influences social development of any country, along with its role in preservation of cultural and historical heritage increases its importance. In this context, one of the common tendencies all over the world is that countries are making strong strategic efforts and financial investment for tourism development. This is also the case in Kazakhstan, which is an emerging and still unexplored destination for visitors. The peculiarities of Kazakhstan have gifted the country with an opportunity to develop diverse offers in travel and tourism industry, such as

nature-based activities, including ecotourism and birdwatching in national parks and protected areas, authentic cultural tourism, skiing or hiking in the mountains, water sports, sunbathing, and swimming in the lakes among others (Visit Kazakhstan, 2018).

The territory of Kazakhstan is divided into Southern, Northern, Western, Eastern and Central regions. Each region has a great potential for tourism development, namely presence of historical sites, monuments, attractive landscapes, nature resources and unique lakes and rivers (Kuralbayev et al., 2017).

Kazakhstan constitutes an interesting case study, because of its history, geographical position, and size. It is the world's ninth largest and landlocked country, located in the center of Eurasia. The Republic of Kazakhstan has an administrative division under the national level composed of 14 regions and 2 cities (Astana and Almaty). Astana, as the capital of the country, and Almaty as the largest city (and the former capital), are administratively independent with statuses comparable to a region. Almaty City concentrates an important share of the country's total population. It is considered one of the most important country's business and financial centers, located in the South-East of Kazakhstan.

The territory of the state can be divided into four landscape zones: deserts (which supposes around the 44% of the national territory), steppes (26%), semi-deserts (14%), and forests (5.5%). Thus, the tourism activity in this country is mainly based on natural attractions (such as its various and unique geographical landscapes, natural parks, flora and fauna, etc.), jointly with an exquisite and authentic cultural heritage (Azhimetova, et al., 2013; Kuttybayeva, 2015). Thus, the diverse natural and cultural resources constitute its primary tourist attractions, and tourists usually try to witness nature and be immersed in a rich natural, cultural, and historical experience. Numerous national parks and more than nine thousands historical and archeological monuments are located in the territory of the country (Abubakirova et al., 2016). Moreover, the country is characterised by a number of natural recreational resources for the development of health tourism. Nowadays, there are 89 known sources of mineralised water treatment in Kazakhstan, used for drinking and balneological

purposes, and 47 deposits of therapeutic muds. There are around 120 sanatoriums, which operate on the basis of these mineral resources in the country (Yessengabylova et al., 2016). In this sense, we can state that the natural environment plays a major role in the Kazakhstan's tourism industry and constitutes its main competitive advantage. Thus, environmental sustainability must be a key issue in the national tourism policy. One of the steps to achieve this goal was the declaration of Kazakhstan as the first country in Central Asia to receive the status of a biosphere reserve by UNESCO.

Kazakhstan's economy is based mainly on the export of raw materials and energy resources. However, globalisation and competitive international context requires development of other sectors of economy. Attempts are being made to achieve this through development of competitive clusters in other economic sectors of the country, including tourism. Hence, during recent years the Government of the country is developing tourism sector to move towards a more diversified economy, which will not depend only on the export of natural resources (Abubakirova et al., 2016).

As indicated above, nowadays the development of the tourism sector constitutes a high priority for policymakers, and it is considered that it will be the second main driving force (after the energy sector) in the next future to increase national GDP and boost the economy of the country (Syzykbayeva et al., 2015). In this line, the government of Kazakhstan has developed several strategies and programs such as legislation "On tourist activity in the Republic of Kazakhstan", "The concept of development of the tourism industry of the Republic of Kazakhstan until 2023" (Department of Tourism in Akmola region, 2018). The main purpose of these strategies and programs is to promote the development of a competitive and modern tourism industry, totally integrated into the global tourism market and development of further international cooperation through the field of tourism.

As a result of the government's initiatives, tourism has increased in the country both in terms of tourist arrivals and income during last decade (Abubakirova et al., 2016).

According to the World Economic Forum's Travel and Tourism Competitiveness Report (2017) Kazakhstan is on the 81st place out of 136, which is four positions higher compared to the previous period (WEF, 2017). Some figures can illustrate the evolution of tourism. The number of international tourist arrivals increased to 7,701 million in 2017, which is 18% higher than in previous year (UNWTO, 2018). Kazakhstan was the host of the international exhibition “Expo 2017”, called “Future Energy” in 2017, which enhanced recognition of the country as a tourist destination. Furthermore, the strategies and programs developed by the government have pushed up many private initiatives in Kazakhstan’s tourism industry. As results, the range of services offered by local tour operators is increasing from year to year. For example, the number of tourist establishments has reached 2,987 in 2017, which is 8% higher than in 2016 (UNWTO, 2018).

In this sense, we can also observe a significant positive trend in the accommodation industry, where both quantitative and qualitative growth is observed during decade (Table 3.1). Concretely, the number of placements recorded increased from 239 to 2,997 (only 13% of all establishments is categorised by star ratings), with an average annual growth of 20%, and the number of rooms increased from 11,104 to 66,555, with an average annual growth of 14%, the number of bed-places increased from 22,172 to 154,625, with an average annual growth of 15% during 2003-2017 (Committee on Statistics of Kazakhstan, 2018). Furthermore, the number of overnight tourists in accommodation establishments has been increased from 1,034,168 to 5,279,406 in the period 2003-2017, with an average annual growth of 14.57% (Figure 3.1). However, in line of other world tourist destinations, in 2008 and 2009 the international tourist arrivals present a negative growth rate of 2.43% and 10.48% respectively, due to the negative impacts of the worldwide financial and economic crisis. But, in 2010, the percentage of tourists once again started to increase, and this increase continued into 2017 with placement rates of 2,997 units, 66,555 rooms, and 154,625 bed-places.

Table 3.1. Evolution of accommodation sector in Kazakhstan, 2003-2017

Region	Number of placements			Number of rooms			Number of bed-places		
	2003	2017	Average annual growth (%)	2003	2017	Average annual growth (%)	2003	2017	Average annual growth (%)
Akmola	6	338	33	347	5 016	21	612	12 440	24
Aktobe	4	95	25	357	1 862	13	448	4 465	18
Almaty	14	452	28	397	8 023	24	1 247	21 228	22
Atyrau	27	80	8	608	2 643	11	774	4 074	13
West Kazakhstan	3	71	25	190	1 503	16	310	2 863	17
Zhambyl	12	152	20	360	1 809	12	683	3 379	12
Karaganda	24	228	17	860	4 714	13	1 807	11 686	14
Kostanay	3	121	30	252	2 050	16	478	6 055	20
Kyzylorda	12	91	16	186	1 016	13	313	1 796	13
Mangistau	9	77	17	285	2 841	18	363	5 207	21
South Kazakhstan	14	209	21	614	3 553	13	1 042	8 910	17
Pavlodar	11	98	17	325	2 907	17	584	7 209	20
North Kazakhstan	4	96	25	177	1 437	16	268	4 180	22
East Kazakhstan	34	495	21	2 214	8 905	10	5 923	27 713	12
Astana city	26	224	17	928	9 744	18	1 758	18 857	18
Almaty city	36	170	12	3 004	8 532	8	5 562	14 563	7
TOTAL (Kazakhstan)	239	2 997	20	11 104	66 555	14	22 172	154 625	15

Calculation is based on the data from the Committee on Statistics of the Republic of Kazakhstan (2018)

Analysing more deeply the Kazakhstan tourism industry, we detect that the most important inbound markets are Europe (96.33%), East Asia and the Pacific (2.30%), Americas (0.53%), South Asia (0.56%), Middle East (0.11%), Africa (0.03%) and other countries (0.13%) (Figure 3.2). With respect to the purpose of travel, the major number of tourists usually visit the country for holidays, leisure and recreation purposes (85%), while only the 15% of tourists traveled to Kazakhstan with business and professional purposes. In 2017, the travelers spent 1,990 US\$ Mn, of which 89% was expenditure for travel purposes, and 11% was for passenger transport. Expenditure for personal reasons (91%) was higher than for professional purposes (9%) (UNWTO, 2018).

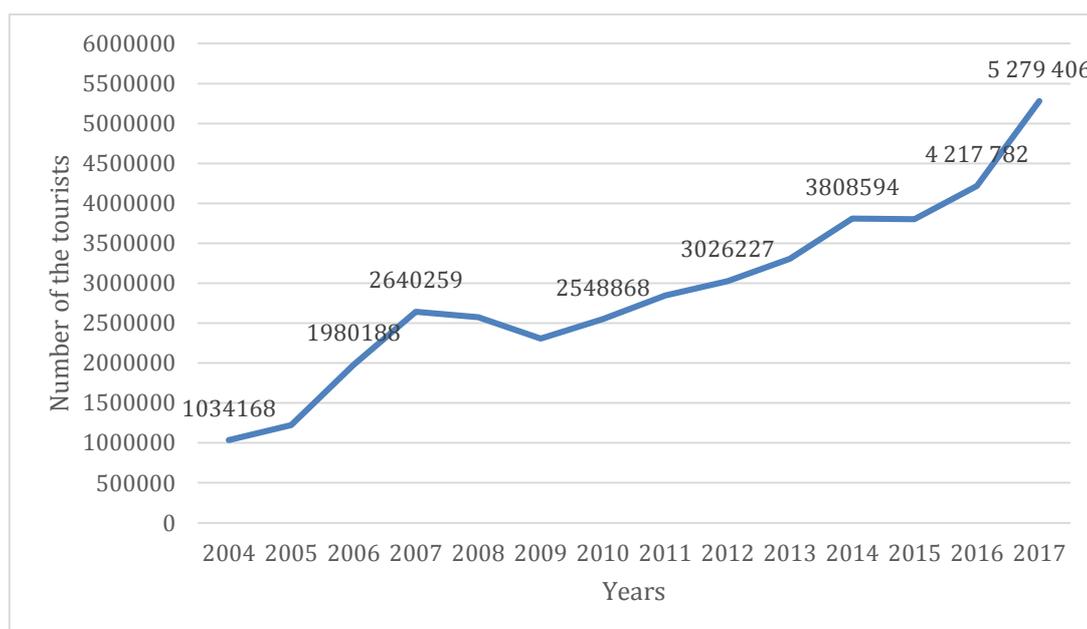


Figure 3.1. Number of the tourists on the placements for the period 2003-2017

Sources: Committee on Statistics of the Republic of Kazakhstan (2018)

A positive trend has been observed with regard to the domestic tourism. Total number of the trips reached 8,603 million in 2017, where overnight visitors (tourists) represent 87% and the Same-day visitors (excursionists) represent 13%. Most of the

people traveled for personal purpose (91%), while 9% of the individuals traveled with professional or business motives. Package tours are not popular in the country and were used only by 0.02% of the travelers (UNWTO, 2018).

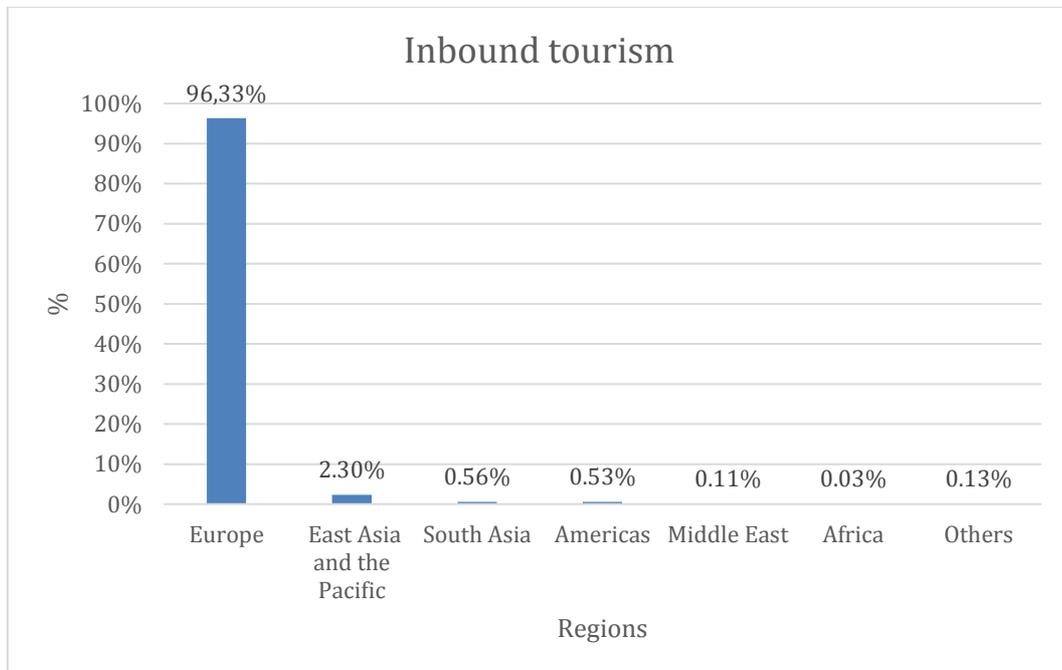


Figure 3.2. Arrivals to Kazakhstan by regions in 2017

Sources: UNWTO (2018)

Analysing the Kazakhstan outbound tourism, we observe that the total number of the departures in 2017 was 10,261,000, which is higher compare to inbound tourism. Total expenditure of Kazakhstani people in 2017 was 1,886 US\$ Mn.

However, despite the increasing tendency of tourism development indicators in Kazakhstan, the share of tourism in the national total GDP is only nearly 1.6% (WEF, 2017). Tourism is not yet in the level of its development adequate to the potential and abilities of the country. Natural resources, rich cultural and historical heritage can not be sufficient for the tourism development. A similar situation in tourism sector development is facing neighbor country Uzbekistan (Sobirov, 2018). Thus in

order to increase the role of tourism in increasing the country's GDP, it is necessary to address a number of challenges related to infrastructure, technology, prices for tourism services, problems with charter flights, lack of professional skills (Smailova, 2012; Syzdykbayeva et al., 2015). According to Abubakirova et al. (2016) one of the biggest issues of tourism in Kazakhstan is "the insufficiency of demand" due to the lack of effective marketing strategy. In this context, Sobirov (2018) emphasizes the importance of deep understanding of consumer behavior, in particular, consumer's buying decision-making process. The author believes that it will enable marketers and tourism businesses to better understand the consumer demand side and therefore, develop effective marketing strategies to favor supply sides.

Furthermore, insufficiency of educated and qualified staff in tourism industry is another issue. Airport conditions and visa procedures should be simplified for international tourists. Some researchers indicated as one of the major problems of tourism business development in the country is the lack of mechanisms of state support (Zhidkoblinova, 2013). Another concern is traveling conditions from one part of the country to another, which is complicated due to the poor development and weak conditions of the infrastructure - roads, transport, and lack of hotels of acceptable quality in small cities and towns, high prices for air travel access (Kuralbayev et al., 2017). Infrastructure investments are usually concentrated in major cities of the country. Nevertheless, a recognition of tourism sector as an economic activity at regional levels can be more successful. Therefore, a deeper look to the case of Akmola region can be useful, as the region with a high potential for tourism industry development.

3.2 SHCHUCHINSK-BURABAY RESORT AREA OF AKMOLA REGION

Akmola region is located in the northern part of the country, founded in 1939. The area of the region is 146,200 km². The administrative center is Kokshetau city, founded in 1824. The relief of the territory is diverse: most parts are covered by steppes, upland, plains and river valleys, and mountains covered with forests. Having such a beautiful landscape with a magnificent combination of rocky mountains, coniferous forests, lakes with comfortable beaches, recreational areas, Akmola region is considered to have good potential for tourism development.

Akmola region, having such a unique natural potential as Burabay, Zerenda, Korgalzhyn among others, is able to occupy its place in the system of international tourism. There is an opportunity to develop various types of tourism, such as hunting, fishing, water-sports and ecotourism (Department of Tourism in Akmola region, 2018).

Nowadays the tourism industry is one of the priority sectors of the economy in Akmola region. The tourism industry is composed of more than 700 enterprises (356 accommodation facilities, 45 sanatorium, resort institutions, 266 subjects of roadside services, 68 travel agencies licensed to carry out tourist activities, 3 state national natural parks). As indicated in the table 3.2, the number of tourism companies in Akmola region has seen a general increase in recent years. The number of accommodation facilities increased up to 356 in 2018, the number of rooms accounts for 5,350 and the number of beds is 13,464. The amount of services provided by accommodation facilities was 5,028,500 tenge in 2018, which is for 12.3% more compare to previous year.

Table 3.2. Main indicators of tourism development in Akmola region, 2018

INDICATORS	Value 2018
Number of tourism enterprises	700
Number of accommodation facilities	356
Number of rooms	5,350
Number of beds	13,464
The volume of services provided by the accommodation sites	5,028,500

Sources: Department of Tourism in Akmola region (2018)

The region also contains several national natural parks, such as ‘Kokshetau’, ‘Buiratau’ and ‘Burabay’. Furthermore, the most important and internationally well known is the ‘Korgalzhyn State Nature Reserve’, included in the List of World Natural Heritage UNESCO (Department of Tourism in Akmola region, 2018).

Akmola is the most dynamic region of Kazakhstan in terms of the evolution of the accommodation capacity. It is the first region of the country by the increase in the number of establishments and of bed-places and the second by the increase in the number of bedrooms (Figure 3.3). Having enough recreational potential and infrastructure endowments, Akmola region has actually been selected as a priority region for tourism development.

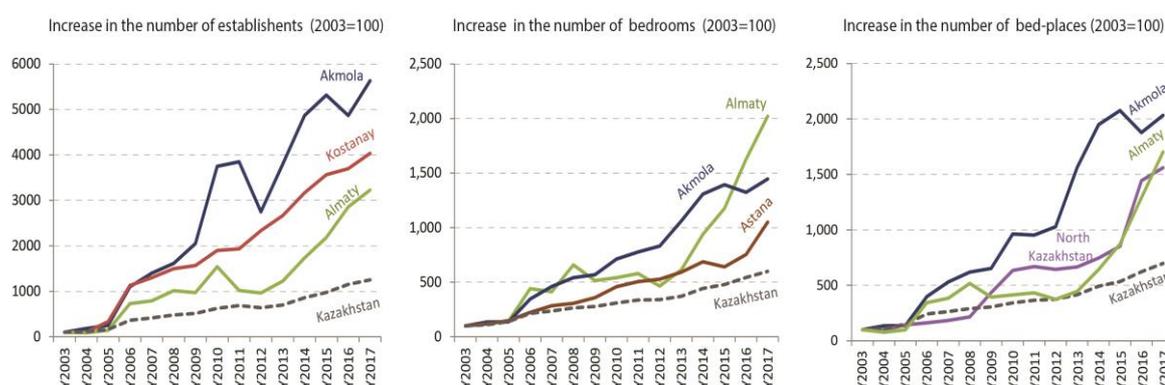


Figure 3.3. Regions, with the most dynamic accommodation sector, 2003-2017

Sources: Committee on Statistics of the Republic of Kazakhstan (2018)

Within Akmola region, a special attention and in a high priority for development of tourism is the Shchuchinsk-Burabay resort area. Its development is determined by series of national policies and programmes, such as “Law on Tourist activity in the Republic of Kazakhstan”, the “Concept of development of tourism in the Republic of Kazakhstan until 2023”, the “Tourism Development Program in Akmola region for 2017-2019”, as well as the President's Nazarbayev instructions on the systematic development of Shchuchinsk-Burabay resort area until 2020 (Department of Tourism in Akmola region, 2018). Furthermore, foreign investments are planned for development of tourism in the region. For example, the value of some projects planned to be implemented raise to 3 billion dollars (Abubakirova et al., 2016).

3.2.1 Evolution of tourism in the Shchuchinsk-Burabay resort area

The Shchuchinsk-Burabay resort area is situated between 52°50'/53°10' North latitude and 70°00'/70°40' East longitude in the Akmola region, within the Burabay district, around 100 km east from Kokshetau city, the administrative centre of Akmola and 290 km from the capital Astana. The most populous towns of the district are Burabay and Shchuchinsk, with a total population of about 75,000 people (Department of Statistics in Akmola region, 2018).

Shchuchinsk is located on the coastal zone of the Shortandy Lake and is the main transport hub between the resort area and Burabay National Nature Park. Burabay town, located on the coastal zone of the Burabay Lake, is the centre of the Shchuchinsk-Burabay resort area, focusing mainly on tourism activities. This area is part of the national heritage of the Republic of Kazakhstan, where natural therapeutic resources and attractive landscapes have been decisive in acquiring its status. The region has an accessible geographic location, unique natural and climatic conditions, attractive landscape with a great combination of rocky mountains, pine forests, lakes and recreational areas.

The climate of the resort is sharply continental with a long winter and a relatively short summer. The average daily air temperature in January is about -17°C, minimum temperature is -42.5 °C. The average air temperature in July is + 20°C, the maximum temperature is + 37.6°C. The average amount of precipitation is 331 mm/year, and is the main supply of surface and ground water. About 70% of it falls during the warm period of the year and the region is considered arid in terms of moisture availability (Sevkaznedra, 2014). Land use mainly features flatland steppes and forested hills. The highest peak of the region is the top of Kokshetau Mountain (Sinyuha, 947m), situated between Ulken Shabakty and Burabay Lakes. The mountain range of Kokshetau stretches for more than 30km from north to south. The slopes of the mountains are covered with pine and pine-birch forests which dominate the natural appearance of the area and create a favourable microclimate.

The lakes of the Shchuchinsk-Burabay resort area are of immense cultural, recreational and environmental value. Acknowledgement of these values have significantly contributed to the successful nomination of the lakes of the Northern Kazakhstan as a UNESCO World Heritage Site in 2008.

The environment of the Burabay area is suitable for various types of tourism such as ecological, nature, health, cultural, educational, mountain and adventure tours (Table 3.3). Mountainous landscape, pine forests, clean air, mountain lakes, rich hydro-mineral resources in the surrounding areas are important curative factors that attract tourists to the area (Pyatov, 2007).

Table 3.3. Tourism offers of the Shchuchinsk-Burabay resort area

Typology	Main tourism assets and offerings of Burabay region
NATURE TOURS	<ul style="list-style-type: none"> - Bus excursions to Khan Asuy, Abylay Khan village, Blue Way Cordon - A walking tour Abylaikhan Meadow - Kenesary Cave with a visit to the Blue Bay Cordon and Keresary Cave - Lakes: water sports, sunbathing, swimming
MOUNTAIN TOURS	<ul style="list-style-type: none"> - Climbing tours to Kokshetau Mountains - Climbing tours to Okzhetpes Mountains - Cycling tour along the Burabay National Park - Adventure Tour
HORSE RIDING AND CULTURE TOURS	<ul style="list-style-type: none"> - Horseback riding on the territory of Burabay National Park - Horseback riding on the territory of Jaylyau ethnographic village - Visiting museums of local history in honor of Abylay Khan - Visiting Nature museum - Visiting Shchuchinsk historical museum
MEDICAL AND HEALTH TOURS	<ul style="list-style-type: none"> - Holidays in Burabay health resort hotels ('sanatoriums') - Holidays in Shortandy health resort hotels ('sanatoriums') - Tours for Children in health and recreation centres
ECOTOURS	<ul style="list-style-type: none"> - Highlights of Akmola region - Shchuchunisk –Burabay resort area Lake Tour - Kazakh ethnographic aul - Burabay National Park Tour
BIRD EYE VIEW TOURS	<ul style="list-style-type: none"> - Birdwatching in Abylaikhan Meadow

Sources: Authors' elaboration from information published by Visit Kazakhstan (2018) and Department of Tourism in Akmola region (2018)

In order to preserve unique landscapes of nature, State National Nature Park "Burabay" was established in August 2002. There are 14 lakes with the surface area over 1 square kilometer each and a number of smaller lakes are situated on the territory of the national park (Figure 3.4).



Figure 3.4. The lakes of the Shchuchinsk-Burabay resort area

This area also includes an important set of hydrological resources with therapeutic and wellness properties, that made it the most important balneological area of the country, similar to other mountain balneological resorts located in other European countries like Karlovy Vary (Czech Republic), Baden-Baden (Germany), Bad Ischl (Austria), Montecatini Terme (Italy), Vichy (France) (UNESCO, 2016). These favorable natural, geographical, hydrological, and therapeutic conditions, joint to a favorable climatology make Shchuchinsk-Burabay one of the most important resort areas for medical and wellness tourism in the country. Thanks to these conditions, the Burabay region has been selected as a priority region for tourism development and the Government of Kazakhstan has developed various strategies and programs (Department of Tourism in Akmola region, 2018).

As a result, tourism industry started to grow in the region. For example, for the period 2003-2017, the number of accommodation establishments, rooms and beds in Akmola region has the highest growth in Kazakhstan. From only 6 establishments in 2003, the region went up to 338 establishments in 2017, with an annual average growth of 33%, considering that the Shchuchinsk-Burabay resort area accounts for around 65% of all tourism infrastructure in Akmola. Some detailed information on growth of accommodation establishments, rooms and beds is presented in the table 3.4 (Department of Statistics in Akmola region, 2018). During the summer period, the population of the area increases up to five times, while during weekends it may go up to 10 times. Budnikova and her colleagues (2010) reported that the number of tourists in the area was around 500,000 per year during 2006-2010. The number of tourists using accommodation establishments has increased as well, with an average annual growth rate of 15% in Akmola and 38 % in the Shchuchinsk-Burabay resort area for the period 2003-2017 (Department of Statistics in Akmola region, 2018).

As table 3.4 shows, both the Akmola region and the Burabay have experienced an annual average growth of 22% and 34% in terms of the number of tourism sector establishments during 2006-2015. Concerning the indicators such as number of rooms and beds, the table shows an annual average growth of 17% and 38% in Akmola

region and Burabay. Consequently, a growth have been observed in number of beds (Akmola region – 21%, Burabay – 47%).

Table 3.4. Indicators of tourism development in Akmola and Burabay, 2006-2015

Indicators /Years	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Annual average growth
Number of establishments, units											
Akmola	66	84	97	123	225	231	165	228	292	319	22%
Burabay	28	31	36	40	125	156	141	140	187	203	34%
Burabay (%)	42%	37%	37%	33%	56%	68%	85%	61%	64%	64%	
Number of rooms, units											
Akmola	1,200	1,601	1,880	1,974	2,475	2,696	2,886	3,682	4,539	4,838	17%
Burabay	201	403	529	907	1,230	1,453	1,639	2,256	3,008	3,173	38%
Burabay (%)	17%	25%	28%	46%	50%	54%	57%	61%	66%	66%	
Number of beds, units											
Akmola	2,444	3,245	3,787	3,990	5,893	5,827	6,287	9,572	11,922	12,703	21%
Burabay	367	769	1,030	1,925	3,310	3,211	3,608	6,045	8,233	8,704	47%
Burabay (%)	15%	24%	27%	48%	56%	55%	57%	63%	69%	69%	

Sources: Department of Statistics in Akmola region(2018)

It is noticeable that the Shchuchinsk-Burabay resort area is absolutely dominant within Akmola region, in terms of tourism development indicators such as (number of the placements, rooms, beds, number of visitors and volume of the services provided). This fact indicates that the Shchuchinsk-Burabay resort area is the leader in tourism infrastructure development and may serve as a good example for other planning regions in Akmola. Nevertheless, the analysis of inbound tourism to Burabay shows that the region is still not very attractive for the foreign guests as in the case of the entire country. Domestic tourism is dominating in the region (75% of all visitors). With regard to non-resident visitors, we observe that 13% represents

tourists from Russia, 5% from Germany, 3% from UK, 2% from USA and 1% from Austria and China (Figure 3.5.).

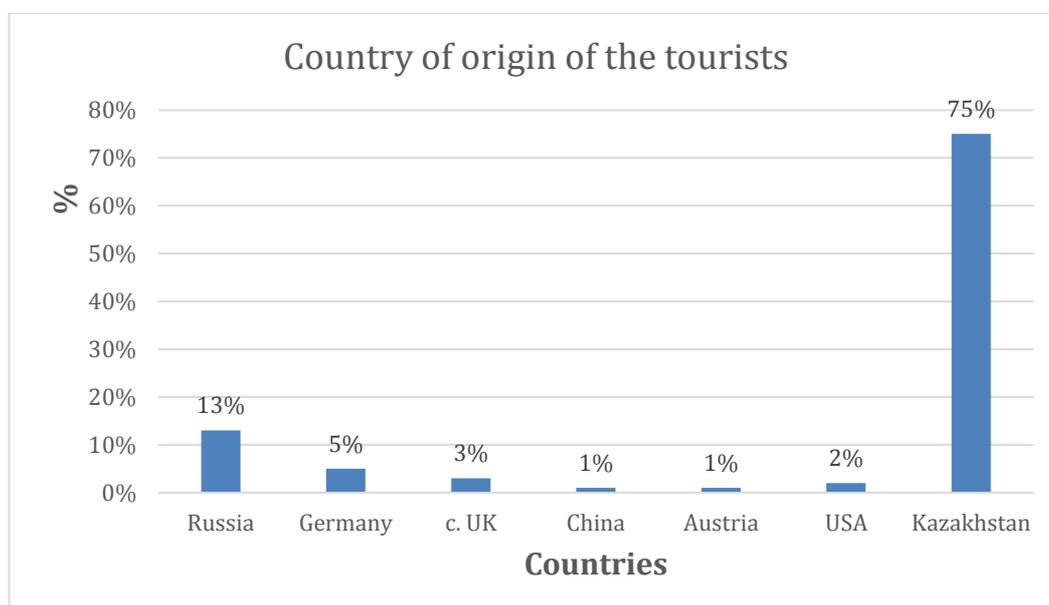


Figure 3.5. Country of origin of the customers in 2014-2015

Sources: Based on survey results April/May 2016

Slow development of inbound tourism from foreign countries in Akmola region can be explained by the distant location of the country from countries of tourism “donors”, inefficient development of transport structure, poor quality of tourism services, lack of professional staff in tourism, high prices for tourism services, lack of marketing in tourism industry (Smailova, 2012; Syzdykbayeva et al., 2015).

Currently the tourists visiting the area, are divided into 4 groups depending on the distance they have to travel to the Shchuchinsk-Burabay resort area.

- 1) Tourists, coming from the nearest cities, located at a maximum of 3 hours journey by car (Astana and Kokshetau).
- 2) Tourists, coming from cities located within a radius of 3 to 6 hours trips by car (Petropavlovsk, Kostanay and Karaganda). For this group of tourists duration of stay is longer than the weekend, as the distance passed by the car is considerable and should be compensated.

- 3) Tourists, coming from the rest of the country with a higher level of economic development (Almaty, Atyrau and Aktau). The distance also implies a longer period of stay, however frequency of travel is reduced from one to three times per year.
- 4) Tourists, coming from the other countries.

According to Department of Tourism of Akmola region, the number of the tourists to the area will increase until almost one million (table 3.5). However, the tourism industry will remain be attractive for the local people, which requires development of appropriate strategies and programs aiming to attract the foreign visitors.

Table 3.5. Forecasting potential tourists demand to the area

Tourism demand	2011	2020 (forecasting)
The cities located less than 3 hours distance by car	240,000	600,000
The cities located less in 3-6 hours distance by car	83,930	230,000
Other cities of Kazakhstan	34,000	70,000
Other countries	8,000	20,000
Total	365,930	920,000

Sources: Department of Tourism in Akmola region (2018)

Tourism is usually concentrated during high season months (around the 70% of tourist arrivals are concentrated during the period from May to August). The direct consequence of this seasonal pattern is that the population of the area during the summer season rises up five times the residents, and ten times during the weekends.

Table 3.6 shows the lodging facilities occupancy level in high and low seasons during 2014-2015. High season is considered from May until August, and low season is considered from September until April. Minimum average occupancy rate in high season in 2014 was 50%, maximum rate was 100%, and average occupancy rate was 80%. In 2015 the numbers have increased for 5% in minimum occupancy rate in high season, for 2% in average occupancy rate during the same season. In low season

occupancy rate has failed until 10% in minimum in 2014-2015, maximum occupancy rate was 90% in 2014 , for 10% higher than 2015, medium occupancy rate in two years was 34%.

Table 3.6. Occupation levels of the lodging facilities at the Shchuchinsk-Burabay resort area, 2014-2015

Variables	Min.	Max.	Mean.	Std.dev.
Average occupation in high season, 2014	50%	100%	80%	0.13
Average occupation in low season, 2014	10%	90%	34%	0.20
Average occupation in high season, 2015	55%	100%	82%	0.12
Average occupation in low season, 2015	10%	80%	34%	0.18

Note: High season is considered May-August, low season is considered September – April.

Sources: Survey results (2016)

In general, the tourism indicators show a growth of the tourism industry during the last ten years. Obviously, it has an economic importance, since it provides good employment opportunities and other benefits to the local community.

Nevertheless, a set of issues concern the effectiveness of the industry, including seasonality, dependence of the sector on domestic market, poor tourism infrastructure and inadequate services, a lack of professional staff and weak marketing strategies. Therefore, in order to better meet the needs of the tourists and increase attractiveness of the country and its regions, it is necessary to take further measures to promote a competitive tourist industry in the region, develop a highly effective destination marketing strategies. A certain steps should be taken towards creating and developing a competitive and attractive tourism products and services for the tourists along with active positioning of Akmola region as a tourism destination in the domestic and international markets.

Undoubtedly, tourism development generates considerable economic benefits, however at the same time, tourism can create additional pressure and a demand for natural resources, especially for water. Thus, a careful attention should be paid to the limited natural resources, such water during planning and development of tourism.

CHAPTER IV: ANALYSIS OF THE WATER SITUATION AT THE SHCHUCHINSK-BURABAY RESORT AREA

4.1 LAKES AS A TOURISM ATTRACTION

We can say that water generates and is an important attractiveness for tourist activity and, thus, a large proportion of tourist destinations are concentrated in or near to water-based attractive areas. According to Gladstone et al. (2013) coastal areas are the most attractive for tourists, thus during the last decades several concepts such as marine, coastal, river, and more recently lake tourism have been discussed in tourism literature (Hall & Härkönen, 2006; Rodrigues et al., 2015). In this context, the number of the tourists visiting coastal areas is increasing along with its relevance for the tourism industry. For example, coastal tourism is major component of the economy for Zanzibar, where its share in country's GDP is 25% (Lange, 2015).

We can find some studies related with tourism and water resources on islands and sea coastal areas, however, there is a gap on research in the case of lakes areas. Regardless the limited research in lake tourism and lake destinations, there is a number of countries where the lakes play essential and unique role in promoting the country (place) as a tourism destination (Hall & Härkönen, 2006). For example, lakes are the key attraction for many destinations like Lake Balaton in Hungary, the Great Lakes in the USA, Lombardian lakes in Northern Italy, Finnish Lakeland, Lake District in the UK, etc. The lakes have both natural and cultural resources for attraction of the tourists. Lakes can constitute a key attraction for many tourist destinations, despite this, lakes are also a crucial freshwater resource for agriculture, industry, and household sectors. In turn, Kurlito (2013) also points out the economic importance of the lakes, its role in supporting not only tourism, but also other human activities, such as agriculture, production of food and electricity supply, which increases the concern towards protection of environmentally vulnerable water resources such lakes.

A growing interest at lake destinations increases the concern towards the protection of lakes water resources. Thus, studies that analyse the consequences of lake tourism development, the links between lakes water quality changes and tourism, and the perceptions of visitors on lake destinations can be actually useful

for destination managers or policymakers of those areas. For example, Lee and Lee (2015) conducted a research on impact of water quality on the visual and olfactory satisfaction of tourists at Taiwan's Hsinchu Fishing Port. This research obtains evidence about the importance of tourist destination image, as the quality of the environment could influence on their decision to choose the destination. The researchers consider that it is important to understand the tourist's visual and olfactory satisfaction on water quality in order to promote in fishing ports. They measured 14 water quality components and defined the parameters affecting to visual and olfactory satisfactions of visitors.

Thus, and based on discussion above, we can state that the freshwater resources in the lakes are crucial for the survival and development of the nearby societies. Thus, it is necessary to discuss and understand the potential impacts on lakes water resources of the different economic sectors and activities like, for example, the tourism sector. But also the potential effects of other natural factors, such as the effects of the climate change should be considered. Therefore, next sections attempt to expose several theoretical and empirical studies related to the impacts of tourism activity (section 4.2), but also other anthropogenic activities (like the land use, the population increase, and the human direct and indirect activities) on lake environment (section 4.3).

4.2 EFFECTS OF TOURISM DEVELOPMENT ON LAKES' WATER ENVIRONMENT

The growth of tourism industry has led to increasing concern about the sustainability of the lakes environment, especially when the water resources are limited or already contaminated. Some authors state that lakes are one of the most sensitive and vulnerable providers of water for many tourist destinations, which are suffering from pressure arising from tourism (Hall & Härkönen, 2006). Thus, analysis of tourism impacts on lake environment can be essential in order to monitor and effective management of water resources and tourism development.

The tourism industry is extensive and highly diverse, offering a different array of services, which can lead to negative direct and indirect impacts (externalities) on lakes' environment. Tourism activities require water, both in quantity and quality, for direct and indirect consumption (Rico-Amoros et al., 2009).

In the recent years, the development of tourism activities has increased the levels of contamination and overexploitation of several water resources (i.e., sea water, lakes, rivers, basins, etc.) in several tourist destinations around the world (Gössling et al., 2012, 2015). Furthermore, tourism growth generates water supply scarcity, which becomes the main obstacles to sustain further tourism development. This issue is more important if we take into account that the competitiveness of many tourist destinations is based on qualitative water resources and water-based attractions (i.e., rivers, waterfalls, lakes, hot springs, seaside, etc.), and thus, any negative impact can compromise these attractions (i.e., low levels of water during summer, poor quality of bathing water, etc. (Essex et al., 2004; Eurostat, 2009; Gössling et al., 2012). This is also the case of lake destinations.

Tourism services and activities can affect shorelines directly and indirectly, with an impact depending on the type, size and depth of the lakes. With regard to direct impacts of the tourism activities, it depends on the type of activities undertaken in the lakes, the number of people engaged in them, the environment etc. For

example, Dokulil (2014) considers that certain activities such as swimming, boating and angling have a greater role. As for indirect impacts, airports, accommodation facilities, restaurants and shops produce high quantities of wastewater generating pollution of water resources. Moreover, the situation is compounded by the fact that the tourism industry development usually results in a considerable amount of water consumption for accommodation establishments. A large part of this is due to the use of water by tourists within their rooms, but also within the complementary services and facilities: swimming pools and spa centres, gardens, golf courses etc. This leads to water shortages and degradation of water supplies, as well as generating a great volume of wastewater.

The development of tourism activities, along with other human activities, has led to a growing use of fossil fuels. Over time, this has led to high levels of greenhouse gases in the atmosphere, an important cause of climate change (Dibike & Coulibaly, 2005). Moreover, increasing water temperatures caused by climate change favours algae blooms during high tourist season, consequently with negative impacts upon the lake environment. In turn, both weather changes and algae blooms have negative impacts on tourism (Foghagen, 2014). All these indirect impacts lead to the pollution of lake water and cause changes in the hydrological cycle of lakes (Dokulil, 2014; Ostendorp et al., 2004). This idea has been supported by Gladstone et al. (2013), arguing that tourism has much more than simply a direct impact from tourist activities on coastal areas.

There has therefore been an increasing interest in recent years in assessing the ecological state of the lakes by analysing relevant water quality parameters (Bhateria & Jain, 2016; Kumar et al., 2014; Romanova & Kazangapova, 2013). For example, the study of Kumar et al. (2014) shows the importance of water quality parameters in analysis environmental state of the rivers and lakes in India. The authors used a number of parameters such as total solid, pH, dissolved oxygen, biochemical oxygen demand, total phosphorus, nitrates, and turbidity for the calculation of the water quality index of The Chambal River and revealed that water of the river under the Good quality category. Such findings are explained by little

anthropogenic impacts on the river's water quality. The work of Islam et al. (2012) has examined the shrinkage and pollution of urban lakes in Bangladesh based on combination of field work, government reports and analysis of satellite imagery. The researchers revealed that the majority of the lakes lost water over the 66 years' time interval due to poor management strategies in the past.

Some research has been conducted by analysing the links between water quality and quantity and changes of water bodies and tourism worldwide (Burak et al., 2004; Hadwen et al., 2003; Kurleto, 2013; Lange, 2015). Garcia and Servera (2003) evaluated the impacts of tourism development on water demand and beach degradation on the Island of Mallorca. It is a good example of proving that tourism has growth rapidly in the island as a main economic tool. Despite the positive effects of tourism growth, it has had severe consequences for the island such as overcrowded beaches, massive construction of the tourist facilities on the coastal zone, high water demand during the dry season. Thus, the authors pointed out that monitoring the environmental state of water bodies on time is crucial in achieving sustainability of the area. According to Burak et al. (2004) groundwater used to satisfy the demands of accommodation establishments lower the water level and result in lake water intrusion in the most coastal aquifers. Most of the Mediterranean coastal zones have developed tourism as high-income industry in short period of time that lead to changes in groundwater. One of the examples is Turkey, where heavy construction of tourism facilities on coastal areas resulted to pollution of water resources, furthermore the absence of wastewater treatment facilities and their inadequate operation lead to pollution problems. Kurleto (2013) also mentioned the impact of high degree of seasonality on the lakes. During summer time the flow of the tourists increases sharply, that lead to level of direct and indirect contamination of the lakes. Moreover, the fact that there are 53 various activities that could be practiced on the lake accelerates the importance of the lakes for tourism sector. According to Zhong et al. (2011), pollution from development of tourism activities could lead to eutrophication of water, occurrence of infectious disease and degradation of water saving forests. They consider that tourism recreational activities such as boating, fishing, rafting, swimming result

to negative impacts on water environment. Furthermore, they indicate that the oil and heavy metals from motor boats or ships cause the water pollution. Several empirical studies have been done on the tourism impact on water environment in China. Most of the findings are in line on negative impacts of the tourism industry. For example, the sewage discharged from tourism resort areas has polluted the watershed of the Erdaobai River, which resulted to increasing level of some organic pollution indicators by 30%. In the case of Bitahai Lake in Yunnan Province, the bacterial levels of surface level of the lake has increase three times as a result of exponential ecotourism growth.

The research conducted by Hadwen et al. (2003) on the impact of tourism in dune Lakes in Fraser Island in Australia revealed that three lakes out of 15 are strongly used and most threatened by tourist activities. One of the reasons is location of the lakes in walking distance and accessibility of the lakes to parking facilities, the researchers have found out that these lakes are susceptible to nutrient additions rising from tourism development, thus management of lakes planning is required to preserve natural resources. Hadwen et al. (2003) have used Tourism Pressure Index (TPI) to define the relative pressure of tourism activities on each lake in the region, taking into account the factors related to publicity, accessibility and facilities provision.

However, due to the absence of a conceptual model of possible direct and indirect impact of tourist activities on coastal areas, it is difficult to apply an existing scheme. Moreover, according to Gladstone et al. (2013), there is a profound lack of tourism statistics, especially for some recreational activities that are of great importance. Kurlito (2013) considers that the objective assessment of the influence of the tourism industry on the lake ecosystem is quite complicated even for a country like New Zealand, which is famous for its huge number of the lakes, which represent the main tourist attractions for this destination.

4.3 OTHER FACTORS INFLUENCING LAKES' WATER ENVIRONMENT

According to Alifujiang et al. (2017), most of the studies on the impacts of anthropogenic factors on the lake environment are focused on single aspects, such as changes in physicochemical parameters of lake water, influence of climate change, population increase, changes in land use, etc.

There have been a number of empirical studies on lake sensitivity to climatic variables. Most of them conclude that the water loss and shrinkage in lakes are induced by low precipitation and high evaporation (Angel & Kunkel, 2010; Dibike & Coulibaly, 2005; Ostendorp et al., 2004). For example, strong water decline caused by climate change was observed in the case of Lake Constance in Europe during 1930-2002 (Ostendorp et al., 2004). Climate change is a global trend, affecting the hydrological cycle of lakes worldwide. This trend may have a long-term impact on open water bodies and significant changes are expected to occur in water availability of the lakes. With increasing concerns on the impact of climate change on lake water and the rapid development of human society, it is becoming crucial to examine the influences of other anthropogenic factors. Recent research has shown that the main stressors determining declines in water level should be examined as a combination of climatic and anthropogenic factors (Cai et al., 2009). For example, Alifujiang et al. (2017) investigated and empirically tested the main driving forces influencing decreasing water level of the Lake Issyk-Kul in Central Asia, by using a dynamic simulation model. The model has been validated by testing historical data used for the period 1980-2012. Researchers revealed that the factors influenced on the change of lake water level are mainly the increasing decreasing water withdrawal from lake tributaries. A number of other factors such as population increase, changes in land use and water demand also forced the lake water level variations. Bucak et al. (2017) estimated the future levels of the Lake Beysehir in the Mediterranean region and influences of climate change and land use upon it by applying Soil and Water Assessment Tool (SWAT) model with a Support Vector Regression Model (SVR). The empirical results indicate that Mediterranean regions are in a high risk of freshwater loss caused by continuous climate changes and forecasted a 15-52% reduction in total flows by the end of the century. It is interesting to note that, according to research results, land use is not an important

factor influencing the hydrological cycle of the lake. However, the development of agriculture and demand for its irrigation will exacerbate water stress. Yuan et al. (2015) also revealed that water level decline of the Dongting Lake in China might be caused by the combination of the climatic and anthropogenic factors, where rainfall is retained as main stressor during the period 1961-2002, while dam construction is more responsible for water level decline during 2003-2010. According to Lake and Bond (2007), many freshwater ecosystems in Australia have been highly affected due to the increasing water demand of agriculture, urban and/or industrial sectors. Jalili et al. (2016) argued that dramatic decline in water level of the Lake Urmia in Iran, the second largest hyper-saline lake on Earth, could have been caused by climate change or other anthropogenic effects; however, it could also be a part of natural climate variability. The results of the non-parametric trend analysis showed that the recent fall in water level of the Lake Urmia is due to anthropogenic impacts rather than natural variability. The negative influence of population density and infrastructure on lake environment has been observed in the case of Lake Constance in Europe (Ostendorp et al., 2004).

To conclude, it can be stated that changes in lakes' environment situation can be explained by the combination of various natural and anthropogenic factors. In turn, tourism activities appearing around the lakes compete for water resources for their operation and thereby create a pressure on water resources. This is the case of Shchuchinsk-Burabay resort area of the northern Kazakhstan, where development and heavy concentration of the accommodation settlements around the lakes can be responsible for shrinkage of surface area and quality of water. Thus, a deeper look into the lakes of the Shchuchinsk-Burabay resort area becomes crucial.

4.4 DATA AND METHODOLOGY

4.4.1. Data collection

The present study has applied statistical analysis by processing the official data of the Committee on Statistics of the Republic of Kazakhstan, Department of Tourism and Department of Statistics in Akmola region and Water Resources Committee of the Republic of Kazakhstan.

Data on water quality of the lakes were collected from the Department of Geology and Subsoil Use “Sevkaznedra” and RSE “Kazhydromet”. The official documents providing a public framework for our study are the “Law on Tourist activity in the Republic of Kazakhstan”, the “Concept of development of tourism in the Republic of Kazakhstan until 2023”, the Tourism Development Program in Akmola region for 2017-2019”, as well as President Nazarbayev’s instructions on the systematic development of the Shchuchinsk – Burabay resort area until 2020 (Government of the Republic of Kazakhstan, 2013, 2014, 2015).

The information related to geographical location and main features of the Shchuchinsk-Burabay resort area along with the evolution of tourism is provided in the third chapter. The current chapter is designed to analyse the environmental state of the main lakes of the region.

Surface water sources of the region are represented by a series of large and deep lakes, which have been formed by tectonic movement. They are fed by atmospheric precipitation, underground sources, and partly by small rivers and temporary streams. The water level constantly fluctuates, as in summer time some small lakes might dry up and turn into dry “sores” with rare vegetation, which arise environmental concern. The lakes of the Shchuchinsk-Burabay resort area are of immense cultural, recreational and environmental value. In this study, we examine four main lakes of the Shchuchinsk-Burabay (Burabay, Shortandy, Ulken Shabakty and Kishi Shabakty Lakes). Some characteristics are described below (Table 4.1).

Table 4.1. Morphological characteristics of the lakes

<i>Lakes</i>	<i>Length (km)</i>	<i>Width (km)</i>	<i>Depth (m)</i>	<i>Max.depth (m)</i>	<i>Water catchment area (km²)</i>
<i>Burabay</i>	4.6	3.2	2.8	7.0	164.0
<i>Shortandy</i>	7.2	3.7	8.2	19.0	69.4
<i>Ulken Shabakty</i>	8.3	5.1	8.2	33.0	150.0
<i>Kishi Shabakty</i>	8.3	2.6	4.2	15.0	139.0

Sources: Sevkaznedra (2014)

Shortandy Lake is located north of the Shchuchinsk city. Maximum length is 7.2 kilometers, width is 3.7 kilometers. The basin occupies the southwest part of the national park. Water catchment area is 69.4 square kilometers. Maximum depth is 19 meters. Most of the surface basin (85%) is covered with pine forest, and other parts are used for gardens, urban development. The lake is characterised by freshwater, the total mineralisation is 289 - 291 mg / l.

Ulken Shabakty Lake is located north of Burabay Lake. Water catchment area is 150 square kilometers. Length of the lake is 8.3 kilometers, width is 5.1 kilometers. Maximum depth is 33.3 meters. Total length of the coastline is 31 kilometers. The lake has a number of small islands covered with vegetation. The number and area of islands are increasing each year. The lake is slightly saline with a total mineralisation of water of 853 - 918 mg / l.

Kishi Shabakty Lake is located in the north-eastern foot of the Kokshetau mountains. Water catchment area is 139 square kilometers. Maximum depth is 15.5 meters. Length of the lake is 8.3 kilometers, width is 2.6 kilometers. Sixty five percent of water catchment basin is used for pasture. Kishi Shabakty is undrained lake. The water of the lake is used for drinking livestock and the technical needs of the surrounding village.

Burabay Lake is located on the territory of the Burabay National Nature Park. The lake water is healing, the famous resort Burabay is located on the east coast of the lake. Water catchment area is 164 square kilometers. Total length of the coastline is 13-15 kilometers. Maximum length is 4.6 kilometers, maximum width is 3.2 kilometers. Maximum depth is 7 meters. Coastal area covered with pine trees. Burabay is drainage lake, 4 small rivers flow into it and one river is flow out from it . The lake is characterised by fresh water, the total mineralisation of water is 216 - 251 mg / l (Sevkaznedra, 2014; SNNP Burabay, 2017).

4.4.2 Indicators of the lakes' water quality changes

In order to analyse water quality of the lakes, we compute the indicators: water pollution index and water quality variance rate.

Water Pollution Index

Water Pollution Index (WPI) has been used to assess water quality of the lakes. This index is a coefficient, representing the average proportion of exceeding of maximum permissible concentration (MPC) of individual parameters. WPI is calculated strictly on six parameters having the highest values of given concentrations, whether they exceed MPC or not, where Potential of hydrogen (PH), biological oxygen demand (BOD5), and dissolved oxygen content (DO) are mandatory parameters (Kazhydromet, 2017).

$$WPI = \frac{1}{n} \sum_{i=1}^n \frac{C_i}{MPC_i}$$

where:

C_i – component concentration (value of the physico-chemical parameter);

n – number of parameters, used to calculate the index, $n = 6$;

MPC_i – established standard value for the special type of the water body.

Depending on the WPI value, the water objects are divided into following classes (Table 4.2).

Table 4.2. Quality class of water bodies

Quality class	Characteristics of water quality	The value of WPI
1	Very clean	$\leq 0,3$
2	Clean	0,31 - 1,0
3	Moderately polluted	1,01 - 2,5
4	Polluted	2,51 – 4,0
5	Dirty	4,01 – 6,0
6	Very dirty	6,01 – 10,0
7	Extremely dirty	$> 10,0$

Sources: Kazhydromet (2017)

Water quality variance rate

Water quality variance rate has been applied to reveal the qualitative changes of water quality parameters. Water quality variance rate (r) indicates the qualitative changes of water parameters during the last decade for four main lakes in the region. The values of " r " are over "1", represent a tendency of improvement, while the values are lower than "1", show a worsening tendency of the water quality, and if " r " is equal to 1, it can be considered that the water quality parameter in a stagnant tendency. We have calculated the variance rate for the following parameters: PH, DO, BOD, HCO₃, SO₄, Cl, Ca, Mg, F, Cu. Water quality variance rate for each parameter of the analysed lakes was calculated based on following equation (Enea et al., 2017; Romanescu et al., 2016).

$$r = \frac{\sum_{i=1}^k n_i^{(+)} / n}{\sum_{j=1}^m n_j^{(-)} / n} = \frac{\sum_{i=1}^k f_i^{(+)}}{\sum_{j=1}^m f_j^{(-)}}$$

where:

r - quality variation rate;

k – number of positive values;

m – number of negative values;

$n_i (+)$ - number of absolute frequency values for rises;

$n_j (-)$ - number of absolute frequency values for reductions;

n - total number of absolute frequency values;

$f_i (+)$, $f_j (-)$ - relative frequencies.

4.4.3 Lakes' surface area - GIS methodology

GIS technologies are widely used in various fields of research as effective and strong geographical tools. GIS tools are applied in tourism as well, for example in producing maps of the tourist destination, providing data about various tourism elements such as infrastructure, lodging facilities, developing models and mapping relationships between them (Juodkienė, 2014).

GIS features tools used in the evaluation of tourism infrastructure location (in Cvetcovic & Jovanovic, 2016). It can be used in identification of places to improve the territorial tourism planning, traffic and transport lines, or prediction of areas, which could be the subject of flood, fire and so on. One of the advantages of GIS is displaying the data on simple visual form for the reader. Another advantage of GIS lies in the fact, that it can create georeferenced layers, which can be used as a basis information in order to create maps and identify evolution of the territorial aspects over time.

Cvetcovic and Jovanovic (2016) consider that one of the biggest advantages of the GIS tools is the possibility to enable the integration of all tourism stakeholders, data processing and spatial analysis at different levels. Moreover, recent advances prove that GIS techniques are vital in decision making and conservation of the natural resources. Merem et al. (2011) used GIS tools in the analysis of the impacts of human activities on watersheds in South Texas. Based on mix scale method of temporal spatial techniques and integrated use of GIS, researchers found out that increasing human activities and agricultural pollution have a negative impact on

water quality.

This study also applies GIS tools in order to perform a mapping of the case study area, by taking into account main water resources, human settlements and tourism components, such as accommodation facilities (Figure 4.3). Extensive mapping information can help in investigating tourism and water nexus at the level of our region. Open-source QGIS software has been used to perform spatial and temporal analysis. To assess the anthropogenic impacts on water resources, satellite images provided by Landsat Earth coverage program and Sentinel mission together with remote sensing techniques. Landsat Program provides multispectral satellite imagery. It is the most continuous and long space-based record of the Earth's surface developed by National Aeronautics and Space Administration (NASA). First satellite, Landsat 1, has been launched in 1972 and the latest one, which is Landsat 8, in 2013. Sentinel is a series of missions under the Copernicus programme developed by European Space Agency (ESA) using radar and super-spectral imaging for land, ocean and atmospheric monitoring.

Based on the resolution and cloud cover, six Landsat images for 1987-2012 (Landsat 4 is for 1987, 1991, 1996, Landsat 7 is for 2000,2007,2012) and one Sentinel 2 image for 2017 have been selected for spatial-temporal analysis of the case-study area. Seasonal fluctuations of the lakes' levels reflect the annual hydrologic cycle, which is characterised by higher water levels during the spring and summer and lower water levels during the rest of the year. Thus, we used the images for the period 1 May – 31 August of 1987-2017, as they were characterised by higher water levels.

Photogrammetric and thematic processing were applied to LandSat and Sentinel images in QGIS using *Semi-automatic classification* plugin. Thematic processing of data is a method based on colour transformations, classification, and analysis of the images' main components. The surface areas of the lakes Shortandy, Ulken Shabakty, Kishi Shabakty and Burabay have been calculated using the "Export/Add Geometry Columns" tool from the Processing Toolbox in QGIS. The spatial data has been re-projected in WGS84 cartographic system – Universal Transverse Mercator

(UTM) projection fuse 42N (EPSG:3857), specific for Kazakhstan.

GIS provided a tool in order to observe lakes surface area changes over a long timescale (1987-2017). Due to the absence of data from official sources on tourism evolution indicators for the last 30 years, GIS has been applied as well. For this, the accommodation sector has been targeted, as a possible driver responsible for lake surface area decline in the studied region. By using the ability of GIS to locate geographical objects across time and space, we distributed tourism accommodation establishments around each lake for the years 1987, 1991, 1996, 2000, 2007, 2012 and 2017, based on the year of construction of the establishments. Mapping enabled to spot the changes in a number of tourism accommodations in the past 30 years, as well as the changes in the surface area of the lakes.

4.5 RESULTS AND DISCUSSION

4.5.1 Water quality of the lakes

Figure 4.1 indicates the evolution of WPI of the lakes for each year. The value of WPI of Burabay Lake was 1.95, quality class 3 “Moderately polluted” in 2006, while this value has increased to 3.21 indicating the quality class 4 “Polluted” in 2015. In the case of Ulken Shabalty, in 2006 the WPI value was 2.94, with quality class 4 “Polluted” and it has reached the value 6.53, with the quality class of 6 “Very dirty” in 2015. The WPI was 8.04 (quality class 6 “Very dirty”) in 2007 in the Lake Kishi Shabakty and it remained the same quality class in 2015 with the WPI value 6.75. The WPI of Shortandy was 2.11, indicating the quality class 3 “Moderately polluted”, and it reached the quality class 5 “Dirty” with the value of WPI 4.75.

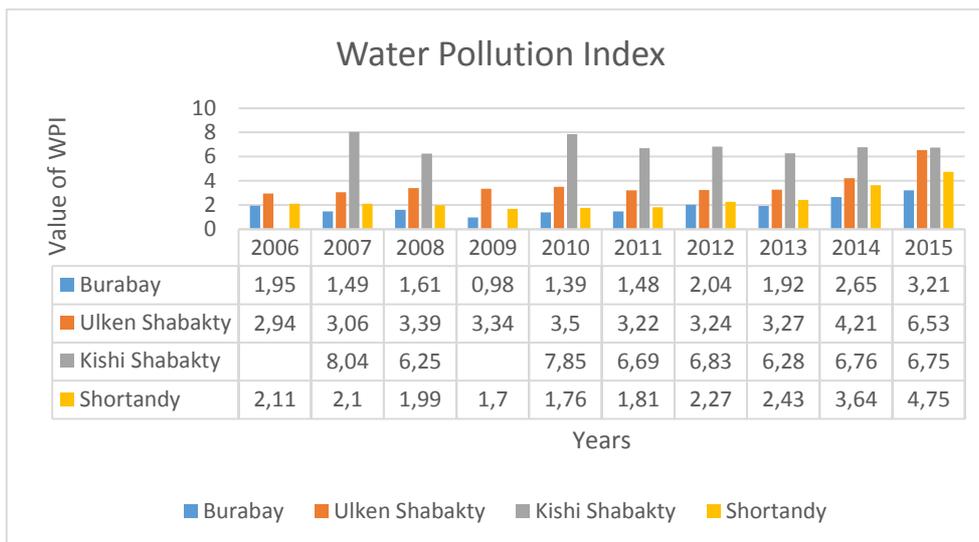


Figure 4.1. WPI dynamics of the lakes, 2006-2015

Table 4.3 presents the results of descriptive statistics of the lakes WPI. Kishi Shabakty Lake is one of the most polluted lakes in the region. Quality class of the lakes is “6-very dirty”, with values of WPI fluctuating from 6.00 to 8.00 during last 10 years. The WPI of Ulken Shortandy Lake is fluctuated between 2.94 and 6.53, with dramatical changes of quality class from “4- polluted” to 7 “Very dirty”. The WPI of Burabay Lake has changed from Moderately Polluted to Polluted, while Shortandy Lake has reached the class dirty from polluted during last 10 years.

Table 4.3 Descriptive statistics of lakes WPI, 2006-2015

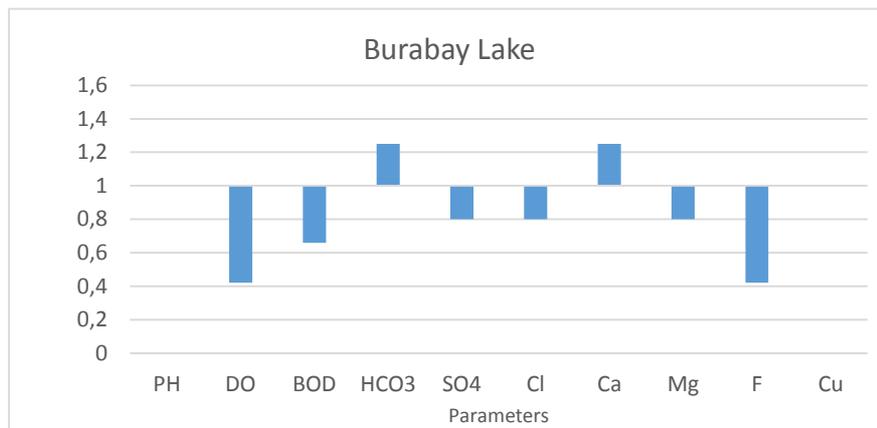
Lakes	Min.	Max.	Mean	St.dev.
Burabay	0.98	3.21	1.87	0.65
Ulken Shabakty	2.94	6.53	3.67	1.06
Kishi Shabakty	6.25	8.04	6.93	0.66
Shortandy	1.70	4.75	2.46	0.98

Sources: Kazhydromet (2017)

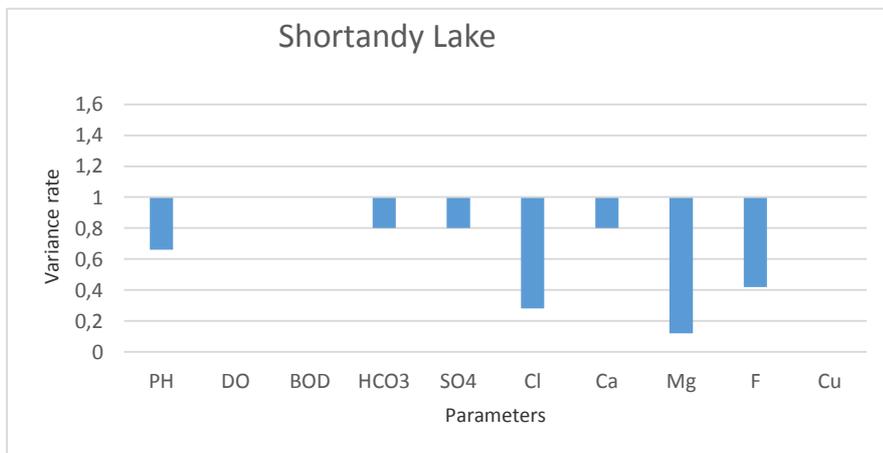
Water quality variance rate

As for water quality variance rate, the mentioned dynamic can be observed and analysed for each parameter of four lakes (Figure 4.2). The results show that the most of the parameters reveal a degrading tendency, while some of them are in a stagnant tendency. The comparative analysis of this indicator for four lakes indicate that in Ulken Shabakty, a worsening tendency of 80%, in Shortandy of 70%, in Burabay and Kishi Shabakty of 60% of analysed parameters can be observed.

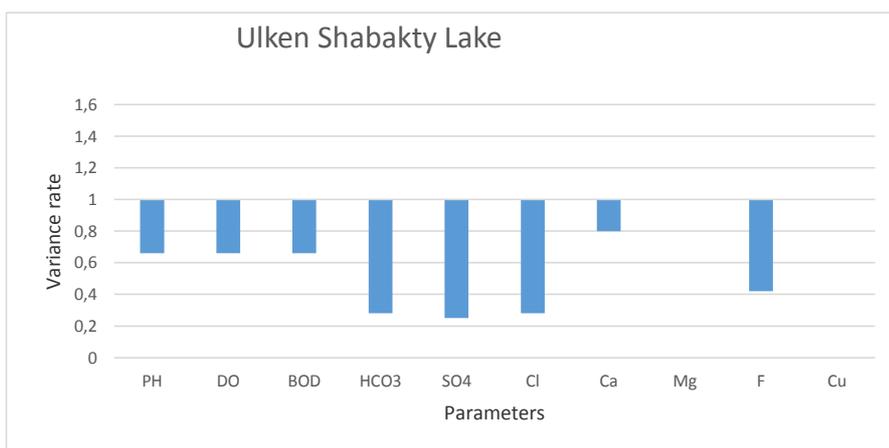
a)



b)



c)



d)

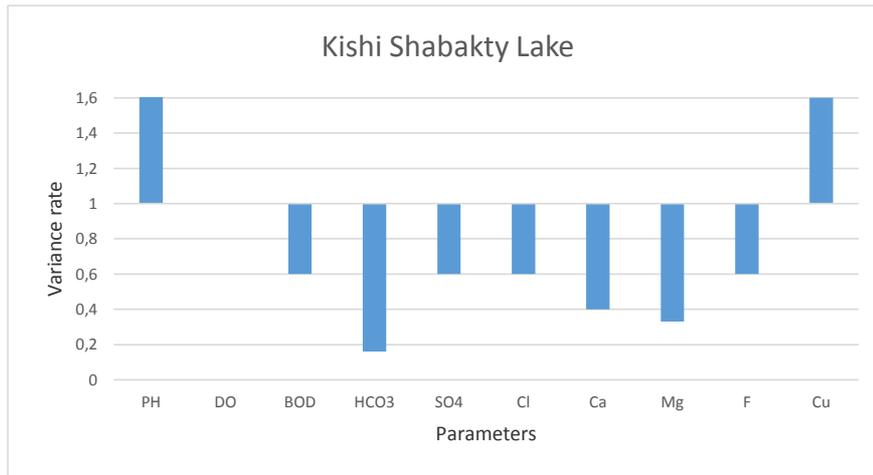


Figure 4.2. Water quality variance rate (2006-2015)

The Water Pollution Index has been used in previous research to define the quality of the Lake Kopa, located in Kokshetau of the Northern Kazakhstan (Kazangapova et al., 2016). The authors revealed decreasing water level of the lake and increasing level of salt concentration leading to changes in water quality. Romanova and Kazangapova (2013) empirically tested that oil concentration in the lake water is explained by negative impacts arising from anthropogenic activities around and in the lakes. In the case of the examined lakes of the Shchuchinsk-Burabay, the water quality indicators show deteriorating conditions of lakes water from year to year, which is becoming a big concern. A previous research explains the decline in water levels of the lakes by a number of factors such as steadily increasing air temperature and level of evaporation, decreasing level of snowmelt inflow, and growing anthropogenic use of groundwater resources. Development of tourism in its turn exacerbate this situation. A number of tourism enterprises, accommodation facilities are located in the shore of the examined lakes offering a wide variety of services and activities. Nevertheless, the lack of centralised sewerage systems entails the construction of numerous local waste water collectors, which often creates a threat of overflow and pollution of the lakes. In addition, major infrastructure developments, such as hotels, sanatoriums, restaurants, shops require land reclamation, which can also cause changes in environmental state of water. One of the examples is Turkey, where heavy construction of tourism facilities on coastal

areas and absence of wastewater treatment facilities and their inadequate operation resulted to pollution of water resources (Burak et al., 2004). Zhong et al. (2011) consider that recreational activities such as boating, fishing, rafting, and swimming lead to negative impacts on water environment.

In the case of our case study area, a previous research conducted by the team of Sevkaznedra (2014) found out the main causes of pollution of the lakes are irretrievable water abstraction, pollution of the catchment area with production and consumption wastes, followed by flushing them into surface water bodies, erosion of soils from arable land, pollution of beaches with debris. All these negative factors, as well as evaporation processes from the surface of the lakes led to a change in the temperature regime and water quality of the lakes. However, there is an absence of studies dedicated to tourism impacts on lake water, therefore, this research attempts to fill a gap in the literature and examine tourism development in the region and its link with the decreasing environmental state of the studied lakes.

4.5.2 Changes in the lakes' surface area

The changes of lakes surface area focused on the results of the GIS interpretation over the 30-year period (1987-2017) from a temporal and geospatial perspective presented in Table 4.4.

Table 4.4. Dynamics of changes in the lake surface area from 1987 to 2017

Years / Lakes	Burabay	Shortandy	Ulken Shabakty	Kishi Shabakty
	Area (sq. km)	Area (sq. km)	Area (sq. km)	Area (sq. km)
1987	10.0167	16.7191	21.3141	18.0857
1991	9.9916	16.1855	20.8552	17.9243
1996	9.8912	15.8223	20.6295	18.0173
2000	9.9524	15.4889	19.9421	17.5115
2007	9.9123	14.7984	19.6523	17.5101
2012	9.9451	14.9688	18.7656	16.8902
2017	9.9427	14.8686	18.2053	16.8843
Total decline	-1%	-11%	-15%	-7%
Average annual decline	-0.02%	-0.36%	-0.47%	-0.21%

Sources: QGIS outputs

Table 4.5 presents similar results on the changes in water volume and surface area of the lakes during 2000-2016 based on research of the National Laboratory of Astana team (2016). The researchers also applied GIS tools. As we can observe from the both tables 4.4 and 4.5, the quantitative data on surface area changes of the lakes do not differ much, which demonstrates the accuracy of the QGIS technologies.

Table 4.5. Dynamics of changes in the surface area and volume of the lakes, 2000-2016

Years/Lakes	Burabay	Shortandy	Ulken Shabakty
	Area (sq. km)	Area (sq. km)	Area (sq. km)
2000	9.98	15.15	19.31
2004	9.98	15.07	18.92
2007	10.07	14.90	19.15
2010	10.10	14.65	18.36
2013	9.96	14.47	17.99
2016	9.96	14.75	18.03

Sources: National Laboratory of Astana (2016)

As presented in the tables 4.4 and 4.5, over the 30-year period, the lakes of the region experienced visible declines in the water surface. The causes are decreased level of precipitation, increased temperature of the surface water area resulting in high levels of evaporation, growth of population and industry, uncontrolled withdrawal of water from the lakes, agricultural run-off and increase of livestock farming (Sevkaznedra, 2014). Precipitation is the most important component of the hydrological cycle in the region. According to the reports of the Burabay National Park the amount of precipitation is in average around 280 - 400 mm/year. The mean annual temperature ranges from 1.4°C – 2.3°C in the region (Yapiyev et al., 2017). Analysing the historical data on precipitation changes (see figure 4.5), we can observe the dry years, when the value of precipitation was very low (for example around 180 - 200 mm in 1936, 1951, 1991, 1997, 2003, 2010). It can be observed, last three decades the level of precipitation is steadily decreasing in the region. The climatic situation is aggravated by rising mean of annual temperatures leading to linear changes in open water evaporation rates.

Moreover, small rivers of the examined resort area are short and shallow, their valleys are poorly expressed, and in recent years groundwater participates less in feeding them. Their level and consumption depend on weather and climate conditions. The main surface run-off occurs during the period of spring snowmelt. As temperatures increase, the rivers dry out in the summer. Changes in precipitation, run-off to the water catchment basin, directly affect the water level and area of the lakes.

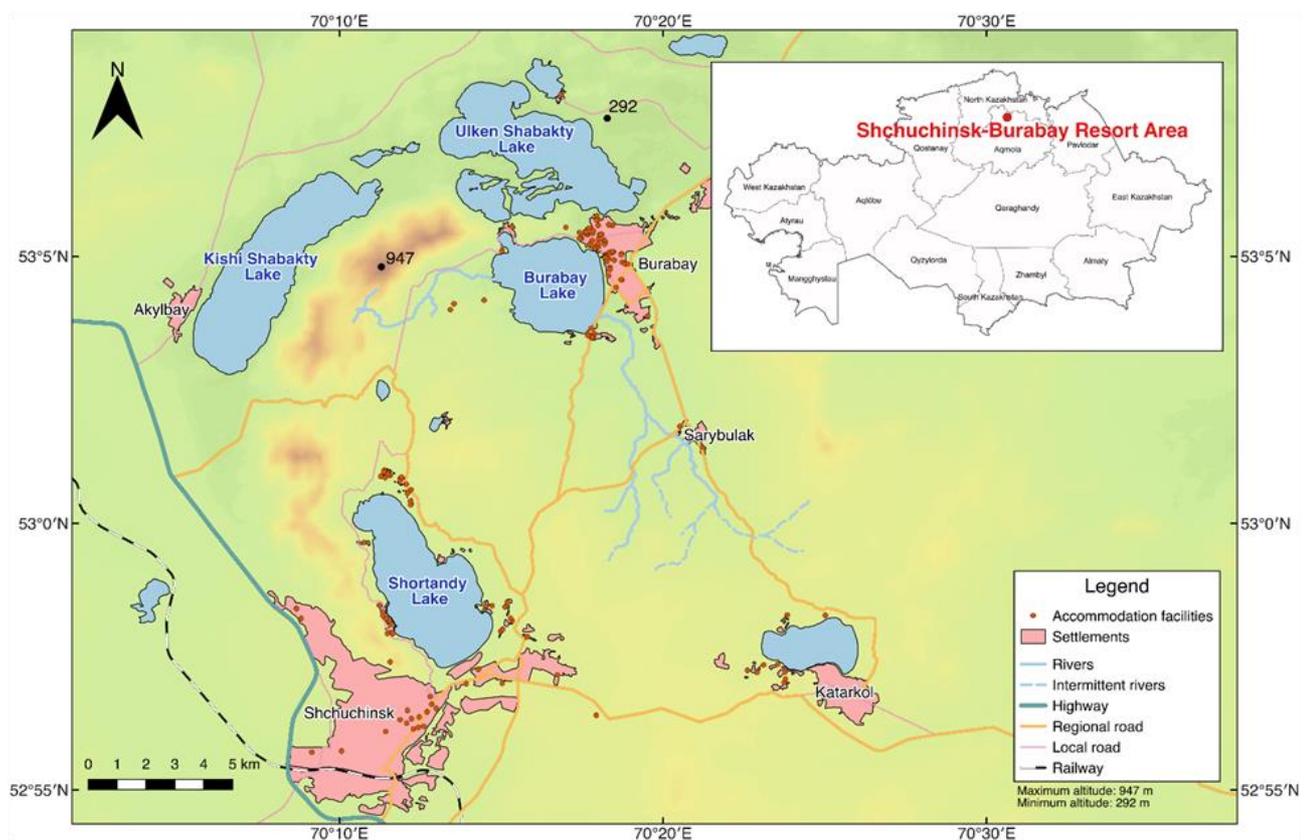


Figure 4.3. Study area map

Shchuchinsk-Burabay resort area and examined lakes Shortandy, Kishi Shabakty, Ulken Shabakty and Burabay. Biggest settlements are Shchuchinsk and Burabay. In addition, location of tourism accommodation facilities is indicated.

The research conducted by Yapiyev et al. (2017) on the main hydrological processes and current state of water resources in Burabay National Nature Park indicates the increasing concern on the tendency of lakes to dry up, which is caused by various factors. According to their research, the decline in water levels of the lakes could be explained by steadily increasing air temperature and level of evaporation, decreasing level of snowmelt inflow, and high anthropogenic consumption of groundwater resources. Researchers have investigated the changes in water level in three out of the four lakes in our case-study - Shortandy, Ulken Shabakty and Burabay for the period 2008-2015. They observed a steady decline in water level, averaging of 15-20 cm per year. The research conducted by “National Laboratory of Astana” (2016) emphasizes this concern. According to their forecasting for the period 2007-2093, obtained based on Regional climatic modelling PRECIS, the precipitation in the region will slightly increase, while the air temperature will increase rapidly. This will lead to an increase in the deficit of air humidity, to a higher evaporation at the surface of lakes, and a higher aridity in the area. Due to the increase in temperature, the risk of lakes drying out will increase and may even lead to a catastrophic disappearance of the lakes.

Thus, the current situation is at high risk and requires urgent measures to preserve water resources. In the case of the Shchuchinsk - Burabay resort area, research has been conducted on the geological state, hydrological cycle of water resources, the influence of climate change, weather forecasting, hydrology of large lakes.

The recent research on the main hydrological processes and current state of water resources in Burabay National Nature Park has been developed by Yapiyev *et al.* (2017), whereas research of tourism impact has been neglected. Furthermore, according to Sevkaznedra (2014), of the 10-12 million m³ water deficit in 2013, around 65-70% was due to anthropogenic factors. Considering all this, a closer look could help identify future risks and make a contribution to the process of designing policies and laws regarding preserving water resources.

4.5.3 The lake surface area and the tourism growth nexus

We apply GIS in order to calculate a number of accommodation facilities around each lake. GIS is able to locate geographical objects across time and space, we distributed tourism accommodation establishments around each lake for the 1987, 1991, 1996, 2000, 2007, 2012 and 2017, based on the year of construction of the establishments. The mapping enabled us to spot the changes in number of tourism accommodation in the past 30 years as well as the changes in the surface of the lakes (Figures 4.3 and 4.4). A considerable evolution can be seen in number of accommodation establishments in the region. There were only 7 accommodation facilities in the area in 1987 (Appendix A), while this number reached to 151 in 2017 (Appendix B). Dynamics of changes in the lakes' surface area and evolution of accommodation facilities during 1987-2017 are presented on the map (Appendix C). It is noticeable that a growing number of tourism facilities corresponds to a decreasing surface of the lakes. Thus, mapping is an effective tool to reflect the changes in environmental and development aspects.

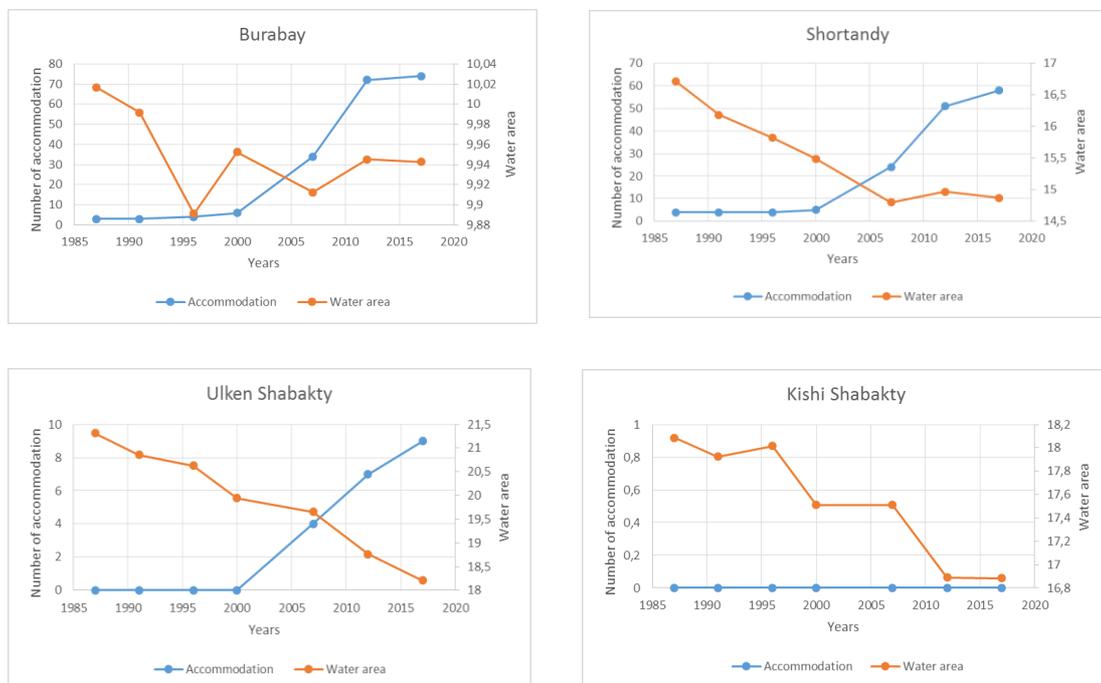


Figure 4.4. Number of accommodations and lakes surface for 1987-2017

Sources: GIS outputs

As we observed that over the 30-year period, the lakes of the region experienced visible declines in the surface area. Despite slight declines in the lake surface area from 1987, the examined lakes can be affected by the tourism industry only in recent decades. However, to date the reasons of lake area decline have not been fully understood. Thus, we attempt to understand the possible influence of tourism industry on lake surface during the last decades. In this sense, we consider the period of 2000-2002 as the turning point in tourism growth in the region. Since that period, the number of hotels in the area has grown up to the 11.5% per year. Thus, we consider that is crucial to analyse the impact of the development of the accommodation sector on surface area of the lakes in Akmola region.

Accommodation establishments are considered one of the most important water consumers within the tourism sector. Development of accommodation facilities increased the levels of fresh water consumption and wastewater discharge, especially during the peak tourist season. In addition, tourists consume more water resources when they are on holiday comparing with they would usually do at home (Bohdanowicz & Martinac, 2007; Charara et al., 2011; Essex et al., 2004; Gössling *et al.*, 2012; Tortella & Tirado, 2011). The high intensity of water consumption by the accommodation sector usually leads to overexploitation, water scarcity, water supply degradation and the generation of big volumes of sewage water (Sulnu, 2003).

When examining the behaviour of each lake, an important surface reduction is revealed for Ulken Shabakty Lake (15%). This area needs a lot of attention, especially as the process is ongoing and tourism continues increasing. The high concentration of accommodation establishments on the shoreline of Burabay Lake affects the water volume and area of Ulken Shabakty Lake, as both lakes are connected through an outflow river from Burabay.

The surface area for Burabay Lake itself has only declined by 1% during the last 30 years with an average annual decline of 0.02%, a relatively small number when compared to the other lakes. However, the biggest number of accommodation facilities are concentrated here. The main natural factor affecting the lake level is the

amount of inflow. Burabay lake is fed from four rivers (Sarybulak, Imanbulak and two unnamed), in comparison with the other lakes which do not have this generous inflow. This explains why Burabay has maintained the same level of water surface area during a longer period of time. In addition, the establishment of Burabay National Natural Park on the shore of this lake, in the year 2000, could be another factor of water level stability. Because the planning and development measures over Burabay Lake could have been more cautious and focused on sustainability. Of the four examined lakes, the most popular and advanced tourism area is shore of the Burabay lake. A number of significant tourism enterprises, lodging facilities are situated around the lake. The lake also plays significant role due to its favorable location in creating first impression of tourists visiting the resort area. Therefore, environmental state along the sight of the lake is likely to receive more attention from the Burabay National Natural Park.

Water surface of Shortandy Lake has declined nearly 11% during the last 30 years. The drop of nearly 1 sq. km every 10 years is partially due to tourism development, but only as an adding factor to the presence of the nearby city of Shchuchinsk (46,024 inhabitants in 2017), the greatest in the area and highly dependent on water consumption.

It is interesting to note that Kishi Shabakty Lake is not surrounded by tourism accommodation businesses. It seems that there is little or no direct influence of the tourism industry on the environmental state of the lake. Lack of easy access by road diminishes the effects of tourism. However, as the beaches of the other lakes tend to be overcrowded and with poor water quality during high tourist season, tourists tend, more and more, to visit the unspoiled beaches of Kishi Shabakty Lake. Thus, the absence of tourism infrastructure, does not necessarily mean that there is no environmental impact of this industry.

Analysing, location of accommodation facilities, we can see that the most tourism establishments (74) are located in the coastal area of Burabay Lake, 58 are around

Shortandy Lake, and nine (9) are concentrated close to Ulken Shabakty Lake (Table 4.6).

Table 4.6. Distribution of accommodation facilities around the lakes, 1987-2017

Lakes	Years	Number of accommodation facilities	Lakes	Years	Number of accommodation facilities
Burabay	1987	3	Ulken Shabakty	1987	0
	1991	3		1991	0
	1996	4		1996	0
	2000	6		2000	0
	2007	34		2007	4
	2012	72		2012	7
	2017	74		2017	9
Shortandy	1987	4	Kishi Shabakty	1987	0
	1991	4		1991	0
	1996	4		1996	0
	2000	5		2000	0
	2007	24		2007	0
	2012	51		2012	0
	2017	58		2017	0

Sources: QGIS outputs

However, it is interesting to note that the indicator “number of beds” presents different results. The majority of the accommodation establishments in terms of the numbers of beds is located on the shoreline of Shortandy Lake (4,497 bed places), while the accommodation facilities with fewer beds are located close to Burabay Lake (3,342 bed places) (the calculation was made for 2017). This is explained by the fact that most public sanatoriums (with great number of the beds) are located on the coastal area of Shortandy Lake. The construction of the first health centres and sanatoriums began in the early 20th century on the coastal area of the Burabay and Shortandy lakes, and development continued in the middle of the 20th century, aimed at using local mud and mineral waters for treatment. These establishments have become popular as excellent resorts for treatment and wellness. However, by analysing the sanatoriums as accommodation type in terms of water consumption, it is noticeable that sanatoriums are the highest accommodation water consumers (see chapter 5). More detailed information on water consumption level of different

accommodation types along with factors influencing upon it are presented in the next section.

Water consumption in sanatoriums of the Shchuchinsk - Burabay resort area accounts for 436-439 litres per guest per night, while hotels consume 194.75 – 236.03 L/G/N, and guesthouses 172.58-181.90 L/G/N. (Table 4.7). High water consumption in the sanatoriums is caused by the wider range of medical and therapeutic services and activities that they offer, many of which are based on the consumption of water resources (hot water, cold water, mineral water, healing water, freshwater). Hamele & Eckardt (2006) highlighted that different types of accommodation consume different amounts of water. It also has been found by Hadjikakou et al. (2013) that the type of accommodation is one of the main factors impacting water consumption.

Table 4.7. Average water consumption in accommodation types, 2014-2015

	Hotels	Sanatoriums	Guesthouses
Average water consumption per guest per night (L) in 2014	194.75	436.22	172.58
Average water consumption per guest per night (L) in 2015	236.03	439.00	181.90

Sources: Research results (Chapter 5)

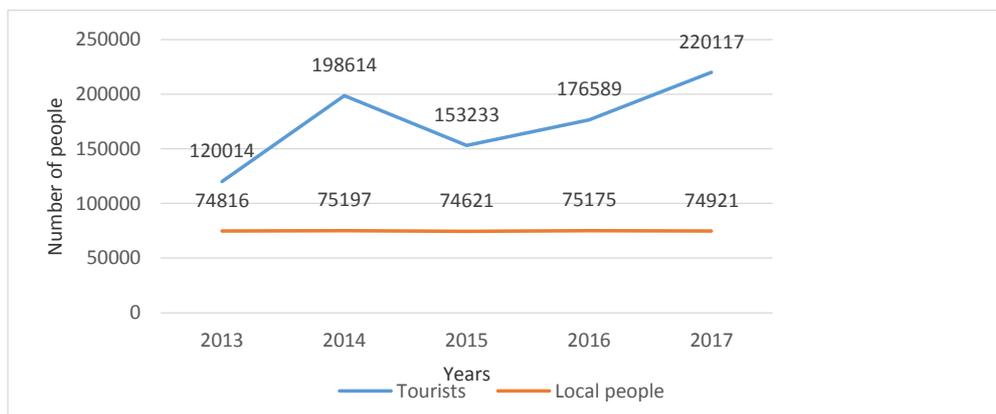
Tourism water consumption has not been well documented in statistics. This lack is also found in many other tourist destinations worldwide (Eurostat, 2009). Thus, based on available data on accommodation and water consumption indicator, we attempt to calculate the total water consumption per year, for each of the three types of accommodation. According to the calculations, an average water consumption of 38,852 m³ per year in a sanatorium, 3,205 m³/year in a hotel, and 951 m³/year in a guesthouse. Total water consumption per year has been 1,217,742 m³ in 2015. The results are similar to those of obtained by Sevkazndera’s team in the summer of 2014. They calculated the water extraction from the wells of the sanatoriums and revealed

that the amount of water extraction per day is averagely 100 - 120 m³ (36,500 – 43,800 m³ annually).

In the next table 4.8, we compared the evolution of local population and tourists in the region. We can see that during the last 5 years, there has not been observed a considerable change in the size of the local population. However, there is a growth in the number of tourists and accommodation establishments in the region, which definitely put additional pressure on water consumption. The situation is exacerbated by the fact that most hotels and other accommodation types in the area are not supplied by the central water system and still use pumping wells.

During the peak tourist season, the number of the tourists in the area is five times bigger than the number of the local population. Development of tourist activities, along with other human activities, led to a growing use of fossil fuels. With the time, this led to high level of greenhouse gases nearby the water resources, an important cause of water pollution.

Table 4.8. Number of tourists and local people in Burabay, 2013-2017



Sources: Department of Statistics of Akmola, 2018

The overview of water consumption patterns within the accommodation establishments indicates the negative effects of tourism on surface area of the lakes. However, the total water consumption of the accommodation industry is more complex, if we take into account all the water required to maintain the tourism industry. Thus, recent research outlined three dimensions of water use, such as direct, indirect and systematic water use. Tourism infrastructure requires substantial amounts of water resources to be operational (Gössling et al., 2015). Moreover, the tourism industry during high season could compete with other industries in the region. In this sense, Eurostat (2009) noted that, in some Mediterranean countries, conflicts exist between hydro-electricity production, agriculture and tourism industry during summer, and the priority is sometimes given to the accommodations. Thus, the potential influence of the tourism industry on water availability should be taken into consideration, keeping in mind the suggestion of the UN Water Report (2015), that global water demand will increase by 55% by 2050 due to the growing demand of various industries and domestic uses (Connor, 2015).

Tourism growth and seasonality, combined with agricultural and industrial activities, can lead to water supply shortages in the region, which cause imbalances between water demand and water supply.

4.5.4 Other factors

Various factors contribute to the conditions that lakes are experiencing today. Lately, one may notice a relatively stable level of long-term annual precipitation and increasing level of water evaporation due to the rising temperature. Other factors such as land use, agriculture, irrigation, industry, infrastructure and local population could also influence the water area balance of the lakes. Shchuchinsk town, Burabay and Akulbay villages (with a total population of 74,921 of inhabitants in 2017) are located on the shore of the lakes. Furthermore, lake water has long been the main supply source for Shchuchinsk town. As there are many residents living without sewage treatment or with sewage systems in poor conditions, there is a growing contamination of both ground and surface water resources. Shchuchinsk experienced an important population growth until 1991, but then a drop of 17% in the following

25 years, although accompanied by infrastructural development, extensive resource-consuming activities. The presence and operation of industry nearby result in additional pressure on natural water resources.

According to the Water Resources Committee of the Republic of Kazakhstan (2016), average water consumption per person per day in Kazakhstan is 82 litres, three times less than the average water consumption by tourists in Shchuchinsk-Burabay resort area, which is in line with the previous literature findings. Water extraction from the wells in Burabay town is 900 m³ per day, leading to a total water consumption per year 328,500 m³. Akulbay town, located on the shoreline of Kishi Shabakty Lake, extracts 50 m³ of water from the wells per day, which accounts for about 18,250 m³ per year (Sevkazndera, 2014). Shchuchinsk town, which is mostly provided by a central water system, accounts for 45,441 inhabitants (2015 year), where water consumption per person per day is 82 litres (Water Resources Committee of Kazakhstan, 2016). Calculation of total water consumption by Shchuchinsk population per year results to about 1,360,050 m³.

The above-mentioned data represents that in the Burabay region, the accommodation sector (1,217,742 m³) combined with the household sector of Burabay (328,500 m³) and Akulbay towns (18,250 m³), Shchuchinsk (1,360,050 m³) is an important consumer of water resources (approximately 2,924,542 m³ per year). Its share of the total water volume of the examined lakes (381.5 mln m³) is approximately 0.8% per year. This is exacerbated by the fact that tourism accommodation infrastructure is overloaded in the water catchment basin of Burabay Lake and its ongoing growth character highlights the risks of increasing water extraction and wastewater discharges into the lake. Furthermore, accommodation facilities are planned to increase along the Lakes Ulken Shabakty and Kishi Shabakty (Department of Tourism in Akmola region, 2018).

The annual volume of extracted groundwater to supply anthropogenic needs (including tourism sector) cannot be renewed, as sewage water is discharged far away from the water catchment basin of the area, due to non-existent wastewater

treatment plants. This situation leads to a negative water balance of the lakes' environment. It should be noted that these processes are irreversible and the environmental issues concerning the lakes must be addressed in early stages (Cooper, 2006).

According to the results of Sevkazndera (2014), overexploitation of groundwater is already considerable in the area. It provokes not only water deficit, but also saline water intrusion, that in turn has negative impacts on the quality of freshwater. Kazhydromet (2017) reported that the water quality of the lakes is already low in the region. Moreover, historical data shows that relatively stable levels of long-term annual precipitation and increasing levels of water evaporation due to the rising temperature will deepen the water deficit of the lakes in the near future (Figure 4.5).

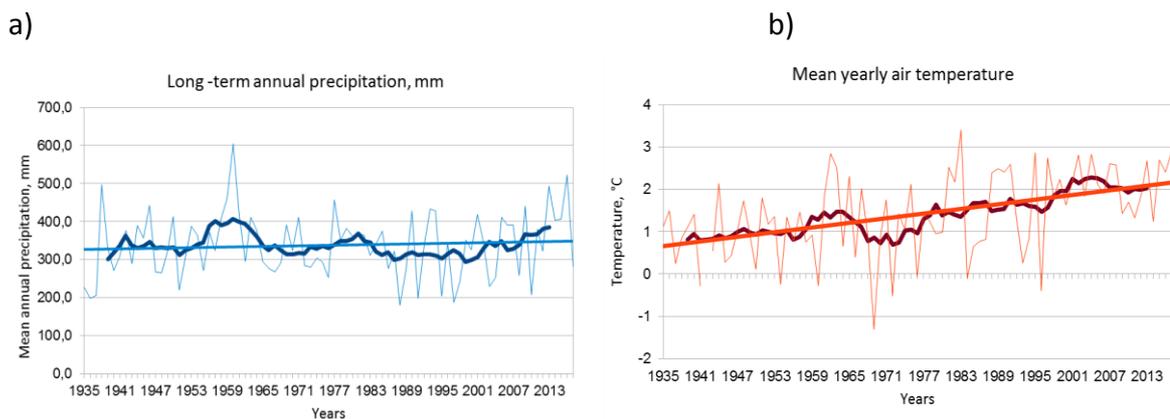


Figure 4.5. Long-term annual precipitation (a) and mean yearly air temperature (b)

Sources: Shchuchinsk Weather Station, 1935–2013

A synthesis of the current data processing and qualitative observations show that the overall presence of tourism might influence in some degree the amount of available water combined with other factors. The geographical features separate the system into two major areas (Figure 4.6):

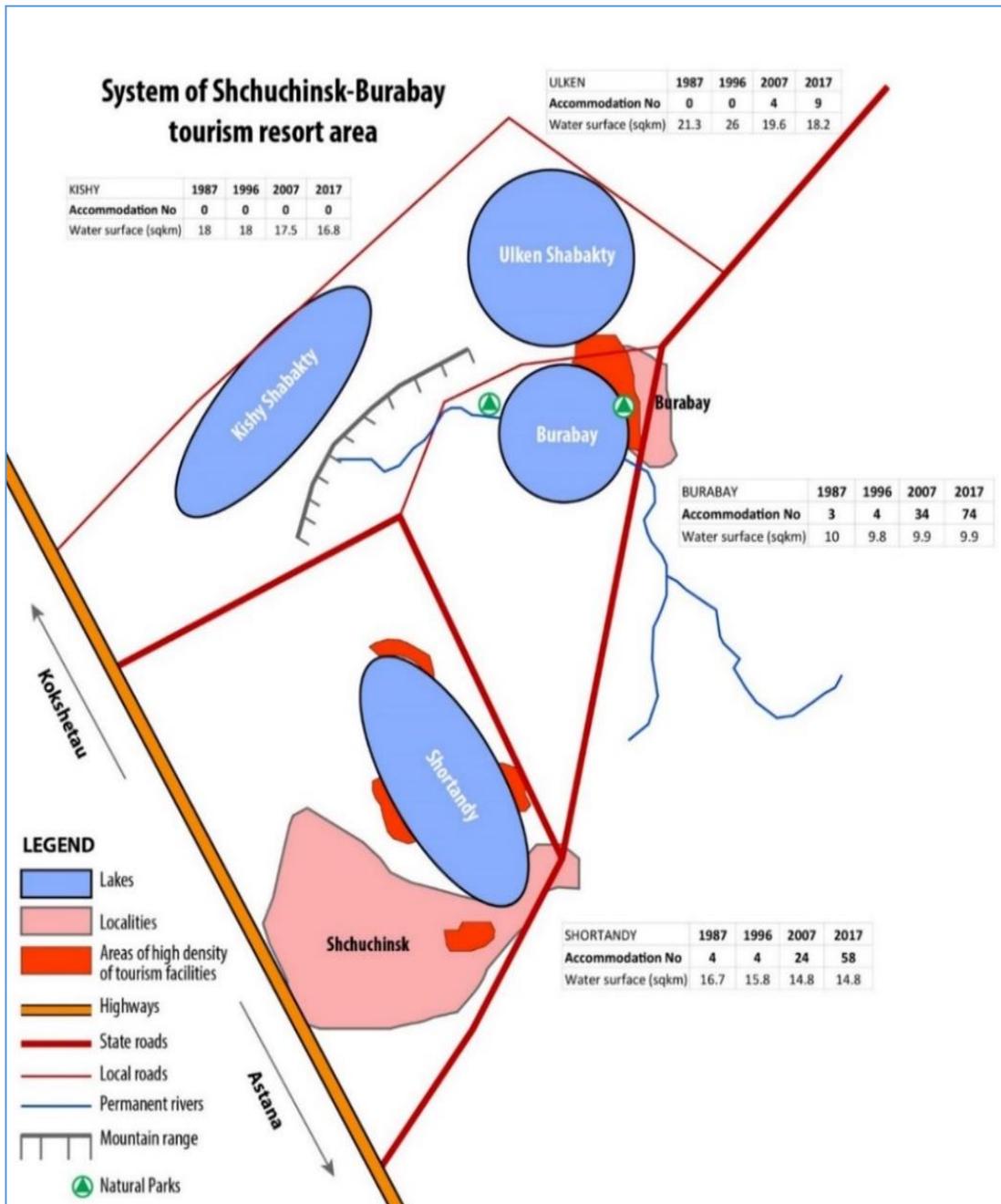


Figure 4.6. Schematic situation of Shchuchinsk-Burabay resort area

Shortandy-Burabay lakes area, which has a high coverage of forests and shrub vegetation, presence of protected areas, bowl-shaped relief made by the surrounding mountain range which favours the retention of water; permanent and temporary streams manage to refill the area during wet season and a high level of vegetation coverage absorbs and maintains water levels. Thus, Burabay lake did not register a decline in water. The relative stability over the last 10 years shows that the ecological system created by the mountain range will most probably prevent both lakes from losing critical quantities of water during the next 10 years, if further development of tourism and other water-consuming activities is under constant monitoring. This can be supported by the research of Wu et al. (2014), where the water quality and quantity of mountain lakes in Xinjiang region in China slightly fluctuated and have not significantly changed over the past decade. The lake area has been stable and relatively insensitive to climate change. However, continuous growth of accommodation infrastructure and consequently of water consumption may influence the lacustrine area.

Ulken Shabakty and Kishy Shabakty lakes area is situated in a different geographical context. Tourism activities and human settlements are dominant in the eastern side, near the Ulken Shabakty lake. Steppe vegetation dominates the surroundings. To the west, the presence of activities around Kishy Shabakty lake is only incipient, without specific infrastructures. The surrounding land is dominated by agriculture, a massive consumer of lacustrine water. Thus, the reduction of the surface is due to growing activities near Akylbay town (~1.000 people). In the same time, considering that tourism infrastructure is planned to increase along the Lakes Ulken Shabakty and Kishi Shabakty, it might result in a quicker drop of the water surface area in the future.

4.6 CHAPTER CONCLUSIONS

The present study examined the situation of the lake water resources of the Shchuchinsk-Burabay resort area, and the possible effects of the tourism development upon the surface area of its four main lakes.

The results indicate that the main surface water resources of the studied area have been facing environmental challenges during the last 30 years. The lakes have been losing surface area in that time, with variations depending on geographical location and water consumption pattern of human activities. According to previous studies, climate change influences the water level, however the direct human activities, characterised by high water demand and consumption, exert a greater role. In this sense, tourism has been retained as one of the influencing elements, as changes in water surface reflect the combined effects of climate change, water inflow, industry, household and other anthropogenic activities.

A number of papers have examined the effects of tourist activities on coastal, marine, lakeshore areas, mostly revealing negative consequences arising from tourism. So far, most studies have focused on direct impacts of tourism on water bodies, whereas this research provides a number of important insights, especially with regards to indirect effects of tourism activity on the lake area, devoting a special attention to the accommodation sector. In particular, we have attempted to understand how water consumption by various type of accommodation influences the lakes' surface. After a thorough assessment of tourism accommodation impact on surface of the examined lakes, the results indicate that the loss of 11% in water area of Shortandy Lake and 15% of Ulken Shabakty Lake is partly explained by the nearby high concentration of accommodation businesses. Moreover, each type of accommodation has a specific influence on the amount of water consumption, where sanatoriums are the highest water consumers.

However, the overcrowded places and the great number of accommodation establishments around Burabay Lake did not induce a high water loss. This is explained by the presence of smaller establishments, which have a typical low-consumer behaviour, with small impact on the lake resources. The bigger size and

variety of activities/services offered by accommodation businesses near Shortandy Lake correspond to higher water consumption by facilities and important water loss.

The quantitative overview of total direct water consumption within the accommodation establishments combined with local population accounts for 0.8 % of total water volume of examined lakes per year. Further calculus of indirect water consumption may reveal in the future more impact of these activities.

Hence, as most tourism water consumption is related to the type of accommodation facilities, the future water management policies should target this sector first. The accommodation industry could contribute to improving water quality by building sewage treatment systems and mitigate the environmental issues associated with the exploitation of the lake water resources by introducing water saving measures. Furthermore, these measures need to be implemented by involving and empowering local people in the decision-making processes, which could contribute to a sustainable tourism development. Thus, in destinations such as the Shchuchinsk-Burabay resort area, with a sensitive lake ecosystem, prevention of pollution and protection of the natural water resources should become essential.

In future water management plans, special regard needs to be given to the planned activities and possible direct and indirect impacts of tourism, according to the specifics of each lake. The Great Lakes in USA and Canada, or the Lake District in the UK, could be a good example of developing such plans for each lake based on the integrated lakes management approach.

Overall, in order to examine the influence of the tourism industry on the lacustrine environment, future research may reach a complex calculus of water balance by taking into account a wide range of important environmental and socioeconomic factors from land use, agriculture, industry and population dynamics. Thus, future expansion of research on tourism-water nexus should be encouraged and scientific results must be taken into consideration when developing future lake water management plans.

**CHAPTER 5: DETERMINANTS OF WATER
CONSUMPTION IN THE TOURISM LODGING
SECTOR**

5.1 WATER CONSUMPTION IN THE LODGING SECTOR

As we pointed out previously, lodging sector usually constitutes one of the most relevant water consumers at tourism destinations (Bohdanowicz & Martinac, 2007; Charara et al., 2011; Deng & Burnett, 2002; Gössling et al., 2012; Hamele & Eckardt, 2006; Tortella & Tirado, 2011; White & Fane, 2002).

For example, Bleu (2004) estimates average water consumption at luxury hotels in the Mediterranean, which represents between 500 and 800 liters per day per tourist. Other studies conclude that average hotel water consumption ups to 394 liters per overnight stay (hereinafter l/os), while in five-star hotels the consumption reaches the 594 l/os (Ecologic, 2007; Hamele & Eckardt, 2006). Basing on a sample of hotels in Barbados, Charara et al. (2011) compute that the average water consumption of the hotel industry, which is 863 liters per person and day. In the same line, Bohdanowicz and Martinic (2007) obtained that water consumption at European Hilton International hotels (upscale brand) accounts for 515 liters per person and day, while at European Scandic hotels (mid-market brand) accounts for 215 liters per person and day. This study also concludes that the levels of consumption are significantly higher in upscale hotels than in mid-market hotels. The reason is probably due to the fact that upscale hotels usually incorporate a higher number and more intensive water related services and activities (indoor swimming pools, laundry services, kitchen open 24 hours, inroom Jacuzzis, spa facilities, etc.).

The direct consequence of this situation is the arise of water costs. Some studies compute that water costs in tourism accommodations account between the 5% and the 10% of total operational costs (Charara et al., 2011; Green hotelier, 2013; Tortella & Tirado, 2011). But in any case, water costs will depend directly in the water pricing system applied in the country or region (i.e. flat rates, rising block rates, etc.).

The reason of this high levels of water consumption is due to several factors like the existence of water intensive facilities (swimming pools, spa, gardens, kitchens, etc.), and the guest's behavior (tourists water consumption at room facilities is usually higher comparing with their consumption levels at home).

The interaction of all these factors concludes in the fact that water consumption levels of tourists are usually higher than residents. The study of Gössling (2001) found that the average water consumption by tourist in accommodation business in Zanzibar (Tanzania), accounts for 685 liters per person and day that is 15 times higher than local resident's consumption. The study of Mangion (2013) pointed out that in Malta island, the average water consumption by tourists at hotels was 296 liters per person and day, whereas average water consumption by local residents was 150 per person and day. These studies demonstrate that water consumed by tourists when they stay on holiday tends to be higher comparing with their consumption at home (Charalambous et al., 2012; Essex et al., 2004; Gössling et al., 2012; Kasim et al., 2014). Other studies obtain similar conclusions. For example, the study Eurostat (2009) points out that the average water consumption at hotels in Europe raise up to 300 liters per person and day, while water consumption of European residents accounts for 160 liters per person and day. Some studies consider that this different behavior is due to the "pleasure approach" when tourists take more often showers or baths when they are on holidays (Eurostat, 2009; Gössling et al., 2012; Kasim et al., 2014).

This high intensity in water consumption at lodging facilities usually concludes in environmental negative consequences, usually related with overexploitation, scarcity, and water supplies degradation, especially during the tourist high season (Sulnu, 2003), that usually coincides with the driest months. This problem is most exacerbated if we take into account that the most popular tourism destinations are usually located in regions with significant water scarcity problems, like for example many coastal and island tourist destinations (Tortella & Tirado, 2011). For instance, water scarcity has been a national problem in tourist regions like Alicante, Barbados, Cyprus, Mallorca and Malta for many decades, and had usually concluded in negative effects (i.e., water cuts, poor water quality standards, high water prices, etc), that directly affects the welfare of residents and tourist and, thus, the sustainability and competitiveness of the destination (Essex et al., 2004; Eurostat, 2009; Gabarda-Mallorquí et al., 2017; Gössling et al., 2012; Tapper et al., 2011; UNWTO, 2013).

These environmental problems usually push policymakers to develop and implement water management policies in order to reduce the negative impacts generated by the tourism activity. During many years these policies were oriented on the offer side, and usually consist in increase the availability of fresh water. Nevertheless, during the last years, and following international recommendations such as European Union Water Directive (European Union, 2000), policymakers have oriented their water policies to the demand side. The main objective is, rather than increase the water offer, try to reduce and optimise water demand levels. These policies usually consist in the implementation of awareness campaigns, the introduction of fiscal incentives to promote the incorporation of water saving techniques, the increase of water prices, and the design of new water pricing structures that favor low level consumptions, and penalise non efficient consumption levels (i.e., rising block price systems) (Deya-Tortella et al., 2016; Deya-Tortella et al., 2017).

5.2 DETERMINANTS OF WATER CONSUMPTION IN THE LODGING SECTOR

The objective of our study is to develop and estimate a model to identify the main drivers of water consumption at tourism lodging sector. The dependent variable of our model is the log transformation of annual water consumption per meter cubic. We apply the log transformation of water consumption to ensure a normal distribution of the dependent variable.

The independent variables included in the model are related with the physical and management characteristics of the lodging businesses. Within the first group, several previous studies conclude that size of the accommodation facilities is one of the main determinants of water consumption (Bohdanowicz & Martinic, 2007; Charara et al., 2011; Gabarda-Mallorquí et al., 2017; Tortella & Tirado, 2011). Within these studies, we can find two different possibilities to measure the size of the lodging business. Some studies use the proxy 'number of rooms' (Charara et al., 2011; Tortella & Tirado 2011), while others use the proxy 'area of the hotel' (usually measured in square meters) (Bohdanowicz & Martinic, 2007; Gabarda-Mallorquí et al., 2017). In any case, previous research demonstrates that both variables are good proxies of the size of the hotel, and present similar effects, that is, as bigger is the size of the lodging facilities, higher is the level of water consumption. Our model includes the variable '*total area of the lodging facility*' like a proxy of the accommodation size. In order to prevent scale effects, and also to simplify the interpretation of estimated coefficients, we use the log transformation of the total area of the lodging facility.

Another variable related to physical characteristics is the existence of swimming pools facilities. According to previous studies (Gössling 2001, 2012; Mclennan et al., 2017), swimming pools are considered one of the most intensive water consumers in hotels. The operation of swimming pools facilities typically demands substantial quantities of water for renewal and evaporation reasons. In this context, Hof et al. (2018) state that swimming pools are major contributor to increasing water consumption levels in both urban and tourism sectors. The researchers empirically revealed that evaporation and refilling of the swimming pools account for 4.9% of

the total urban water consumption in the Balearic Islands, and lead to additional 9.6 L of water consumption per guest night and person night. These studies emphasize the importance of swimming pools in tourism water consumption analysis. In previous studies this factor was usually incorporated in the regression models through the introduction of dummy variables, that takes value one in the case that the business present this facility, and zero otherwise. However, in our opinion, the size of pools constitutes a key point to explain their influence on water consumption, since as bigger is this facility, greater will be the water consumption (i.e., higher evaporation levels). Thus, the variable included in our model is the '*area of pools*' (measured in square meters). With the same aim to prevent scale effects, and also to simplify the interpretation of estimated coefficients, we apply the log transformation of pool's area.

The type of the accommodation also plays an important role to determine the water consumption at the lodging facilities. The study of Hamele and Eckardt (2006) concludes that type of accommodation plays a key role in water consumption. This study obtains that water consumption is really different depending on the type of accommodation: 394 liters per person and day at hotels, 281 liters at bed and breakfast, and 174 liters at campsites. As reported in Eurostat (2009), water consumption levels vary considerably in accommodation businesses of Morocco. The figures indicate that water consumption in luxury 5 star hotels accounts for 600 liters per night, while in the apartments the amount of water consumed by the individuals is 180 liters.

If we analyse previous literature, which is mainly focused exclusively on the hotel sector, we can find several studies that introduce the category of the hotel using the variable 'number of stars'. However, in the case of Kazakhstan, and more especially, in our study area, the variable 'number of stars' is not a good choice, for several reasons. First, because the lodging sector of the area include not only hotels, but also other popular accommodation options of the region like sanatoriums and guesthouses. Second, because the 86% of hotels and other accommodations in Kazakhstan are not categorised with the traditional star ratings (Syzdykbayeva et

al., 2015). Thus, basing on the idiosyncrasy of the lodging sector of the region (for a detailed analysis, see table 5.1 in the next section), we identify the three most popular types of lodging facilities: hotels, sanatoriums, and guesthouses. Basing on previous evidences obtained by literature (like Eurostat, 2009; Hadjikakou et al., 2013; Hamele & Eckardt, 2006, Gössling et al., 2012 among others), we can expect that the levels of water consumption will be different depending on the type of accommodation. Concretely, we expect that sanatoriums will be the type of accommodation with higher levels of water consumption. This is due to the fact that sanatoriums not only offer lodging services, but also a set of health and well-being services and activities, that usually include the use of water intensive facilities. On the other side, we expect that guesthouses, usually oriented in the budget accommodation segment, will present the lower levels of water consumption. This hypothesis is supported by previous evidence. For example, Hadjikakou et al. (2013) conclude that usually budget accommodations tend to present the lower footprints, while luxury lodging places tend to present the highest footprints. In the same line, Gössling (2001), analysing water consumption in Zanzibar, also found out that daily water consumption per tourist in hotels is higher than in guesthouses. Thus, in order to introduce the effect of accommodation type on water consumption, our regression model includes two dummy variables for hotels and sanatoriums. The dummy variable '*Sanatorium*' takes value one if the type of accommodation is sanatorium and zero otherwise. The variable '*Hotel*' takes value one if the type of accommodation is hotel, and zero otherwise. Guesthouses, the ones that we expect with lower levels of water consumption, will remain like the reference group.

Our model also includes a set of variables related with the lodging management system, that can have a potential effect on water consumption. Those variables are occupation, number of meals served, and the introduction of water saving initiatives. With respect of occupancy level, previous literature obtained evidence that higher levels of occupation increases lodging water consumption, since higher will be the water consumed in rooms (i.e., number of showers, water spend in room cleaning, etc.) and in the common areas of the lodging business (i.e., refilling of

swimming pools, etc.) (Bohdanowicz & Martinic, 2007; Deng & Burnett, 2002; Tortella & Tirado, 2011).

The model also incorporates a variable to control the effects of the number of meals served. Several previous studies conclude that the number of meals served increase directly the levels of water consumed, mainly due to higher consumptions at kitchens facilities (Deng & Burnett, 2002; Bohdanowicz & Martinic, 2007). The typical boards offered at the accommodation business in Kazakhstan are usually only bed (no meals included), bed and breakfast (only breakfast included), half board (breakfast, lunch, or dinner included), and full board (breakfast, lunch, and dinner included). Thus, in order to analyse the effect of the number of meals on water consumption in the accommodation business of Kazakhstan we include the variable '*type of board*'. This variable is calculated multiplying the percentage that each type of board represents in each accommodation facility by the coefficient factor that introduce the typical number of meals included in each type of board: zero in the case of accommodation only, one for bed and breakfast, two for half board, and three for full board.

Finally, our model also include a variable to control for the effect of the introduction of water-saving measures (i.e., installing water efficient fittings, installation of flow restrictors for the tubs and showers, low/dual flush toilets, the use of grey water systems, etc.). The introduction of these measures constitutes an increasing trend during the last decades in the accommodation sector (Chan, et al., 2009; Mangion, 2013; Mclennan et al., 2017). Several theoretical and empirical studies revealed encouraging results of introducing water saving measure in tourism accommodation sector. Tortella and Tirado (2011) pointed out that water saving measures can substantially reduce hotel water consumption. The authors advised to make efforts towards water saving programs, pricing policies, water reusing and recycling practices. In their turn, Gossling et al. (2012) provided several examples on effectiveness and economical profitability of installing water saving devices in accommodation's rooms, toilets (dual flush), bathrooms (low flow showerhead), kitchens (efficient dishwashers, flow control regulators) as well as in pools (reducing

size, drainage barriers to collect overflows) and efficient irrigation systems. This can be confirmed by some figures. For example, Barberan et al. (2013) empirically revealed effectiveness of installing water saving devices in taps in hotel rooms, kitchens and public areas, which resulted in 21.5% reduction in total water consumption. Reduction in water consumption was found also economically profitable for both the hotels and the society in general. Hamele and Eckardt (2006) obtained similar results in a hotel on the island in Spain, where introducing water saving devices in taps and dual flush toilets led to 33% water reduction. Obviously, such reductions in water use also help to reduce sewage and protect from pollution of groundwater. Kelly and Williams (2007) discussed the strategies proposed by Whistler (North America) to reduce water consumption in tourist destinations. First strategy is based on implementation water conservation practices on new and redeveloped building, which is expected to be better for 25% in water conservation. The second strategy is based on installing greywater recycling systems in new and retrofitted buildings, which have a potential to provide about 95% of water to be used for toilets and irrigation. The third strategy is related to implementing rainwater capture systems which estimates for 25% of water, that can be used for laundry and dishwashing purposes. Following this discussion, we believe that similar-sized reductions in water consumption can be possible in our case study area.

The reasons that usually push lodging business to introduce these measures are really heterogeneous and diverse, and go from environmental firm awareness, cost reduction strategies, and marketing reasons. In this sense it is true that the increase of water prices and the implementation of new pricing methodologies (that usually tries to penalise intensive water consumers), has caused a significant increase in lodging business water costs during last decades. Some studies conclude that water costs account for between the 5% and 10% of total operational costs in lodging business (Charara et al., 2011; Green hotelier, 2013; Tortella & Tirado, 2011). This situation has increased the incentives to introduce water saving measures at lodging facilities. In this sense, some previous studies demonstrates the effectiveness of the introduction of measures and techniques. For example, the study of Chan et al. (2009), basing on a sample of Hong Kong hotels, conclude that the introduction water

saving initiatives plays a relevant role in the reduction of water consumption levels. The study consider that the significant reduction in consumption observed between the periods 1994-1996 and 2001-2002 (from 572.5 l/os up to 452 l/os), is mainly due to the introduction of water-saving technologies and a greater water-saving awareness among staff and guests. But in any case, previous studies demonstrate that the introduction of these measures or mechanisms constitutes an effective mechanism to reduce the levels of water consumption and water costs. There is also evidence that the implementation of water-efficient practices in the accommodation establishments can decrease operating costs by approximately 11% (EPA, 2012). Thus, from cost management perspective, accommodation companies have strong incentives to introduce more efficient devices and techniques (McLennan et al., 2017). Although the cost reduction is usually the main reason to introduce water saving measures, other studies also concludes that the reasons to implement water saving techniques are also related with marketing factors or tour operators' requirements. Thus, our model, in order to control the effects of the introduction of water saving measures, includes a dummy variable that takes the value of one when the lodging facility has introduced these measures, and zero otherwise.

Thus, the model proposed in our study in order to determine the key drivers of water consumption in the lodging sector, includes the following variables:

$$\begin{aligned} \ln(\text{Water Consumption})_i = & \beta_1 + \beta_2 \cdot \ln(\text{Area})_i + \beta_3 \cdot \ln(\text{Pool})_i + \beta_4 \cdot (\text{Sanatorium})_i + \\ & + \beta_5 \cdot (\text{Hotel})_i + \beta_6 \cdot (\text{Occupation})_i + \beta_7 \cdot (\text{Board})_i + \beta_8 (\text{Measures})_i + \epsilon_i \end{aligned}$$

Where the dependent variable is the log of water consumption (measured in cubic meters); $\ln(\text{Area})$ is the logarithm transformation of total area; $\ln(\text{Pool})$ is the the logarithm transformation of the area of swimming pools; the variable *Sanatorium* is a dummy variable for the type of accommodation; *Hotel* is also a dummy variable representing the accommodation type; *Occupation* is the annual average occupancy level; *Board* is the type of board offered by the lodging business; and finally the variable *Measures*, is a dummy variable controlling the introduction of water saving measures.

5.3 SAMPLE AND DATA COLLECTION

Quantitative data related on water consumption in the tourism lodging industry is usually scarce and incomplete in many countries (Eurostat, 2009; Gössling et al., 2012; Tapper et al., 2011), as usually tourism-related water consumption statistics are combined with 'urban' water consumption statistics (Tortella & Tirado, 2011). Thus, the data used in this study has been obtained basing on a survey questionnaire distributed among lodging facilities sample of the Shchuchinsk-Burabay resort area in 2016. The sampling technique has been the stratified random procedure, stratified by lodging type, in order to obtain a representative sample. Data were collected through professional interviews with lodging managers. The questionnaire requested information for the years before (2014, 2015) related to water consumption, size and type of accommodation, size of swimming pools, strategy, occupation level, board type and water saving measures introduced (see Appendix D). Data related with water consumption has been contrasted and completed with the information provided by the local water authorities of Akmola region, such as the State Communal Enterprise on the right of economic management 'Burabay Tazalyk' and 'Burabay Su Arnasy'.

According to the data provided by the Department of Tourism in Akmola region, the Shchuchinsk-Burabay resort area includes around 150 lodging facilities business, with 8,734 beds (data for 2015). This population includes multiple types of lodging facilities, such as hotels, sanatoriums, guesthouses, and camping camps, but also other small accommodation providers (such as cottages, hostels, recreation centers, apartments and small houses, among other types). A detailed information of lodging types and number of beds is exposed in Table 5.1.

Our sample includes the most relevant categories, that are, hotels, sanatoriums, and guesthouses. These lodging categories represent the most important part of the Akmola lodging sector (accounting for 6,566 beds, the 75.18% of total), and constitute the most popular in the area and the unique that operate during all year. Only the 17.64% of our sample lodging facilities use the star category system,

confirming that the use of the star category classification is not widely spread in Kazakhstan.

While the water consumption at hotels and guesthouses has been investigated in previous studies (Bohdanowicz & Martinic, 2007; Charara et al., 2011; Gössling 2001; Gabarda-Mallorquí et al., 2017), the concept of the sanatorium is less often examined in international studies. This type of accommodation, mainly oriented to health and wellness, is typical in Kazakhstan, and most of them developed during the Soviet period (Vetitnev & Dzubina, 2013). During the Soviet period, sanatoriums were even a part of public health-care services funded by the government. These facilities are usually located in resort areas, and are intended to provide health improvement measures and promote wellness for guests. Nowadays many of the sanatoriums in the Shchuchinsk – Burabay resort area are managed by the state.

Table 5.1. Population and sample

Type of lodging	Population	%	Number of beds	%	Sample	%
Hotels	58	38.67%	2,236	25.60%	30	58.82%
Sanatoriums	21	14.00%	3,850	44.08%	11	21.57%
Guesthouses	25	16.67%	480	5.50%	10	19.61%
Recreation centers	10	6.67%	215	2.46%		
Cottages	9	6.00%	126	1.44%		
Hostels	9	6.00%	140	1.60%		
Children´s camps	7	4.67%	1,320	15.11%		
Others	11	7.33%	367	4.20%		
Total	150	100.00%	8,734	100.00%	51	100.00%

Sources: Elaborated from data of Department of Tourism in Akmola region (2016)

The stratified sample methodology has been conducted according to lodging category, in order to obtain a representative sample. The sample database was obtained from a survey distributed among all the 104 lodging facilities selected, including sanatoriums, hotels and guesthouses. Finally, a total of 51 questionnaires were successfully fully completed, that represents the 49.03% of our population, and the 34% of total lodging sector. The major problems that appear during the data collection process were mainly the rejection to participate in the survey arguing confidentiality reasons (18 facilities), the simple rejection (13 facilities), and the no

time to answer the questions due to reconstruction processes (eight facilities). The final sample includes a total of 30 hotels (58.82% of the sample), 11 sanatoriums (21.57% of the sample), and 10 guesthouses (19.61% of the sample). All these lodging establishments account for 5,669 beds (64.90% of the total population). More precisely, our sample includes nine hotels ranked basing on the international star categories system (representing the 17.64% of the sample), and 42 lodging establishments without category (representing the 82.36% of the sample).

Data related with sample water consumption is exposed on Table 5.2. As we can observe, our sample presents an average consumption of 242 liters per guest and night (l/g/n) in 2014 and 269 l/g/n in 2015, with a minimum level of 3 and 16 l/g/n, and a maximum level of 1,383 and 1,302 l/g/n respectively. In the line of the evidence in other countries, these levels represent approximately three times the consumption levels of Kazakhstan’s local population (82.70 liters per day; Water Resources Committee of Kazakhstan, 2016). These figures are comparable with those observed in hotels of the Mediterranean region (250 liters per tourist per day), guesthouses in Zanzibar (248 liters), hotels in the Normandy Coastal of France (259 liters) and Germany (275 liters) (Gössling et al., 2015).

Table 5.2. Water consumption in the Shchuchinsk-Burabay resort area

Water consumption/Years	Min	Max	Mean	SD.
Water consumption in 2014 (m ³)	12.00	35,052	4,468.29	7,963.91
Log of water consumption (2014)	2.48	10.46	7.17	1.67
Water consumption in 2015 (m ³)	100.00	33,000	4,951.27	8,096.15
Log of water consumption (2015)	4.61	10.40	7.40	1.53
Consumption per guest per night in 2014 (liters)	3.25	1,383.05	242.49	262.57
Consumption per guest per night in 2015 (liters)	16.03	1,302.08	269.20	256.03

The descriptive statistics for the explanatory variables are exposed in Table 5.3. The the area of the lodging facilities included in the sample presents, on average, around 3,016 square meters, with a swimming pool size of 128.61 m². The annual average occupation level ranges from the 35% to 52%, with and average value of 42%. The type of board offered by accommodation facilities ranges from zero (facilities that only offers accommodation) to three (facilities that provides the full board option), with average value of one-half. Thus, the type of board usually offered in the area generally includes breakfast, and in a less extent a second meal (usually dinner). Finally, we can observe that only the 17.65% of the sample facilities have introduced some water saving measures.

Table 5.3. Sample descriptive statistics

Variables	Min	Max	Mean	SD.
Total area of lodging business	150	16,500	3,016.73	2,859.19
Pool area	12	540	128.61	128.88
Sanatorium	0	1	21.57%	
Hotel	0	1	58.82%	
Average occupation in 2015 (annual)	0.35	0.52	0.42	0.04
Type of board	0	3	1.5	1.2
Water saving measures	0	1	17.65%	

Notes: 1US\$=330.75365KZT, *source:* Inforeuro, May 2016.

High season is considered May-August, low season is considered September – April.

5.4 RESULTS AND DISCUSSION

The proposed model is estimated with *Ordinary Least Squares Methodology*, using the *Statistical Package for Social Sciences SPSS 23.0*. Regression results are exposed on Table 5.4 The adjusted square R square of the model is 0.712, and demonstrates that our model is able to explain a significant part of the variability of water consumption in the lodging sector of the Shchuchinsk-Burabay resort area. The values of *Variance Inflation Factor* (VIF) proof that the explanatory variables introduced in our model do not present multicollinearity problems.

With respect to the coefficient estimations, our research also concludes, in the line with previous research, a positive significant relation between the size of the lodging facility (i.e., the total area of the lodging facility) and water consumption levels. Concretely, our model estimates that an increase of 1% in the total area of the accommodation, results in an increase of 0.301% on the water consumption of lodging business.

Our research also concludes that the existence of swimming pools generates a significant effect on total lodging water consumption. Concretely, our model estimated that an increase in one square meter of the area of pools tends to increase 0.218% of total water consumption, in the line of results obtained by previous studies, such as Gössling (2001), and Tortella and Tirado (2011). This effect could be attributed to weather conditions of the region. As mentioned above, the average temperatures of the region during the high season are usually between 20° and 23° Celsius degrees. This temperature usually tends to generate unfavorable conditions for swimming in the lakes and rivers, leading many tourists to primarily use the pool facilities at their accommodation facilities. Additionally, renewal of water in pools and high evaporation rates are two other factors that influence the water demand of hotels (Gössling, 2001).

Table 5.4. Regression results

Dependent variable: Log of Water Consumption (2015)			
Model and Variables	Coefficients	Standard errors	VIF
Constant	4.296**	1.830	
Ln (total area)	0.301***	0.171	1.837
Ln (area of pools)	0.218**	0.064	1.466
Sanatorium	0.380***	0.494	3.136
Hotel	0.082	0.333	2.032
Annual average occupancy level (2015)	-0.111	3.441	1.085
Board type	0.278**	0.182	2.456
Measures	-0.157*	0.371	1.516
R2	0.752		
Adj. R2	0.712		
F-test	18.643***		

Note: * significant at 10%, **significant at 5%, *** significant at 1%,

VIF - Variance Inflation Factors.

Regression results also confirm our hypothesis related with lodging type. Guesthouses are the lodging category with lower levels of water consumption, while sanatoriums are the highest water consumers comparing with hotels and guesthouses. Specifically, the results indicate that sanatoriums consume 38% more water than guesthouses, while hotels consume 8.2% more water than guesthouses.

The high level of consumption observed in sanatoriums can be explained by several facts. First, as we point out before, these facilities usually include a wide range of health, medical and therapeutic services and activities, usually related with water intensive facilities (i.e., hot and cold-water baths, mineral water, radon water, healing water, etc.). Additionally, sanatoriums are usually managed by the government authorities without a market oriented basis, mostly with a social orientation. Historically, these facilities were developed by the government in order to provide medical and wellness services and activities for workers of the public companies and factories (usually from the mining and energy sectors). During the last years these sanatoriums have been reoriented to offer their services to all public, but continuing with a public management system. Thus, the management of these facilities are not usually market driven. Contrary, these facilities try to offer a

social service, and thus, this can explain the higher levels of water consumption. Finally, another reason explaining the high levels of water consumption observed in these facilities can be related with the number of workers. The nature of these facilities, that combine accommodation with health improvement services, usually makes that the number of employees of these facilities is significantly higher comparing with hotels and guesthouses. In this sense, the study of Charara et al. (2011) revealed that the number of employers working at hotels affects in a positive way to the levels of water consumption.

In the case of the effect of annual average occupancy level, regression results revealed not significant effect of the mentioned variable on total water consumption. This result can be explained by the fact that this variable presents a very reduced variability in the lodging facilities of the Shchuchinsk-Burabay resort area. As we expose previously in table 5.3, the value of annual occupancy ratio presents a mean value of 42%, and moves between a range of 35% (minimum level) and 52% (maximum level). Thus, this reduced variability in the occupation variable can explain the fact, that it is not statistically significant.

Regression results also indicate that the number of meals offered plays an important role to explain water consumption in accommodation facilities. The results conclude that an increase in one unit in number of meals included in the type of board offered leads to a significant increase of 27.8% in total annual water consumption. These results are consistent with data obtained in studies of Deng and Burnett (2002), Bohdanowicz and Martinic (2007), and Tortella and Tirado (2011), who concluded that hotels consume more water when they serve more meals. Undoubtedly, this positive relation is because as higher are the meals included in the type of board, higher will be the water consumed in kitchens and restaurants (74.51% of accommodation establishments in our sample have restaurant kitchens). But it is also due the fact that as more meals included in the type of board, higher will be the time spent by guests at the accommodation

facilities, and this will lead to an increase in consumption and costs of water (i.e., more showers, use of swimming pools, etc.).

Finally, our estimations conclude that the introduction of water saving measures reduce in a significant way the level of water consumption. Concretely, our results confirm their effectiveness, since the introduction of these measures reduce the levels of water consumption of the lodging facility in a 15.7%. However, analysing in a more deeply way sample database, we detect that only nine of the 51 sample observations (17.65%) reveals the introduction of water saving measures in their facilities. The reasons usually exposed by managers to justify this situation were usually related with the economic inefficiency of such measures, that is, the cost of the measures are perceived like higher than the cost savings generated, probably influenced by the reduced price of the water in Kazakhstan. These results are in the line of Kasim et al. (2014), who points out that the adoption of environmental management systems is an intensive process and will face high costs.

Thus, it seems necessary that authorities design and develop new policies and strategies to push accommodation managers to implement water saving measures, that leads to more efficient use of water scarce resources. In this sense, recent studies propose to use economic policy instruments to incentive the implementation of water saving measures, such as prices (water tariffs). These studies demonstrate that water tariff system, if it is correctly design, can be an effective tool to encourage accommodation business to introduce water saving measures in their facilities (Gössling et al., 2012; Razumova, Rey-Maqueira, & Lozano, 2016; Tortella et al., 2017). On the other side, other studies suggest that the implementation of non-pricing strategies and mechanisms (such as consumer education, the introduction of restrictions on water use, social marketing programs, etc) are more appropriate and effective measures to reduce the levels of consumption of water resources (Lowe, Lynch, & Lowe, 2015).

5.5 CHAPTER CONCLUSIONS

This study attempts to contribute to a better understanding of the main driving factors of lodging water consumption in the Shchuchinsk-Burabay resort area. Water resources in this region have been experienced significant stress situations during the last years, between other reasons, due to the important development of the tourism activity in the region. Like in any other tourist destinations, lodging sector is one of the main water consumers of the region. In this context, efficiency in the water consumption at the accommodation facilities is considered as a key environmentally issue for the next decades. Thus, the analysis of water consumption in the lodging sector of the region is crucial for the sustainability of the region, both for environmental point of view, but also from economic and social.

Basing on a representative sample of lodging facilities, we estimate a regression model in order to identify the main key explanatory variables that determine the level of water consumption at lodging business. Regression results revealed that the total area of the lodging business, the area of pools, the type of accommodation (sanatorium), type of board, and the introduction of measures of water saving constitute the most important drivers of water consumption in those facilities. Thus, it seems that the development of large hotels with large swimming pools, rather than small guesthouses, will tend to increase the water stress problems of the region. In the same sense, the proliferation of full board formulas, will increase water consumption at kitchens and restaurants, but also will increase the time that guests spend at accommodation facilities and this, will conclude in a higher increment on water consumption levels of guests at pools and rooms.

Our findings also conclude that the introduction of water saving initiatives reduces accommodation's water consumption. In this sense, our database reveals that very few accommodation facilities have introduced this kind of initiatives, usually arguing that their cost is higher than the cost savings generated. Thus, the sustainability of water resources of the region requires that authorities develop new policies and mechanisms to enhance environmental responsibility and incentive the introduction of water saving measures in the accommodation facilities. Those

mechanisms are usually based on fiscal incentives and the design of effective water pricing structures. The actual water pricing structure of the region is based on the flat rate system, that is, all levels of consumption are charged at the same price. Thus is crucial that regional policymakers design new water pricing mechanisms (i.e., increasing block rates pricing models) that push lodging managers to introduce water saving measures in their facilities. These structures increase the water prices charged as the amount of water consumed increases, penalising high consumers in front of low consumers, and thus, incentive water saving attitude's at lodging facilities.

**CHAPTER 6: LAKE DESTINATION IMAGE:
ANTECEDENTS AND CONSEQUENCES**

6.1 LAKE DESTINATION IMAGE

6.1.1 Destination image: definition and measurement

Tourism is considered one of the world's largest and fastest growing economic sectors over the last six decades (UNWTO, 2018). Thus, nowadays many efforts are made by destinations to achieve competitiveness in tourism. The competitiveness of tourism destinations is a key challenge for tourism marketers, who are required to create competitive destinations that attract the attention of visitors (Pike & Ryan, 2004). In order to promote the tourism products and achieve competitiveness, an effective destination positioning strategy in relation to competitors is required (Echtner & Ritchie, 1991). In this sense, special attention has to be paid to the study of destination image, namely to its assessment and formation in the context of tourism, as image is a key component in destination positioning process (Pike & Ryan, 2004).

Image is a critical construct in tourism research, as it affects people's overall satisfaction and behavioural intentions (Chi & Qu, 2008; Jin et al., 2015). There is no consensual definition of destination image. Several authors have been critical in conceptualising the construct and recognised a lack of conceptual framework of destination image in tourism literature (Echtner & Ritchie, 1991; Fakeye & Crompton, 1991; Pike & Ryan, 2004). The avoidance to propose a precise definition of the construct by many of tourism researchers indicates the complex character of the destination image concept.

Some authors argue that destination image is simply described as an "*impressions of a place*" or "*perceptions of an area*". Other researchers define image as the subjective interpretation of the perception on the destinations visited, heard by the tourists (San Martín & Del Bosque, 2008). A commonly adopted definition of destination image is that "it is a set of beliefs, ideas, and impressions that people have of a place or destination" (Baloglu & McCleary, 1999, p. 871). This last definition is one of the most consensual and will, therefore, be taken as a reference in this thesis.

Destination image is one of the most heavily investigated areas in the tourism literature (Baloglu & McCleary, 1999; Crompton, 1979; Gallarza, et al., 2002; San Martín & Del Bosque, 2008).

A number of studies examine destination image based on a list of attributes, while others highlight the importance of holistic impressions of a destination (Echtner & Ritchie, 1991; Fakeye & Crompton, 1991). After that, some authors discuss the importance of combining both attribute based and holistic components of destination image (Choi et al., 1999). Based on the last arguments, Echtner & Ritchie (1991: p.8) argue that the destination image is “not only the perceptions of individual destination attributes, but also the holistic impression made by the destination”.

In the scope of the destination image, the existence of a cognitive image, of an affective image and an overall image is also recognised. These images have been studied separately, or as combinations, in tourism studies. Cognitive image is formed based on the tourist’s beliefs and knowledge about the place’ attributes (Chon, 1991; Fakeye & Crompton, 1991; Pike & Ryan, 2004), while the affective image represents tourists’ feelings and emotions raised at a destination (Baloglu & Brinberg, 1997; Chen & Uysal, 2002). Other authors consider that destination image could be defined as a combination of two main components, a perceptual/cognitive component and an affective one (Baloglu & McCleary, 1999) and thus, during the last two decades, tourism literature includes both cognitive and affective approaches in the assessment of the destination image (Beerli & Martin, 2004; San Martín & Del Bosque, 2008). In this context, San Martín and Del Bosque (2008) point out that the destination image should be considered a multi-dimensional construct that includes cognitive and affective attributes of a destination. In this sense, the cognitive – affective approaches of destination image has been adopted in recent studies (Pike & Ryan, 2004). Moreover, in the literature, the relationship between these two components was examined several times and revealed the significant impact of cognitive image on affective image. It has been noted that affective evaluation depends on cognitive assessment of destination attributes and that, therefore, affective components are

considered as a function of the cognitive ones (Stern & Krakover, 1993). This could be explained by the fact that individuals develop both cognitive and affective responses and attachments to environments and destinations (Proshansky et al., 1983).

This suggests that even both dimensions have sometimes been studied separately, the combination of two components forms an overall image of a destination (Baloglu & McCleary, 1999; Fakeye & Crompton, 1991). In their turn, some others define image as an individual's overall perception of a destination (Bigné et al., 2001). Stern and Krakover (1993), in their model of the formation of urban image, outline the role of the perceptual/cognitive and affective images in composing an overall image of a city. These studies provide support for the interactive role of the two components (perceptual/cognitive and affective) in forming the destination overall image. Some recent research assess the destination image through three components (cognitive, affective and conative) using online marketing approach (Kladou & Mavragani, 2015).

Despite recognising the existence of a holistic destination image and of several components of the destinations' image, most empirical studies in the tourism literature assessed cognitive image of a destination (Chon, 1991; Pike & Ryan, 2004). The application of only cognitive components of the destination image, among other reasons, is most probably due to the influence of cognitive image on affective image or to the fact that the affective image is also a result of the cognitive assessment of the destination (Stern & Krakover, 1993).

Several researchers propose a number of scales of attributes to measure the destination image. A number of previous studies reveal a lack of homogeneity regarding the attributes used to identify the individual's perceptions concerning a destination image (Baloglu & McCleary 1999; Fakeye & Crompton, 1991). Gallarza et al. (2002), based on previous academic literature, namely on 25 studies selected among all empirical tourism destination image research, have effectively identified 22 attributes to measure the destination image (Table 6.1). This list encompasses both functional and psychological destination image attributes. Functional

characteristics refer to directly observable or more tangible components of a destination (e.g. variety of shops, good transportation), and psychological characteristics are more abstract and associated with intangible components of a place (e.g. friendly local people, safe environment, mixed culture) (Echtner & Ritchie, 1991).

Table 6.1. The most widely employed attributes in destination image studies

Authors/Attributes	Various activities	Landscape	Nature	Cultural attractions Nightlife and entertainment	Shopping facilities	Information available	Sport facilities	Transportation	Accommodation	Gastronomy	Price, value, cost	Climate	Relaxation	Accessibility	Safety	Social interaction Residence	Receptiveness	Originality	Service quality	
	<i>Functional</i>										<i>Psychological</i>									
1 Crompton (1979)								X			X	X	X		X			X		
2 Goodrich (1982)		X		X		X		X	X	X			X					X		
3 Stemquist (1985)		X		X	X	X		X	X	X			X					X		
4 Haahti (1986)		X	X	X	X			X			X		X	X				X	X	
5 Gartner and Hunt (1987)		X	X					X	X			X						X		
6 Calantone et.al. (1989)	X	X		X	X	X		X	X		X		X		X			X		
7 Gartner (1989)		X	X	X	X			X										X		
8 Embacher and Buttle (1989)	X	X		X						X	X	X		X		X				
9 Guthrie and Gale (1991)	X				X		X	X	X	X	X		X	X		X	X		X	
10 Ahmed (1991)		X	X	X	X	X		X				X						X		
11 Chon (1991)		X	X	X		X			X	X	X	X		X	X			X	X	
12 Fakeye and Crompton (1991)	X	X	X	X	X	X	X	X	X	X	X	X	X	X				X		
13 Crompton et al. (1992)	X		X		X						X	X		X		X	X	X		
14 Carmichael (1992)	X										X			X				X		
15 Chon (1992)	X	X		X		X		X	X	X			X	X				X	X	
16 Echtner and Ritchie (1993)		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
17 Driscoll et al. (1994)	X	X		X	X	X					X	X		X	X	X	X	X		
18 Dadgostar and Isotalo (1995)			X	X	X	X		X	X	X			X				X			
19 Muller (1995)		X		X	X	X			X	X	X	X	X	X	X			X		
20 Eizaguirre and Laka (1996)						X		X	X	X		X		X	X			X		
21 Schroeder (1996)		X	X	X	X	X		X	X	X	X		X			X		X		
22 Ahmed (1996)		X	X	X	X	X		X										X		
23 Oppermann (1996a, 1996b)		X		X	X			X	X	X	X	X			X				X	
24 Baloglu (1997)		X	X	X	X	X		X	X	X	X	X			X			X	X	
25 Balogu and McCleary (199)		X		X	X			X	X	X	X	X			X			X		
Total	8	19	12	19	17	15	3	16	8	15	15	16	12	12	12	10	7	21	7	4

Sources: Gallarza et al. (2002)

Most of the researchers rely, as Gallarza et al. (2002) did, on secondary information (e.g. literature review of previous authors, information from tourism organisations, travel agencies) when defining and generating the list of destination image attributes. Designing a valid and complete list of the destination image attributes is complicated, expensive and time-consuming. However, some authors point out that not only features that are common to all destinations should be considered in the process of measurement of destination image characteristics, but also the distinctive attributes of the examined destination should be captured (Echtner & Ritchie, 1991).

Pike (2002) reviewed 142 research papers in the destination image literature from the period 1973–2000 and analysed the context, method and focus of the construct. The review of empirical studies reveals a big diversity of statistical methodologies (mostly multivariate techniques) in measuring tourist destination image. The most widely used multivariate methods for measuring destination image are information reduction techniques: multidimensional scaling and factor analysis methods (e.g. Correspondences Analysis, Principal Component Analysis) (Gallarza et al., 2002; Jin et al., 2015). Most of the tourism researchers use Likert-type scales in the measurement of destination image attributes (Chi & Qu, 2008; Jin et al., 2015).

In the context of destination image attributes, the review of academic literature shows that the main attributes used in the measurement of the destination image construct are natural and scenic resources, cultural resources, services and infrastructure, security, accessibility and entertainment (Bigné et al. 2001; Wang & Hsu, 2010). San Martín and Del Bosque (2008) argue that factors such as 'natural environment', 'cultural heritage' and 'tourist infrastructure' represent the cognitive structure of destination image. The same patterns are applied in work of Kladou and Mavragani (2015) on assessing destination image using online marketing approach. For example, Wang and Hsu (2010), in their empirical work on one of the major Chinese tourist destinations identify that cognitive image is composed of five main dimensions such as tourism service quality, tourism resources, supporting factors, amenities and travel environment.

6.1.2 Formation of the destination image

Some important issues should be considered in the process of destination image formation. Firstly, the individuals can create an image of a destination in their mind before traveling to a destination. This can be based, among other things, on the secondary sources of information that can have non-commercial or commercial character or historical, political, economic and social information. Secondly, an image is formed after visiting a destination, which is a modified image and corresponds to a more realistic perception (Echtner & Ritchie, 1991).

In the recent years, Lopes (2011) discussed a formation of destination image in two stages (primary and secondary). Primary images are formed after visiting the tourist destination, and based on the messages from past experience, while secondary images are created in the mind of a traveler before visiting a place. Some authors (Gunn, 1988; Mansfeld, 1992) discussed the secondary image from two different perspectives, organic/informal image and induced/formal image. Organic image is related to the information transmitted unintentionally by tourism representatives, while induced image is formed by the involvement of marketers in promotion of tourism products in the region (Lopes, 2011). This remarks the important impact that information sources may have on destination image.

In this context, a number of studies reveal that, factors such as tourism motivations, sociodemographic variables, tourism marketing, previous experience, and all the information provided about the destination have an influence on destination image formation and consequently can be indicators of choosing the favorable destination (Beerli & Martín, 2004, Bonn et al., 2005). Some academic literature (Chon 1991; Fakeye & Crompton 1991) indicate that the number of trips and the duration of stay at the particular destination may influence the perceived image. While other authors reveal that, the service quality turns out to be the most essential factor in the formation of the visitors' cognitive image (Wang & Hsu, 2010). On another hand, some research suggests that psychological factors such as cultural values along with motivations also have a considerable effect on the construction of the image of a tourist destination even before it is visited (San Martín & Del Bosque, 2008;

Therkelsen, 2003). The authors note that motivation and experience, along with sociodemographic characteristics of the visitors, have a strong influence on cognitive and affective evaluation of the destination overall image. For example, Baloglu and McCleary (1999) recognise two main determinants of destination image such as personal characteristics of the visitors (internal motivation) and stimulus factors (external motivation). Considering this, motivation is considered as one of the important and critical variables in tourist behaviour, as it is represented by incentive and persuasive aspects behind all behaviour (Fayed et al., 2016).

6.1.3 Lake image

Although there is an increasing body of tourism literature on destination image, its measurements and consequences, very few empirical studies have been found on destination image as applied to the lake tourism context. A possible explanation could be that lake tourism is an emerging type of tourism and is thus still less investigated. Despite this, during the last decade the interest in investigating lake tourism and lake destinations has increased (Hall & Härkönen, 2006; Rodrigues et al., 2015; Tandyrak et al., 2016; Tuohino & Pitkänen, 2004). Some authors argue that lake tourism is a part of nature tourism. Others consider that lake tourism is part of rural tourism, as the activities related to some lakes are associated with rural areas (Gartner, 2006). Rodrigues et al. (2015), in their turn, point out that lake tourism, and water based tourism with various recreational elements, can be used as synonyms. Therefore, it could be argued that, no consensus still exists on the relationship between lake tourism and other kinds of tourism. However, it should be noted that lake tourism is not only a tourism that occurs on the lake itself, but that also encompasses the tourism activities in the surroundings areas of lakes. Thus, the lacustrine tourism environment includes the lakes itself, its shore area, and also the infrastructure and facilities around the lake, that enhance it as tourist attraction (Hall & Härkönen, 2006).

Despite a growing interest in lake tourism and lake destinations, there is an absence of academic literature examining the characteristics and attributes of the lake destinations (Rodrigues et al., 2015, 2017; Tuohino & Pitkänen, 2004). A few authors

investigated and published in this field, stating the importance of assessing the perceptions of the visitors towards the lake destinations (Rodrigues et al., 2015, 2017; Tuohino & Pitkänen, 2004). They believe that this will contribute to highlight the role of the lakes as essential natural resources for lake tourism development. Moreover, examining tourists' perceptions about lakes and lake destinations is of interest for lake tourism marketers (Rodrigues et al., 2017). Considering it, a deep understanding of how the lake image and lake destination image is formed is therefore of central importance.

Lake destinations can differentiate themselves on several dimensions. Erkkilä (2006) states that lake tourism destinations worldwide are not the same, as they are in different stages of development and offer different products and opportunities. Thus, the measurement of lake destination image should be based on the particularities of the examined place. Tuohino and Pitkänen (2004) identified lake attributes based on the marketing pictures of the Finnish Lake landscape and on the individual and cultural mental images of the tourists on the shown pictures. Rodrigues et al. (2015) identified main attributes related to lake destination image based on previous literature on destination image formation and complemented the list of variables using textual and photographic data. The researchers analysed the methodologies which have been developed to identify destination image attributes and attempted to apply them in the context of lake destinations (Rodrigues et al., 2015, 2017; Tuohino & Pitkänen, 2004).

In this context, it is logical to emphasize the importance of lake itself as one of the main natural attractions of a destination. Lakes are the main tourist attractions for many destinations, as is the case of Lake Balaton in Hungary, some Australian and Finnish lakes, and those of the English Lake District (Cooper, 2006). Lakes are important attractions, generating visits to tourism destinations (Hall & Härkönen, 2006). Ryan et al. (2010) state that lakes are central to the tourist experience in lakeside tourist destinations. Consequently, lake image is a crucial factor in determining visitors' travel behaviour towards a destination. Part of the lake destination image is determined by how people perceive the lake itself.

Lakes have specific features, which can be called lake's attributes. These attributes can be classified as lake environment (indicating the accessibility, peacefulness, natural beauty, ecosystem of the lakes as well as tourism infrastructure around along with possibilities to practice water based activity), water quality of the lake, represented by visual indicators such as (color, odor, existence of algal, sediments etc.) and inexistence of pressure, referring to the adequate use of lake water by various sectors (agriculture, industry, local population and tourism), which doesn't raise overconsumption of water resources. The lake is the main resource in lake destinations' development, combined with other surrounding resources that form the lake environment (Rodrigues et al., 2015). Having this in mind, the lake image, for this research, is defined as the individuals' overall perception of the lake and all its attributes, including the elements of its shore area.

In most lake destinations, the development of tourism in the lake and around it presents challenges to its ecosystem and decreases water quality. It should be recognised that the water quality of the lakes is essential in attracting the tourists (Cooper, 2006). Thus, it could be assumed that water quality is one of the key components in the measurement of lake image and consequently lake destination image. Moreover, the importance of water quality issues is stated in the Water Framework Directive (WFD), which aims to contribute for reaching good quality of water resources in all river bodies by the year 2027 (European Union, 2000). Water quality within the lake destination image context, could be considered as an important factor influencing recreation site selection decision and satisfaction. In this sense, several studies investigated water quality perception and the recreational uses of lakes (Ditton & Goodale, 1973). The research on the lakeside tourists destinations in Serbia indicates that natural environment, cleanness of the place and especially the lake water quality are the most important factors in tourists' overall destination satisfaction (Markovic et al., 2015). Ryan et al. (2010) analysed the perceptions of the visitors towards Chinese lakes' water quality. The authors discussed three main dimensions affecting visitors' perception of lakes' water quality: degree of pollution, natural environment and infrastructure of tourism industry around (e.g. number of hotels, restaurants, urbanisation). Ramdas and Mohamed (2013) revealed, on their

research, that visitors' and residents' are in high agreement regarding tourism impact on water quality in Redang and Perhentian Island in Malaysia. The researchers consider that environmental education could be a tool leading to positive and responsible attitudes of the visitors and local people to the environmental resources. Thus, it might be assumed that the educational level of the individuals influence the perceptions towards the lakes. Chen et al. (2009) attempted to understand the visitors' perceptions of the environmental impacts caused by six recreational activities - fishing, camping, trail use, swimming, biking and motorboating - on Sun Moon Lake National Scenic Area in Taiwan. The researchers argue that without the awareness of the negative impacts, visitors may not consider changing their behavior to be more environmentally friendly.

Besides the importance of water quality attribute, assessing the visitors' perceptions on water quality is a complicated issue, since not all visitors have enough knowledge and appropriate information in defining water quality. This issue is also challenging for the local people, living around the lake environment. Hu and colleagues (2011) noted that the general population of the United States do not have enough knowledge about water quality issues. Levêque and Burns (2017) reported that a quarter of the respondents on water quality conducted in Monongalia County (West Virginia) perceived water quality as very poor, while another quarter thought that it was excellent. This sharp difference in opinions suggests a lack of knowledge and awareness of water quality issues. However, local people might be more aware about the water quality of lakes and this can be explained by the day-to-day activities of the people around the lake and its watershed.

In order to examine the water quality of the lakes from an ecological point of view, many researchers use water quality indexes (Bhateria & Jain, 2016; Kumar et al., 2014). However, it could be said that there is no consensus regarding the set of attributes or model appropriate to measure the perceptions towards water quality. This can be explained by various factors. First, the multidimensional character of the phenomena such as water quality/pollution and the absence of common accepted

attributes of water quality. Secondly, individuals do not always have enough knowledge/information to assess the water quality (Stedman & Hammer, 2006). For example, Jeon and his colleagues (2005) used a ten-point water quality ladder in water quality assessment, where “0” refers to “Worst possible water quality” and 10 to “Best possible water quality”. Water quality ladder was used not only in the categorisation of the lakes based on the water quality, but also to see the potential water quality improvements of the lakes from one ladder to another. However, some authors argued that there could be a disagreement between perceptions of those who use the lakes for recreation purposes and the water quality characteristics of the lakes assessed by the experts (Ditton & Goodale, 1973). Furthermore, physical water quality parameters of the lake may not necessarily measure the qualities that attract the recreation users (Ditton & Goodale, 1973). It is then possible to observe that perceptions on water quality of the lakes can be different among the individuals (Ditton & Goodale, 1973; Jeon et al., 2005) and influenced by uses (Stedman & Hammer, 2006). Stedman et al. (2007) investigated and compared 5 lake district sites in Europe and 5 in North America, particularly how they are used and how their users feel about them. North Americans prefer relatively intensive recreation activities such as motor boating and fishing, while Europeans more likely practiced swimming, camping and used non-motorised boats. The individuals who are engaged in water contact activities are expected to be more aware on water quality conditions. These individuals may demand higher water quality due to the direct contact with water.

Based on the above-mentioned considerations, using attributes of visual water quality characteristics and readily observable phenomena can be more helpful in assessing the overall perceptions of people towards water quality. For example, some researchers (Stedman & Hammer, 2006) used the variables of shoreline development as a proxy of water quality and assessed the respondents’ perceptions towards lakes, namely perceptions of higher and lower levels of density. Following this logic, in order to assess the visitors’ perceptions on water quality, observable variables of water quality characteristics (color, odor, pollution, level of water, existence of sediments, algal, litter from animal) have been applied in this study.

Some researchers focus on other features of the lake and shore area, besides water quality, that can affect its image. These features include the variety of the wildlife on the lake, the beauty of the landscape (Rodrigues et al., 2015; Ryan et al., 2010), peacefulness (Rodrigues et al., 2015) and opportunities to engage in water-based activities such as swimming, boating or fishing (Rodrigues et al., 2015; Ryan et al., 2010). With regard with this last issue, many people visit lake destinations to engage in recreational activities, and some research analyses the importance of lake water for such activities (Stedman et al., 2007; Tandyrak et al., 2016). Thus, another important component of the lake image is the lake environment, which encompasses other elements besides water quality, such as the ecosystem of the lake, or its accessibility, peacefulness or natural beauty, along with opportunities to carry out water-based activities and the tourism infrastructure on the shore.

The development of lake destinations demands tourism facilities, along with various services and activities that are essential in destination image formation (Lu et al., 2015; Ryan et al., 2010). Visitors' engagement in various tourism activities such as the use of accommodation, of infrastructure, of various services, and also the participation in different activities may influence the perception about the entire lake destination. In turn, positive assessment of a destination may highly contribute to transform the lake landscape into a meaningful experience (Tuohino & Pitkänen, 2004). Despite being tourism attractions, the lakes are crucial in supporting human being and settlements around (Cooper, 2006). Heterogeneous use of lakes may not only affect the fragile lake ecosystem, but also give rise to conflict between stakeholders, which may affect visitors' assessment of the lake (Cooper, 2006). Thus, a lack of pressure in and near the lake due to overuse or conflict between users (who may want to use the land for agriculture, industry, and tourism, among others) may favor the creation of a positive lake image. In this context, in order to assess the visitors' perceptions on possible pressure on the lakes from various uses, the construct as "Inexistence of pressure" is used in this study. The construct is represented by two indicators such as there is no conflict between users (agriculture, industry, local people and tourism), they are not being harmed by overuse.

6.1.4 Lake destination image

There are other components at lake destinations, located a little away from the lake itself that may also be of importance. For some researchers, accommodation (Rodrigues et al., 2015; Ryan et al., 2010), tourist offices (Rodrigues et al., 2015), restaurants (Ryan et al., 2010), shopping areas (Lu et al., 2015) and parking (Prasetyowati et al., 2014) are factors that may influence the lake destination image. Although smaller facilities may be located on the shoreline, these usually tend to be further from the lake. In addition, when trying to assess lake destination image, some researchers refer to the history and heritage of the area (Ryan et al., 2010; Tuohino, 2015), to the friendliness of local people (Rodrigues et al., 2015; Ryan et al., 2010), or to cultural attractions as a whole (Rodrigues et al., 2015). Others emphasize the beauty of the lake landscape (Tuohino, 2015). Some natural features of lake destinations, even those unrelated to the lake, such as the presence of mountains and valleys or a pleasant climate, may also influence the destination image (David et al., 2012; Prasetyowati et al., 2014). Moreover, according to the UNWTO (2007), any destination should contain basic elements such as natural and cultural attractions, along with public and private amenities. Thus, lake destinations are no exception and should provide visitors with a set of natural and cultural attractions.

Lake tourism is recognised as an emerging and under-investigated type of tourism in academic literature (Hall & Härkönen, 2006). However, taking into account the considerations made about lake destination image in this paper, this concept is not easy to define. Based on one of the important empirical works on lake destination attributes, lake destination image can be said to correspond to the sum of all beliefs, knowledge, ideas and impressions that individuals associate with a destination (Baloglu & McCleary, 1999), where lakes are identified as a main resource in the destination's development, but are complemented by other resources, services, facilities and infrastructure around the lake (Rodrigues et al., 2015, 2017).

6.2 ANTECEDENTS AND CONSEQUENCES OF LAKE DESTINATION IMAGE

As has been mentioned before, the destination image can be influenced by various factors, including tourism sociodemographic variables, tourism marketing and all the information provided about destination, cultural values and motivations of the visitors (Beerli & Martín, 2004; Lopes, 2011). In this context, Baloglu and McCleary (1999) recognised two main determinants of destination image: visitors' personal characteristics (psychological and social) and stimulus factors (information sources, previous experience). Among the psychological factors, motivations considerably affect the formation of destination image (Baloglu & McCleary, 1999; San Martín & Del Bosque, 2008) and tourists' destination selection process (Crompton, 1979).

6.2.1 Motivation

A number of theoretical and empirical studies were found on the topic of tourist motivation, indicating the importance of motivation theory in understanding why tourists travel and what type of activities perform while traveling (Crompton, 1979; Fodness, 1994; Kozak, 2002). Fayed et al. (2016) argue that motivation is essential for tourism development, as tourism is based on the needs and interests of people to travel. The tourist motivation is a behavioural impulse based on combination of both conscious and unconscious aspects, which push an individuals or a group of people to travel (Arcana, 2017).

Tourism literature emphasizes the importance of motivations, encompassing both push and pull factors (Crompton, 1979; Lopes, 2011). The push factors are related to socio-psychological motives of an individuals, those factors predisposing people to travel (e.g., escape, nostalgia, etc.). While pull factors are induced by certain destinations that attract tourists to a given destination (e.g., sunshine, sea, beach, seeking a warmer climate, etc.) (Crompton, 1979; Dann, 1977). Dann (1977) concluded that even if the certain destination offers a wide range of services and attractions for the potential tourist, the final decision to visit that destination is a consequent of the personal needs and interests of the individuals. However, some

studies consider that such decisions are complex, with a dynamic mix of push and pull motivations considered to encourage destination selection.

Each destination offers a variety of products and services to attract visitors and each tourist has an opportunity to select from a set of destinations (Crompton, 1992). Thus, the destination selection process might be related to visitors' assessments of destination attributes and their perceptions upon them. Fodness (1994) suggests that understanding tourism motivation is important, as it can assist in tourism product development, service quality improvement and destination image development. Where the role of destination image should be emphasized. Motivation as an antecedent of destination image could influence on process of destination selection. Baloglu (2001) argues that the motivation affects the effective components of the image, or the feelings aroused by a place or a person who can assess a destination based on various travel motives.

A number of studies have been performed on the link between motivation and the choice of a tourist destination (Yoon & Uysal, 2005), and different sets of motivation factors have been defined related to visiting different destinations. For example, Hsu and Lam (2003) revealed that experiencing a different culture, sightseeing and curiosity are primary motives of Chinese travelers in planning to visit to Hong Kong. People visiting ecotourism destinations seek for comfort and satisfaction, while those selecting adventure tourism destinations look for self-actualisation (Meng et al., 2008). Crompton (1979) empirically identified seven socio-psychological motives which served to direct pleasure vacation behaviour. These motives were escape from a perceived mundane environment; exploration and evaluation of self; relaxation; prestige; regression; enhancement of kinship relationships; and facilitation of social interaction. Even each motive was discussed as separate entity, in destination selection process they operate as a combination of motives. Moreover, the authors revealed that for some respondents, the destination itself was relatively unimportant. They visited the destinations not because of the specific cultural insights or attractions; rather they seek for socio-psychological reasons and satisfaction of their inner motives.

Motivation, as a dynamic concept, may vary from one individual to another, from one product to another, and from one destination to another (Kozak, 2002). Despite the heterogeneous nature of tourism motivations, many travelers emphasised the great importance of relaxation as one of the most important psychological needs that individuals seek to fulfill (Kozak, 2002). In the recent decades, many people motivated to visit destinations with objective an increase in personal well-being and health. Improving health on holiday, escaping from work and the movement to a warmer environment seems to be main stimulating factors (Connell, 2006). Moreover, for a long period of time, resorts and SPA areas were the places where the individuals can meet those demands (Sayli et al., 2007). The individuals motivated to relaxation and health improvement seek a destination that meet their demands, more particularly relax their body, mind and spirit while they are able to engage to health improvement activities and physical therapy. Researchers have also already advocated the potential of lakes in offering wellness experiences (Konu et al., 2010), and the lakescape is considered a good place to find happiness and a balance in life (Tuohino, 2013). Individuals searching for wellness and health-improvement activities also seek relaxation (Connell, 2006; Tuohino, 2013). It is thus assumed that the visitors with a stronger “relaxing and health improvement” motivation are likely to have a more positive image of the lake destination, and the following hypotheses are drawn:

H1: The motivations for “relaxing and health improvement” have a positive influence on lake destination image.

H 1a: The motivations for “relaxing and health improvement” have a positive influence on water quality.

H 1b: The motivations for “relaxing and health improvement” have a positive influence on the lake environment.

H 1c: The motivations for “relaxing and health improvement” have a positive influence on the inexistence of pressure from various lake uses.

H 1d: The motivations for “relaxing and health improvement” have a positive influence on tourist facilities and services.

H 1e: The motivations for “relaxing and health improvement” have a positive influence on natural features.

H 1f: The motivations for “relaxing and health improvement” have a positive influence on cultural heritage.

Lakes can be an attractive source for leisure through practicing various activities in groups (Tătar, 2011). The activities in and around the lakes include boating, fishing, swimming, water sports, sunbathing, among others (Stedman et al., 2007). Participation in various water contact recreational activities such as swimming, boating, and fishing may influence differently their perceptions. Some types of activities practiced on the lakes should be recognised as strong determinants of lake destinations' image (Prasetyowati et al., 2014). Individuals' direct interaction with lake water can be higher when swimming and, thus, individuals who swim can demand more water clarity than the ones who practice boating or fishing. For example, the individuals who practice boating may select lakes where motorised activities are allowed regardless the water transparency characteristics (Jeon et al., 2005). Some authors found out that those individuals who considered fishing as their favorite activity, perceived the lakes with lower quality (Stedman & Hammer, 2006). Ditton and Goodale (1973) revealed that the people involved in fishing and swimming activities were more likely to describe the lake quality as polluted or dirty.

Water-based activities might be essential in motivating people to visit lake destinations. Some researchers found out that socialising, meeting new people and old friends are also important motivations for visiting nature-based destinations (Wolf-Watz, 2014). Tuohino (2015) mentioned that the lake as a social system can be described as a place for interaction and being with family and friends. Water-based activities may promote socialising (Tatar, 2011). Therefore, lake destinations that present more opportunities for socialising and meeting new people may be more positively evaluated by those wanting to engage in water activities together. Consequently, it is hypothesised that:

H2: The motivations for “socialising and being active” have a positive influence on lake destination image.

H 2a: The motivations for “socialising and being active” have a positive influence on water quality.

H 2b: The motivations for “socialising and being active” have a positive influence on the lake environment.

H 2c: The motivations for “socialising and being active” have a positive influence on the inexistence of pressure from various lake uses.

H 2d: The motivations for “socialising and being active” have a positive influence on tourist facilities and services.

H 2e: The motivations for “socialising and being active” have a positive influence on natural features.

H 2f: The motivations for “socialising and being active” have a positive influence on cultural heritage.

The existence of various definitions of tourism destination image and frameworks developed for its assessment indicate the importance of the concept (Gallarza et al., 2002; Pike, 2002). Even if the researchers approach the subject from different perspectives, and there is no clear definition of the concept, at the same time all are in consensus about the importance of image for the success of destinations and tourism (Chen & Uysal, 2002; Tasci & Gartner, 2007). Thus, along with examining the destination image itself, it is important to analyse the consequences of it, as its influence on destination satisfaction and post-purchase behavior, including the selection of destinations in the future, may be relevant (Bigné et al., 2001; Chen & Tsai, 2007; Chi & Qu, 2008; Zhang et al., 2014).

6.2.2 Satisfaction

Several studies have analysed the visitors' satisfaction from various perspectives (Baker & Crompton, 2000; San Martin & Del Bosque, 2008; Yoon et al., 2010). Some authors define the concept of satisfaction as a post-consumption evaluation based on a cognitive approach (Kozak, 2001), while others argue that satisfaction is related to the emotional state reflected in a tourist's "after-travel" assessment of a destination (Baker & Crompton, 2000). San Martin and Del Bosque (2008) define satisfaction with a destination as a cognitive and affective state on the part of visitors, aroused from past destination experience. Yoon et al. (2010) consider overall satisfaction to be formed as a total experience, based on the quality of destination attributes and information provided by various sources.

Assessing the satisfaction is important for destinations, as it gives the information on how well the needs of the visitors are met and on the products, whose quality should be improved (Meng et al., 2008). The researchers are in agreement that travel satisfaction is crucial for successful destination business, products, marketing and to promote willingness to revisit the destination (Kozak & Rimmington, 1999; Yoon & Uysul, 2005).

In tourism research, satisfaction has been examined using various theories and methods, such as the expectation-perception gap model, expectation/disconfirmation paradigm, equity theory and perceived overall performance theory (Assaker & Hallak, 2013; Kozak & Rimmington, 2000; Yoon & Uysal, 2005). According to the expectation disconfirmation paradigm, satisfaction is a comparison between performance and expectations (Yoon & Uysal, 2005). Some authors used an expectation-satisfaction grid to analyse cultural/heritage destination attributes and identified high expectation and low satisfaction with some attributes (accommodation) (Huh et al., 2006). Expectation/disconfirmation and perceived overall performance theories are considered as the most applied theories in tourism literature (Kozak 2001; Hui et al., 2007). However, some of the previous literature reported some limitations associated with the expectation/disconfirmation theory (Eusébio & Vieira, 2013; Kozak 2001; Hui et al., 2007). Eusébio and Vieira (2013)

remarked that, many times, it is complicated to measure the visitors' expectations before the visit and this is the reason why the perceived performance after the visit is adopted in some contexts. The authors also consider that most of the recent tourism literature apply the perceived overall performance model, which is based on the perception of actual performance of the consumed products. Millan and Esteban (2004) questioned using the expectation theories and highlighted that satisfaction can be measured only as a perceived performance.

Some studies consider the importance of measuring satisfaction with each component of a destination, as it might influence on overall satisfaction. Chi and Qu (2008) corroborate this assertion indicating that several studies in tourism and recreation measured satisfaction of individual attributes of a destination, as it leads to overall destination satisfaction. Fornell (1992) points out that overall satisfaction is a broad concept based on holistic assessment after purchase and not the sum of the individual assessments of each dimension.

A number of authors examined and tested the association between the perceptions of several destination attributes or the overall image of the destination and the overall satisfaction (Kozak, 2001; Hui et al., 2007; Chi & Qu, 2008). The importance of each destination attribute to create satisfaction with the destination can vary significantly depending on the characteristics of the examined place (Wang & Hsu, 2010). However, when the overall image is assessed, the destination image usually has a positive impact on overall satisfaction.

In the context of lakes, low water quality, including poor smell or color or a polluted water surface, may change landscape perceptions and, consequently, the level of satisfaction (Potocka, 2013). Ryan et al. (2010) analysed the effect of polluted lakes in China on the satisfaction level of visitors. The authors (2010, p. 596) noted that "differing degrees of pollution may exist" and that a lake without aquatic life may still attract tourists to the destination due to its pleasant visual aspect. It is interesting to note that polluted lakes still attracted tourists, as they perceived the lakes as part of the wider attraction of the lake destination, including the built environment and

landscape surrounding the lake. Since the water quality dimension has received greater attention from lake stakeholders and researchers (Ditton & Goodale, 1973; Stedman et al., 2007), it could be one of the most influential predictors of visitor satisfaction. Moreover, it is a crucial component of the lake image, particularly for those visitors who have direct contact with the lake water. As previously discussed in this thesis, the value of the surrounding natural and built environment, along with possible pressure on the lakes from stakeholders, should be taken into consideration as well. Thus, due to a lack of research focusing on the lake image to enhance the understanding of how and what dimensions of lake image affect satisfaction, the following hypotheses arise to be tested:

H 3: The lake image has a positive influence on overall satisfaction with the lakes.

H 3a: Water quality has a positive influence on satisfaction with the lakes.

H 3b: The lake environment has a positive influence on satisfaction with the lakes.

H 3c: The inexistence of pressure from various lake uses has a positive influence on satisfaction with the lakes.

There is substantial empirical evidence that tests the influence of destination image on satisfaction (Chi & Qu, 2008; Jin et al., 2015). Chi and Qu (2008) and Jin et al. (2015) found that the more positive the destination image is, the higher the likely visitor satisfaction level. Thus, it could be stated that the destination image is a direct – usually positive – antecedent of satisfaction.

Despite increasing interest in destination image and its impact on satisfaction, as mentioned before, the case of lake destinations has not been sufficiently investigated (Rodrigues et al., 2017). There is growing interest among researchers in perceptions of water quality and the recreational use of lakes (Ditton & Goodale, 1973; Stedman et al., 2007). Nevertheless, there is still no consensus on the influence of certain dimensions of lake destination image, such as water quality, on satisfaction. Some researchers found no effect of the perceived environmental degradation of lakes on

attachment to place (Stedman et al., 2007). In other words, peoples' attachment to the lake sites is not dependent on the actual water quality of lakes. Stedman (2003) also revealed a lack of connection between attachment and actual water quality variables such as chlorophyll, clarity, and shore development. It could be that perceptions of lake water quality may differ among individuals (Ditton & Goodale, 1973; Jeon et al., 2005) or be influenced by use (Stedman & Hammer, 2006). However, water quality has been found to be one of the most important factors in tourists' overall lake destination satisfaction (Markovic et al., 2015; Ryan et al., 2010). For example, several empirical studies revealed that physical-chemical parameters, smell and aesthetic appearance of water bodies affect individuals' evaluation of the water landscape, coastal area or entire destination (Ergin et al., 2004; Roca & Villares, 2008). These last studies emphasise the role of water quality as one of the key dimensions of lake and destination image, determining visitor satisfaction levels. It is thus postulated that:

H 4: The lake destination image has a positive influence on overall satisfaction with the lake destination.

H 4a: Water quality has a positive influence on satisfaction with the lake destination.

H 4b: The lake environment has a positive influence on satisfaction with the lake destination.

H 4c: The inexistence of pressure from various lake uses has a positive influence on satisfaction with the lake destination.

H 4d: Tourist facilities and services provided have a positive influence on satisfaction with the lake destination

H 4e: Natural features have a positive influence on satisfaction with the lake destination

H 4f: Cultural heritage has a positive influence on satisfaction with the lake destination

6.2.3 Destination loyalty

Loyalty in tourism literature has been measured mostly by using three approaches (Oppermann, 2000, Yoon & Uysal, 2005): behavioural, attitudinal and composite. In the behavioural approach, repeat purchase (repeat visit in the case of the destination) has been widely used to measure tourism loyalty (Alegre & Juaneda, 2006; Chen & Gursoy, 2001). The attitudinal approach is related to the intention to purchase the same product/brand or service and has been also applied to the context of destination loyalty (Chi & Qu, 2008; Hui et al., 2007). The composite approach of loyalty combines both the behavioural and attitudinal dimensions and, according to Oppermann (2000), in order to be real loyal, “a consumer must both purchase the brand as well as have a positive attitude towards it” (p. 79).

A number of studies adopted the variable “intention to revisit a destination” for measuring loyalty (Assaker & Hallak, 2013; Gabe et al., 2006; Kozak, 2001). For example, Gabe et al. (2006) empirically tested the factors that affect a cruise ship passenger’s intention to revisit a port in Bar Harbor, Maine. Gyte and Phelps (1989) discussed the role of repeat visitation in specific destinations and found out that 55% of the surveyed British tourists have already been in Mallorca, Spain. While Kozak (2001) analysed intention to return to the same destination and intention to visit other destinations in the same country.

Loyalty is considered as a good predictor of future behavior, as customer loyalty indices (CLI) are behaviour based and include the measures such as “likelihood to repurchase the product /service” and “likelihood to recommend a product /service to others” (Chi & Qu, 2008).

In the tourism literature, destination loyalty is often assessed using an attitudinal approach, by analysing the individual’s willingness to revisit the place and to recommend it to others (Chen & Gursoy, 2001; Chen & Tsai, 2007; Oppermann, 2000). Several pieces of empirical evidence can be found that examine loyalty using two items representing these two features (Bigné et al., 2001; Chi & Qu, 2008; Yoon & Uysal, 2005).

There is a consensus among researchers that travel satisfaction is crucial for successful destination business, products and marketing, and to promote willingness to revisit the destinations (Yoon & Uysal, 2005). Moreover, the positive influence of satisfaction on behavioural intentions (intention to revisit and willingness to recommend) have also been examined and empirically confirmed (Chi & Qu, 2008; Kozak, 2001; Wang & Hsu, 2010, Kozak & Rimmington, 2000; Oppermann, 2000; Yoon & Uysal, 2005). Tourists satisfied with their visit to the destination are more likely to revisit it again and recommend it to others. Jin et al. (2015) examined the relationship between experience quality, perceived value, image, satisfaction and behavioral intention in the context of Water Park in the tourism industry. The authors found out that satisfaction is a strong determinant for a customers' intention to revisit the water park. Furthermore, the authors revealed that visitors' satisfaction is influenced by positive experience quality, perceived value and image of Water Park. However, according to the same authors, positive water park image and high perceived value do not automatically guarantee the customers' loyalty, if the experiences do not meet the expectations. Hence, this reveals the important mitigating role of satisfaction in the relationship between water park image, perceived value and intention to revisit the park. Chi and Qu (2008) attempted to understand the causal relationship among destination image, tourist attributes, overall satisfaction and destination loyalty in Eureka Springs (Arkansas State). The authors statistically confirmed that satisfaction has a positive impact on destination loyalty. Higher destination loyalty is a result of high tourist satisfaction, which, in its turn, induces visitors to repeat the visit to a destination, and also recommend it to others. The work of Wang and Hsu (2010) also provides strong evidence that satisfaction directly affects behavioural intentions of revisiting a place and recommend it to others. Some researchers found out a stronger effect of satisfaction on willingness to recommend, but many argue that satisfaction levels influence both intentions to revisit and recommend (Kozak & Rimmington, 2000; Oppermann, 2000; Yoon & Uysal, 2005). This logic can be applied in the case of lake destinations. Therefore, it is believed that satisfaction with both the lake and the lake destination is likely to have a positive

impact on behavioural intentions, namely on destination loyalty. More precisely, it is suggested that:

H5: Satisfaction with the lakes has a positive influence on lake destination loyalty.

H6: Satisfaction with the lake destination has a positive influence on lake destination loyalty.

Despite the literature presented in this section, there is a lack of research that examines the image of lake destinations, their antecedents and consequences. Therefore, this chapter proposes a conceptual model of the relationships between motivation, destination image, satisfaction and loyalty in the context of lake destinations, built on the above hypotheses (see Figure 6.1). This model will be tested using a structural equation model, to examine whether the motivations to visit lake destinations have an impact on the lake destination image, whether the dimensions of this image affect satisfaction and, finally, whether satisfaction influences loyalty.

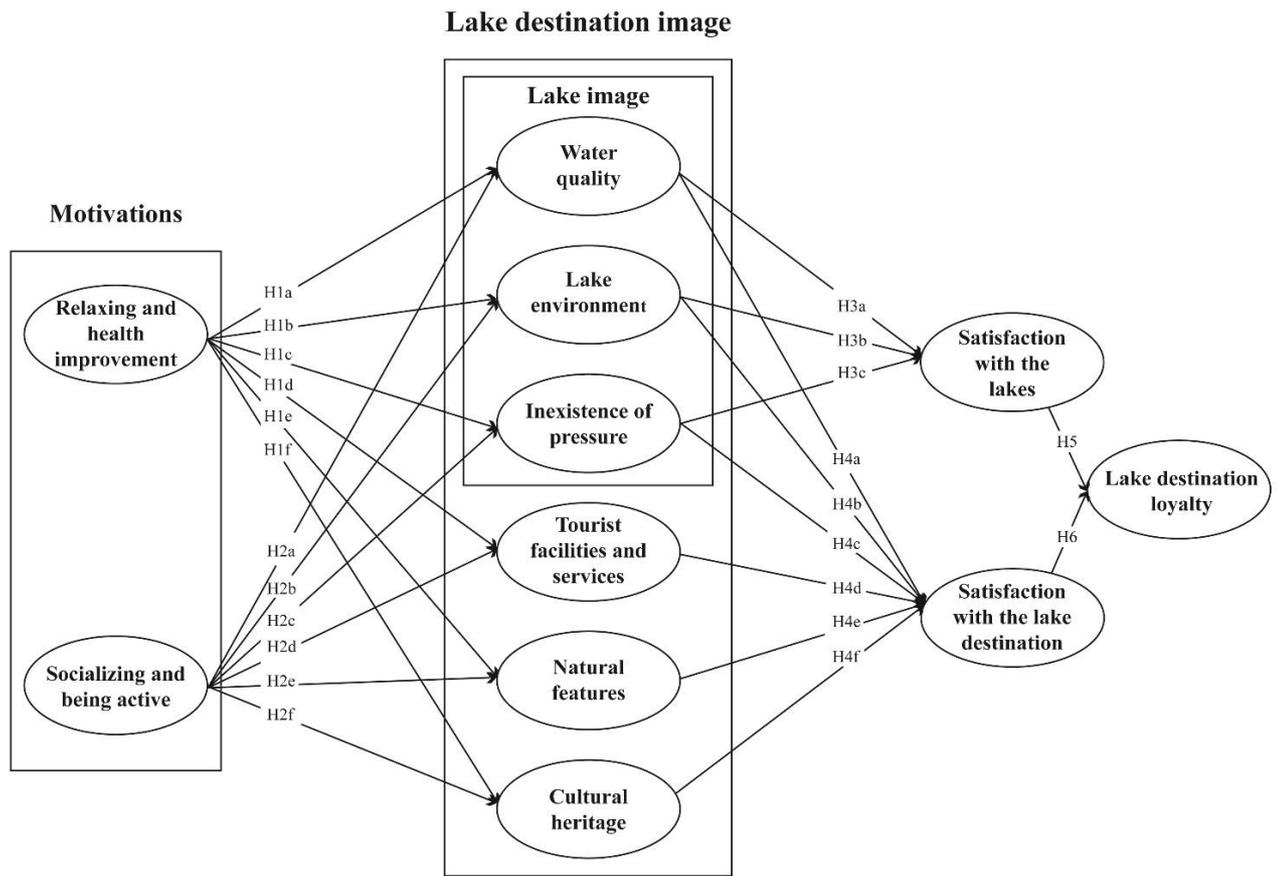


Figure 6.1. The conceptual model proposed

6.3 METHODOLOGY

6.3.1 Data collection

The target population of the empirical study corresponds to all the visitors who visit the resort area under analysis, including those who stay at the hotels, sanatoriums and guesthouses, who stop in the shops and who walk around the villages, lakes and parks. A convenience sampling approach was adopted to select the visitors to include in the sample, due to the impossibility of identifying all the individuals of the population.

In order to gather data for this study, a survey questionnaire was carried out. Some of the questionnaires were administered face-to-face with people visiting the area under research, while others were administered by e-mail. The survey was undertaken between March and April 2018. A total of 450 visitors were contacted, and 366 completed and valid surveys were collected, with an 81% response rate. The questionnaire started with an introduction explaining the purpose and nature of the research, and was organised into four further sections.

The first section was related to constructs associated with the image of the lakes, satisfaction with the lakes and activities carried out in lakes. It contained, more precisely, questions asking what were the lakes visited, types of activities that people intend to practice at the destination, such as swimming, boating, fishing, water sports, sunbathing, tourists' perceptions on the lakes' image attributes, overall satisfaction with visiting the lakes, factors generating lake water pollution and actions adopted in controlling water quality of the lakes.

In order to assess lake image, respondents were asked whether they agreed that the lake image was characterised by a set of items, using a seven-point Likert type scale ranging from 1 (Strongly disagree) to 7 (Strongly agree). The 17 items were related to water quality (e.g. color, odor, pollution, sediments), lake environment (e.g. accessibility, opportunity for water activities on and around, peacefulness, scenery) and inexistence of pressure of various lake uses (agriculture, local people and tourism).

The lake image was examined on the basis of cognitive evaluations using functional attributes (e.g. clear water, wildlife and plants, accessibility). The attributes were mainly adopted from the works of Ditton and Goodale (1973), Moser (1984), Rodrigues et al. (2015), Ryan et al. (2010), Stedman and Hammer (2006) and Stedman et al. (2007), who examined the lake destination image or individuals' perceptions of water quality, and were complemented by specific attributes representing particularities of the case study area (e.g. the inexistence of pressure).

Two questions were developed to measure the satisfaction of the visitors regarding the lakes: "I am satisfied with the decision to visit these lakes," and "Overall, I am very pleased with the lakes." The satisfaction measures were drawn from the literature on consumer behavior in tourism (Lee, Lee, Lee, & Babin, 2008; Yoon et al., 2010). To answer these questions, respondents had to use the same seven-point Likert type scale adopted when assessing the lake image.

The second section comprised questions to ascertain constructs related to the lake destination as a whole, namely respondents' motivations for visiting it, perceptions of the lake destination, overall satisfaction with the visit to the destination, as well as intention to revisit and willingness to recommend the site.

To measure the motivations, respondents were asked: "Please indicate whether you agree that the following factors motivated you to visit this resort area." Several motivation attributes related to relaxation, health improvement, socialising and opportunities to do various activities, among others, were presented to respondents, and the seven-point Likert type scale was adopted again. Motivating factors and related measurable items that might influence destination image were adopted from the literature reviewed, such as Chen et al. (2008) and Yoon and Uysal (2005).

In order to assess perceptions of the lake destination, respondents were asked whether they agreed that the destination was characterised by a set of 18 items related to natural features (e.g. attractive lakes, scenic mountains and valleys, pleasant climate), cultural heritage (e.g. friendless of local people, a range of cultural

events, rich historic and cultural heritage), and tourist facilities and services (e.g. related to shops, restaurants, price of services). Respondents had to use the seven-point Likert type scale previously mentioned to answer the questions. The lake destination attributes included in the questionnaire were mainly selected from Ryan et al. (2010) and Rodrigues et al.'s (2015) works. This list was complemented by the attributes from Chi and Qu's (2008) work examining dimensions of destination image. A similar approach to that adopted to gauge satisfaction with the lakes was applied to measure visitor satisfaction regarding the lake destination.

Destination loyalty was measured based on two indicators, namely the willingness to revisit the destination and the intention to recommend it to other people. The question regarding the intention to revisit was: "Will you repeat your trip to this destination next year?" The recommendation question was: "Will you recommend this destination to other people?" These questions were answered with a seven-point Likert type scale ranging from 1 (Very unlikely) to 7 (Very likely). The items were adopted from Lee et al. (2008) and Yoon et al. (2010).

The third section of the questionnaire encompassed questions on issues designed to obtain a sociodemographic profile of the respondents, including nationality, age, gender, marital status, education level, economic status and monthly income.

In the last section, questions related to trip characteristics were asked, such as whether the respondents had visited the area before or not, length of stay in the destination under research and activities undertaken at the destination.

The questionnaire was initially created in English, and was then translated into Russian by the researchers. Prior to data collection, a pilot survey was conducted with 20 people who were visiting the lake area. Their questions and comments were taken into account and minor changes regarding writing were introduced in the questionnaire. The final version of the questionnaire can be found in appendix E.

6.3.2 Data analysis

Partial least squares path modelling (PLS) is a variance-based method used to estimate composite-based path models (Cepeda Carrión et al., 2016; Hair et al., 2014). As a structural equation modelling (SEM) technique, PLS is helpful in analysing relationships between multiple variables and has seen increasing use in various business disciplines, notably in tourism research (Barnes et al., 2014; Carneiro et al., 2018; do Valle & Assaker, 2016; Lee et al., 2016). According to Shmueli and colleagues (2015), PLS-SEM focuses on the explanation of variances rather than covariances, making it a prediction-oriented approach. Since the goal of this study is identifying key driver constructs referring to lake destination image and the research is mainly exploratory (Hair et al., 2014), PLS-SEM was selected for data analysis. Thus, the research model of the current paper was tested using the SmartPLS 3.0 program (Ringle, et al., 2014).

6.4 ANALYSIS AND DISCUSSION OF RESULTS

6.4.1 Sample profile

The demographic characteristics of the respondents can be observed in Table 6.2. Slightly more female (55%) than male respondents (45%) were surveyed. The sample is represented mainly by domestic visitors (which account for 93%), while the share of foreign visitors is only 7%. Although the sample is somewhat varied regarding age, seniors tend to be an exception (those aged 60 years or older represent only 5% of the sample). About 30% of respondents were between 17 and 23 years old, as were those aged between 24 and 34 years, and the next largest group comprised those between 35 and 45 (19%). Approximately half of all respondents reported being married (49%), or single (46%). Respondents with an undergraduate degree accounted for 68% of the sample, followed by respondents with a postgraduate degree (24%). Eighty-one (81%) percent of the visitors of the area are state employees (26%), workers of private organisations (27%) or students (28%). Almost a third (32%) of the respondents have a monthly income higher than 132,000 Kazakh Tenge (KZT) (with 1 Euro corresponding to 395.42 KZT), being followed by those who

have an income between 66,001 and 90,000 (22%), and then by those whose income was between 90,001 and 132,000 Kazakh Tenge (20%).

Table 6.2. Sociodemographic characteristics of respondents

Variables	N	%
<i>Nationality</i>		
Kazakhstani	342	93
Others	24	7
<i>Gender</i>		
Male	166	45
Female	200	55
<i>Age</i>		
17-23	107	29
24-34	117	32
35-45	70	19
46-59	53	15
60 or more	17	5
<i>Marital status</i>		
Single	169	46
Married	177	49
Divorced	18	5
<i>Education level</i>		
Primary school	0	0
High/secondary school	9	2
Professional diploma	23	6
Undergraduate degree	247	68
Postgraduate degree	86	24
<i>Economic status</i>		
State employee	98	26
Private organisation	99	27
Entrepreneur	32	9
Retired	13	4
Student	101	28
Other	23	6
<i>Monthly income</i>		
33 000 KZT or less	48	14
33 001 – 66 000 KZT	43	12
66 001-90 000 KZT	78	22
90 001-132 000 KZT	71	20
More than 132 000 KZT	114	32

Notes: 1 Euro = 395.42 KZT (InforEuro, 2018)

Regarding characteristics of the trip (Table 6.3), most of the individuals (81%) had already visited the area before. Data on the length of stay suggests that the majority of the respondents stay in the region for short stays around the weekend or up to about a week, since 40% of the visitors stayed on average 1 to 3 nights, 27% stayed between 7 and 10 nights, and 26% between 4 and 6 nights.

One-day visitors represent only 1% of the sample. The most visited lake was Burabay (74%) and less visited was Kishi Shabakty (9%) among the lakes under this study. The most popular activities practiced by the visitors were swimming, done by 75% of the sample, followed by boating (51%) and sunbathing (27%). The most used types of accommodation were sanatoriums (31%), and hotels (29%). Most of those accommodations were located on the coastal zone of Burabay lake (66%). The most used transport system among the individuals was a car (54%) and only 7% of the visitors enjoyed the bus services. Walking was the preferable for 29% of the people.

Table 6.3. Characteristics of the trip

Variables	N	%
Lakes visited		
Burabay	271	74
Shortandy	91	25
Ulken Shabakty	100	27
Kishi Shabakty	32	9
Other	5	1
Activities		
Swimming	277	75
Boating	186	51
Sunbathing	98	27
Fishing	69	19
Water sport	38	10
Other	4	1
Previous visit to the area		
Yes	298	81
No	68	19
Number of the visits		
1 time	2	1
2-5 times	101	55
6-10 times	52	29
11-20 times	20	11
More than 20 times	7	4
Duration of stay		
0 nights	4	1
1-3 nights	130	40
4-6 nights	86	26
7-10 nights	90	27
More than 10 nights	20	6
Accommodation		
Hotel	103	29
Sanatorium	110	31
Guesthouse	85	25
Apartment	49	14
Other	5	1
Location of accommodation		
On the coastal zone of Burabay Lake	233	66
On the coastal zone of Shortandy Lake	52	15
On the coastal zone of Ulken ShabaktyLake	43	12
On the coastal zone of Kishi Shabakty Lake	4	1
Other	19	6
Transport system		
Car	197	54
Bus	27	7
Bicycle	34	9
Walking	104	29
Other	3	1
Expenditure per day		
Less than 3300 KZT	30	8
3 301 – 10 000 KZT	98	27
10 001 – 16 500 KZT	87	24
16 501 – 33 000 KZT	83	23
33 001 – 50 000 KZT	46	12
More than 50 000 KZT	22	6

6.4.2 Water pollution factors and water quality controlling actions

The visitors were asked which actions would be effective in controlling water quality of the lakes. Fifty one (51%) percent of the visitors agreed that purification of lakes from pollutants and animal litter along with improving the tourism infrastructure on the sites, particularly installation of sewage system in accommodations, would be efficient tools. While 46 % of the respondents considered that improving the urban infrastructure on the sites (sewage system) is effective, controlling tourism activities on the lakeside was indicated as important by 43 % of the visitors, following by those who selected purification of lakes from algal/reeds as essential actions (32%), development and implementation of strict environmental laws and regulations (31%) and stakeholder participation (23%).

Table 6.4. Actions on controlling water quality of the lakes

Variables	N	%
Purification of lakes from pollutants and animal litter	187	51
Improve the tourism infrastructure on the sites (sewage system in accommodations)	185	51
Improve the urban infrastructure on the sites (sewage system)	167	46
Control tourism activities on the lakeside	157	43
Purification of lakes from algal/reeds	117	32
Development and implementation of strict environmental laws and regulations	114	31
Stakeholder participation	83	23

With regard to lake water pollution, the visitors were asked whether they agree that the following factors generate water pollution in the lakes. A seven-point Likert type scale ranging from 1 (Strongly disagree) to 7 (Strongly agree) was used to assess their opinions. As it can be seen from the table 6.5, the factors generating water pollution with the highest average value (more than 5.00) are discharging sewage from tourism infrastructure, nearest towns, villages around and industry as well as development of tourism activities on the shoreline of the lakes. The lowest average value (3.91) was given to the factors related to using the lakes as drinking source for animals.

Table 6.5. Factors generating lake water pollution

Variables	Mean	SD.
Discharging sewage from tourism infrastructure	5.37	1.55
Discharging sewage from nearest towns/villages	5.20	1.62
Tourism activities on the shoreline of lakes	5.19	1.41
Discharging sewage from industry	5.10	1.66
Water extraction for irrigation	4.53	1.51
Climate change (increasing evaporation. decreasing precipitation)	4.51	1.45
Agricultural runoff	4.50	1.57
Lack of control on fishing practices	4.15	1.54
Using lakes as drinking source for animals	3.91	1.61

6.4.3 Motivations to visit the lake destination

The visitors were asked to assess the following motivation attributes to visit the lake destination using the seven-point Likert type scale, ranging from 1 (Strongly disagree) to 7 (Strongly agree).

According to the results, outstanding scenery has the highest average value (6.21), indicating the importance of beauty landscape in motivating people to visit the destination. Indeed, visitors appreciate outstanding landscape, mountains, forests, lakes of the area, where they find the conditions for both mental and physical relaxation, and various water – based activities. Therefore, the motivations such as mental relaxation (5.89), opportunities to get away from crowds (5.77), to practice water activities (5.75), physical relaxation (5.74) among others, were also highly assessed by the respondents to visit the area. The attributes related to accommodation types, nightlife and entertainment, attractive villages, unpolluted area among others were less evaluated by the individuals as motives to visit the destination .

Table 6.6. Motivations to visit the lake destination

Variables	Mean	SD.
Outstanding scenery / landscape	6.21	1.18
Mental relaxation	5.89	1.33
Opportunity to get away from crowds	5.77	1.54
Opportunities to do water activities (swimming, boating, fishing)	5.75	1.35
Physical relaxation	5.74	1.24
Opportunities to do various activities (cycling, hiking)	5.62	1.50
Socialising with friends and relatives	5.50	1.59
Health improvement	5.42	1.62
Good weather	5.36	1.31
Cultural experience	5.24	1.50
Meeting people	5.20	1.77
Physical therapy	4.98	1.61
Friendly local people	4.91	1.73
Attractive towns/villages	4.66	1.80
Nightlife and entertainment	4.66	1.84
Budget accommodation	4.62	1.70
Luxury hotels	4.62	1.81
Unpolluted area	4.49	1.57

6.4.4 Lakes and lake destination perceptions, satisfaction and loyalty

The perceptions of the visitors on the lakes and lake destination were assessed using the same seven-point Likert type scale. The visitors had to assess a set of attributes related to lake image and lake destination image.

The results presented in the table 6.7, indicate that in the lake image context, the highest value (6.04) among others represents the attribute related to the beauty of the lakes, while the lowest value (3.60) shows the attribute related to water state.

In the case of the visitors' perceptions on lake destination, scenic mountains and valleys represent the highest average value (6.15), and the lowest average value presents the attribute related to the price of accommodation (4.26).

Table 6.7 Perceptions of the visitors towards the lakes and the lake destination

Variables		
Perceptions towards the lakes	Mean	SD.
Lakes are very scenic	6.04	1.12
Lakes have many species of wildlife and plants	5.85	1.24
Lakes shore is very forested	5.58	1.32
Lakes are very peaceful	5.41	1.35
Lakes are favourable for water-based activities like swimming, boating, fishing	5.33	1.49
Lakes are accessible	5.04	1.46
Lakes shore is not overloaded by tourism facilities	4.94	1.58
I have good overall perception of the lakes	4.82	1.50
There is no conflict between users (agriculture, industry, local people and tourism)	4.77	1.48
Lakes shore has enough tourism facilities	4.74	1.55
Lakes are not being harmed by overuse	4.59	1.53
There are no litter from animal	4.45	1.66
Lakes do not have a bad odor	4.32	1.66
Lakes are not very crowded	4.29	1.54
Lakes water level is not decreasing	4.22	1.73
There are no plenty of algal/reeds	4.16	1.63
There are no sediments on the bottom of the lakes	4.13	1.68
Lakes have very clear water	4.11	1.56
There are no sediments on the surface of the lakes	4.01	1.67
Lakes have a color that suggests there is no pollution	3.82	1.65
Water is not polluted	3.60	1.78
Perceptions towards the lake destination	Mean	SD.
Scenic mountains and valleys	6.15	1.21
Gorgeous trees and plants	6.00	1.34
Spectacular landscape and natural environment	5.86	1.52
Opportunities to relax and refresh the mind	5.85	1.28
Attractive lakes	5.82	1.31
Rich historical and cultural heritage	5.60	1.50
I have good overall perception of the destination	5.57	1.24
Favorable and pleasant climate	5.26	1.34
High quality of wellbeing services	5.19	1.58
Opportunities to practice water activities (boating, fishing)	5.15	1.51
Safe and secure environment	5.08	1.50
High quality of balneology services	5.01	1.66
Friendly local people	4.97	1.55
High range of sightseeing facilities	4.90	1.67
The range of cultural events, shows and exhibitions	4.90	1.65
Clean and tidy environment	4.84	1.58
Good quality accommodation facilities	4.82	1.43
Good quality restaurants and cafes	4.73	1.50
Enjoyable nightlife and entertainments	4.66	1.80
Good water quality of lakes	4.54	1.68
Easy access to tourist information	4.53	1.59
Cleanliness of beaches	4.44	1.61
Good local transport services	4.35	1.62
Reasonable price for attractions and activities	4.33	1.66
Diverse shop facilities	4.33	1.60
Reasonable price for accommodation	4.26	1.69

Table 6.8. Lakes and lake destination satisfaction and loyalty

Variables	Mean	SD.
<i>Overall satisfaction with the lakes</i>		
I am satisfied with the decision to visit these lakes	4.76	1.64
Overall, I am very pleased with the lakes	4.56	1.74
<i>Overall satisfaction with the lake destination</i>		
I am satisfied with the decision to visit this lake destination	5.52	1.32
Overall, I am very pleased with the lake destination	5.41	1.38
<i>Lake destination loyalty</i>		
Will you repeat your trip to this destination next year?	5.47	1.41
Will you recommend this destination to other people?	5.63	1.40

With regard to satisfaction with the lakes and lake destination, visitors had to use the same seven-point Likert type scale adopted during assessment.

The results show that the satisfaction with the decision to visit the lakes (4.76) and lake destination (5.52) has higher average values than satisfaction with the lakes themselves (4.56) and the lake destination (5.41). In the case of lake destination loyalty, the variable related to the recommendations the destination to other people was assessed higher (5.63), than willingness to repeat a trip to the destination next year (5.47).

6.5 MODEL ASSESSMENT

PLS path-modelling analysis includes two stages. In the first stage the measurement model (outer model) is assessed, based on the analysis of each construct and the relationship between the constructs and their indicators (measures). The second stage involves evaluating the structural model (inner model) in order to test the hypotheses underlying the conceptual model proposed.

6.5.1 Measurement model

With all constructs in the model being reflective, these were assessed by analysing the reliability of the multiple-item scales, convergent validity and discriminant validity (Hair et al., 2014). As reported in Table 6.9, the composite reliability of all constructs is higher than 0.86, which goes beyond the reference value of 0.7, and the average variance extracted (AVE) is also greater than the 0.50 cut-off for all constructs, confirming a good convergent validity of the applied scales.

Table 6.9. Measurement statistics of construct scales (continues)

Constructs / indicators	Mean	Standard deviation	Indicator loading	<i>t-value</i> ^a	CR	AVE
Socialising and being active					0.867	0.620
Meeting people	5.20	1.77	0.772	25.975		
Socialising with friends and relatives	5.50	1.60	0.771	28.222		
Opportunities to do various activities (cycling, hiking)	5.62	1.50	0.824	28.222		
Opportunities to do water-based activities (swimming, boating, fishing)	5.75	1.36	0.780	29.501		
Relaxing and health improvement					0.898	0.687
Health improvement	5.43	1.63	0.848	54.787		
Mental relaxation	5.89	1.34	0.826	34.546		
Physical relaxation	5.74	1.25	0.783	24.859		
Physical therapy	4.99	1.61	0.856	48.396		
Water quality					0.941	0.639
Lakes have a color that suggests there is no pollution	3.82	1.65	0.816	30.175		
Lakes have very clear water	4.11	1.56	0.725	20.173		
Lakes do not have a bad odor	4.32	1.66	0.852	46.485		
There is no animal waste	4.46	1.66	0.743	30.446		
There are not plenty of algae/reeds	4.16	1.64	0.782	30.534		
There are no sediments on the surface of the lakes	4.02	1.68	0.828	31.663		
There are no sediments on the bottom of the lakes	4.14	1.68	0.859	48.295		
Water is not polluted	3.60	1.79	0.844	42.131		
Lake's water level is not decreasing	4.22	1.73	0.727	21.860		

Lake environment					0.879	0.548
Lakes are accessible	5.04	1.47	0.696	17.209		
Lakes are favorable for water-based activities (swimming, boating, fishing)	5.33	1.49	0.764	27.837		
Lakes have many species of wildlife and plants	5.86	1.25	0.789	30.191		
Lakes are very peaceful	5.42	1.35	0.728	24.767		
Lake shore has enough tourism facilities	4.75	1.55	0.756	29.452		
Lakes are very scenic	6.04	1.13	0.704	19.012		
The inexistence of pressure					0.913	0.841
There is no conflict between users	4.78	1.49	0.902	54.208		
They are not being harmed by overuse	4.60	1.54	0.932	102.098		
Tourist facilities and services					0.958	0.658
High quality of balneology services	5.01	1.66	0.733	22.894		
Clean and tidy environment	4.84	1.58	0.846	54.850		
Cleanliness of beaches	4.45	1.61	0.791	32.456		
Diverse shop facilities	4.33	1.60	0.849	52.172		
Easy access to tourist information	4.53	1.59	0.830	35.033		
Good local transport services	4.35	1.63	0.874	58.067		
Good quality accommodation facilities	4.83	1.44	0.830	40.412		
Good quality restaurants and cafes	4.74	1.50	0.855	55.367		
High quality of wellbeing services	5.19	1.58	0.790	41.995		
Reasonable price for accommodation	4.27	1.69	0.741	19.342		
Reasonable price for attractions and activities	4.34	1.67	0.767	26.080		
Safe and secure environment	5.09	1.50	0.814	40.138		
Natural features					0.869	0.689
Attractive lakes	5.82	1.31	0.909	69.484		
Scenic mountains and valleys	6.15	1.21	0.823	40.876		
Favorable and pleasant climate	5.26	1.35	0.751	22.293		
Cultural heritage					0.890	0.729
Friendly local people	4.97	1.56	0.823	35.151		
The range of cultural events, shows and exhibitions	4.90	1.65	0.888	49.186		
Rich historical and cultural heritage	5.60	1.51	0.849	49.912		
Satisfaction with the lakes					0.972	0.946
I am satisfied with the decision to visit these lakes	4.76	1.64	0.973	195.953		
Overall, I am very pleased with the lakes	4.56	1.74	0.972	185.501		
Satisfaction with the lake destination					0.966	0.934
I am satisfied with the decision to visit this destination	5.53	1.33	0.967	186.451		
Overall, I am very pleased with the destination	5.41	1.38	0.966	186.727		
Lake destination loyalty					0.950	0.904
Will you recommend this destination to other people	5.64	1.40	0.957	147.352		
Will you repeat your trip to this destination next year	5.47	1.41	0.944	70.942		

Notes: CR: composite reliability; AVE: Average Variance Extracted; ^a t-values were obtained with the bootstrapping procedure (5000 samples) and are significant at the 0.001 level.

In order to examine whether a construct is more strongly related to its own indicators than to any other construct, discriminant validity (table 6.10) was assessed based on the guidelines of Fornell and Larcker (1981).

Table 6.10. Discriminant validity of the constructs (correlation between constructs)

Constructs	1	2	3	4	5	6	7	8	9	10	11
1.Relaxing and health improvement	0.787										
2.Socialising and being active	0.596	0.829									
3.Water quality	0.412	0.385	0.799								
4.Lake environment	0.607	0.552	0.491	0.740							
5.The inexistence of pressure	0.308	0.261	0.680	0.436	0.917						
6.Tourist facilities and services	0.665	0.572	0.605	0.489	0.401	0.811					
7.Natural features	0.687	0.565	0.418	0.636	0.364	0.604	0.830				
8.Cultural heritage	0.690	0.508	0.409	0.476	0.276	0.749	0.574	0.854			
9.Satisfaction with the lakes	0.386	0.332	0.663	0.532	0.585	0.412	0.422	0.298	0.973		
10.Satisfaction with the lake destination	0.666	0.556	0.490	0.595	0.462	0.653	0.699	0.620	0.547	0.967	
11.Lake destination loyalty	0.610	0.471	0.408	0.534	0.421	0.551	0.581	0.566	0.504	0.828	0.951

Notes: The square root of AVEs is shown diagonally in bold.

Table 6.10 indicates the correlation between constructs, where the square root of each construct's AVE (bold numbers) is higher than its correlation with any other construct. Such results provide support for the discriminant validity of the constructs measured.

6.5.2 Structural model

In order to test the proposed hypotheses in the conceptual model, the structural model was considered. Its assessment requires checking the reliability and validity of the measurement model, to analyse the model's predictive power and the relationship between the constructs. The path coefficients show the relevance and significance of the relationships between latent variables and are thus analysed to test the hypotheses that predict direct effects on the endogenous variables. The *t*-values have been obtained with the bootstrapping procedure (5000 samples).

Figure 6.2 presents the structural model, the path coefficients and the respective level of significance, with the relationships identified by arrows as significant.

The explained variance (R^2) was examined to assess the predictive power of the structural model, with values ranging from 0.10 to 0.69, which indicates an acceptable prediction power of the model as well as the predictive importance of the latent constructs. Most of the latent constructs are characterised by high variance explained by the model, with R^2 values around 0.50. Lake destination loyalty is the construct with the highest variance explained ($R^2 = 0.69$), followed by the satisfaction with the lake destination construct ($R^2 = 0.62$). The constructs with the lowest variance explained correspond to two dimensions of the lake image: the inexistence of pressure ($R^2 = 0.10$) and water quality ($R^2 = 0.20$).

Table 6.11. Hypotheses testing

Hypothesis	Path coefficient	t-value ^b	p-value	Supported
H1a: Relaxing and health improvement → Water quality	0.283	5.223	0.000	Yes
H1b: Relaxing and health improvement → Lake environment	0.431	9.022	0.000	Yes
H1c: Relaxing and health improvement → The inexistence of pressure	0.236	3.772	0.000	Yes
H1d: Relaxing and health improvement → Tourist facilities and services	0.502	9.315	0.000	Yes
H1e: Relaxing and health improvement → Natural features	0.544	10.761	0.000	Yes
H1f: Relaxing and health improvement → Cultural heritage	0.601	12.782	0.000	Yes
H2a: Socialising and being active → Water quality	0.216	3.671	0.000	Yes
H2b: Socialising and being active → Lake environment	0.296	5.330	0.000	Yes
H2c: Socialising and being active → The inexistence of pressure	0.120	1.812	0.070	No
H2d: Socialising and being active → Tourist facilities and services	0.273	4.597	0.000	Yes
H2e: Socialising and being active → Natural features	0.241	4.372	0.000	Yes
H2f: Socialising and being active → Cultural heritage	0.150	2.902	0.004	Yes
H3a: Water quality → Satisfaction with the lakes	0.404	7.610	0.000	Yes
H3b: Lake environment → Satisfaction with the lakes	0.245	4.921	0.000	Yes
H3c: The inexistence of pressure → Satisfaction with the lakes	0.203	3.415	0.001	Yes
H4a: Water quality → Satisfaction with the lake destination	-0.026	0.445	0.657	No
H4b: Lake environment → Satisfaction with the lake destination	0.137	2.822	0.005	Yes
H4c: The inexistence of pressure → Satisfaction with the lake destination	0.168	3.323	0.001	Yes
H4d: Tourist facilities and services → Satisfaction with the lake destination	0.196	2.875	0.004	Yes
H4e: Natural features → Satisfaction with the lake destination	0.342	6.488	0.000	Yes
H4f: Cultural heritage → Satisfaction with the lake destination	0.176	2.744	0.006	Yes
H5: Satisfaction with the lakes → Lake destination loyalty	0.072	2.080	0.038	Yes
H6: Satisfaction with the lake destination → Lake destination loyalty	0.789	27.650	0.000	Yes

Note: ^b t-values were obtained with the bootstrapping procedure (5000 samples)

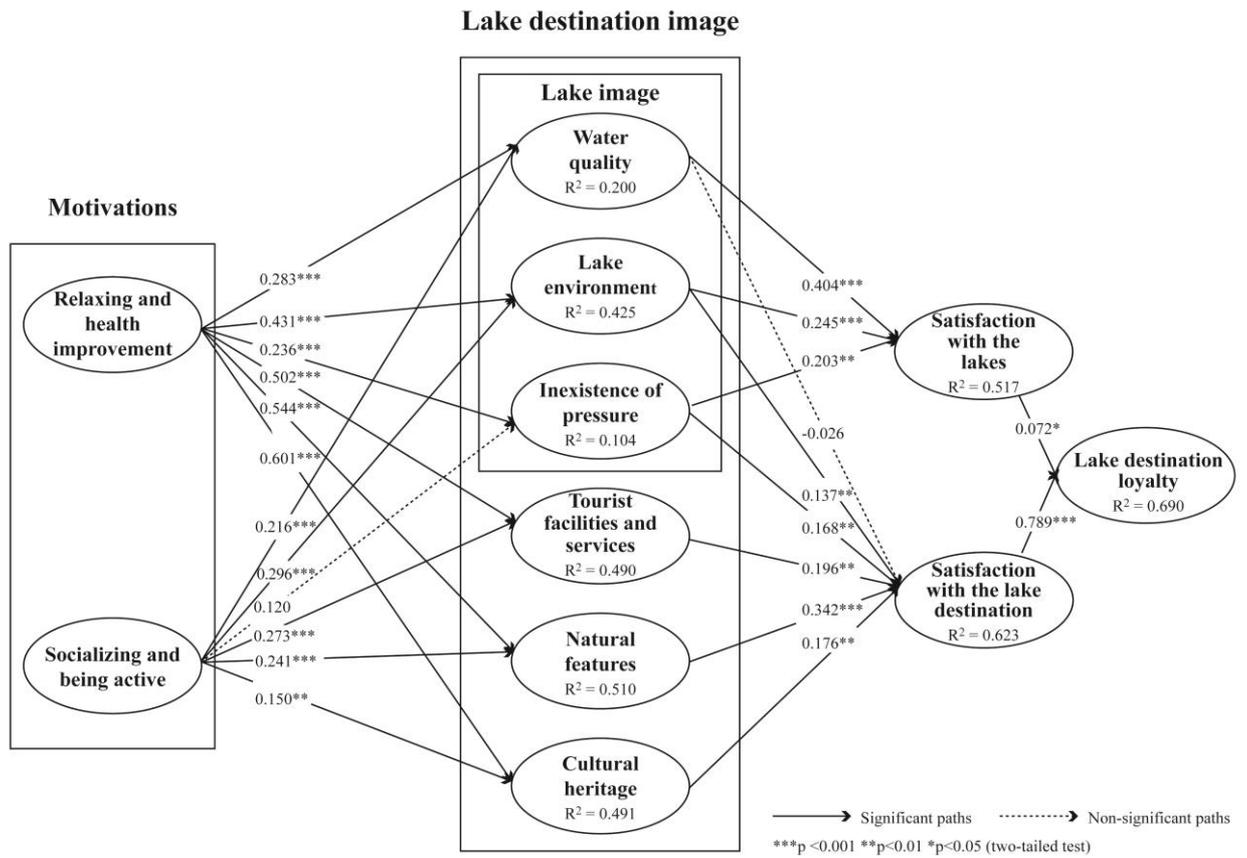


Figure 6.2. Structural model

Sources: author's own elaboration based on the results of PLS-SEM analysis

All hypotheses are empirically supported, except hypothesis H2c, which posits that the motivation “socialising and being active” has a positive impact on the inexistence of pressure, non-significant at the 0.05 level, and hypothesis H4a, predicting that water quality has a positive influence on satisfaction with the destination (Figure 6.2 and Table 6.11).

The motivation “relaxing and health improvement” has a positive and significant influence on the lake destination image, which offers a supportive evidence for H1. As shown in Figure 6.2, the path coefficients with regard to the motivation “relaxing

and health improvement” impact on all lake destination image dimensions were positive and statistically significant, varying from $\beta = 0.24$ to $\beta = 0.60$, supporting all hypotheses H1a, H1b, H1c, H1d, H1e and H1f. However, it should be noted that the “relaxing and health improvement” motivation has the strongest positive effect on the dimensions of the lake destination image, such as cultural heritage ($\beta = 0.60$), natural features ($\beta = 0.54$) and tourist facilities and services ($\beta = 0.50$), and not on those directly related to the lake image. This could be explained by the fact that visitors seeking wellness and health improvement, as well as relaxation, may have a greater appreciation for destinations that have the health facilities and services to meet their demands, namely relaxing their body, mind and spirit with health improvement activities and physical therapy. Thus, these visitors might prioritise destination attributes such as natural features of the area, good tourism facilities and services that allow them to engage in such pursuits. These respondents may also prefer walking around visiting cultural heritage attractions than engaging in activities in the lake, considering the educational nature of such activities more relaxing than more physically demanding water-based activities.

Tuohino and Pitkänen (2004) found that the neutral lake landscape was turned into a meaningful place through the experiences and sensations experienced by visitors. However, it must be considered that motivations for “relaxing and health improvement” still have a positive impact on all the dimensions of the lake image, although this impact is lower than in other dimensions of the lake destination image. This suggests that visitors may also find opportunities for relaxing and improving their health in the lake and its immediate vicinity. These findings correspond to previous research indicating that escape and relaxation make up one of the internal drivers which push the visitor to travel to a destination (Crompton, 1979; Seong-Seop & Choong-Ki, 2002; Yoon & Uysal 2005), and that lakes have a great potential to offer wellness experiences (Konu et al., 2010). In some cases, the lake was also seen as an escape from everyday life (Tuohino, 2015). This could explain why mental and physical relaxation motives influence individuals’ decision to visit the lake destination. Lu et al. (2015), for example, found out that relaxation was the highest motivation to visit the Plum Blossom Lake Scenic Area in Taiwan.

Hypothesis H2 is also generally supported, as the motivations for “socialising and being active” significantly and positively influence the lake destination image at various levels. The path coefficient values vary from $\beta = 0.12$ to $\beta = 0.30$, confirming hypothesis H2a to H2f, except H2c, which is only statistically significant at the $p < .010$ level, not fully supporting the influence of the motivation “socialising and being active” on the inexistence of pressure. This can arguably be explained by the fact that tourists who are more motivated by meeting friends and being active on holidays are not so interested in the “no pressure” attributes associated with avoiding social conflict and overuse.

The results suggest that dimensions such as water quality and the lake environment are more essential for individuals seeking activity (and probably wanting to practice water-based activities), along with natural features and tourist facilities and services that enable other physical activities to be practiced. These visitors do not pay great attention to possible pressure on the lakes and are not so interested in engaging in local cultural activities. These results suggest, then, that both the lake and the lake environment offer opportunities for being active and socialising. Therefore, to satisfy such visitors it is important that a lake destination ensures good water quality, and offers facilities for practicing water and other physical activities, providing services that may support these activities.

These findings partially support research that shows socialising with family, friends and meeting new people to be an important tourism motivation (e.g. Crompton, 1979; Seong-Seop & Choong-Ki, 2002; Wolf-Watz, 2014) and where the lake as a social system was described as a place for interaction and for being with family and friends (Tuohino, 2015).

The findings also confirm a positive and significant influence of the lake image on satisfaction with the lakes (H3), with the highest impact being of the image on water quality ($\beta = 0.40$), followed by the lake environment ($\beta = 0.25$) and the inexistence of pressure from various lake uses ($\beta = 0.20$). A positive and strong relationship between

lake image attributes and satisfaction with the lakes is not surprising, since the lake itself and its features are important factors for individuals seeking to relax around them. The role of water quality should be emphasized in this context. Individuals aiming to visit a destination to practice various water-related activities demand high quality of water. Although the environmental state of the lakes is degrading, their motive to enjoy water activities positively influences the lake destination image and their satisfaction with the lakes. Visitors who go swimming or fishing are more likely to notice and better evaluate the environmental state of the lakes than those who just engage in sunbathing, due to their direct contact or proximity with the water.

Hypothesis 3 was fully corroborated, as expected, following assumptions based on a positive influence of the lake image on satisfaction with the lake. By contrast, the results on Hypothesis 4 must be carefully analysed, revealing interesting insights. All hypotheses from H4b to H4f were confirmed, with the highest positive influence of natural features ($\beta = 0.34$) on satisfaction with the lake destination. However, hypothesis H4a, predicting that water quality has a positive influence on satisfaction with the lake destination, has been rejected.

In the context of the lake image, water quality was found to have a positive influence on satisfaction with the lakes. However, in the case of lake destination image, this impact has been dismissed. These findings are consistent with those of Ryan et al.'s (2010) research, which revealed that the polluted Chinese lakes still attracted tourists, as they perceived the lakes to be part of the wider attraction, including the built environment and landscape surrounding the lake. The findings were further supported by Stedman et al. (2007), who found no effect of perceived environmental degradation of lakes on the attachment to place. In other words, people's attachment to the lake sites was not dependent on the actual water quality. Comparison of the results of the present study with those found in previous studies on water quality perception and its influence on satisfaction indicates that water quality is not always a significant antecedent of satisfaction with a destination. This may be explained by the fact that visitors might not be as aware of the actual environmental state of the lakes as other attributes of the entire destination and, even if polluted, lakes might

be perceived as an attractive natural part of a destination. Thus, they might evaluate water quality more favorably and be somewhat tolerant with water pollution. Moreover, Stedman's (2006) expectancy-value models could be another possible explanation for our findings, which suggest that the overall attitude is defined by a combination of beliefs and evaluations associated with each other. Therefore, as water quality is hard to observe and assess for individuals, they might ignore it while creating overall attitudes towards a destination. However, Tandyak et al. (2016) argue that the quality of the lake water is a basic factor for leisure activities, and protection of lake water is essential since it promotes lake tourism. Nevertheless, as mentioned by Ryan et al. (2010, p. 610), "the degradation of one component of the place does not necessarily impede a satisfying holiday experience."

As previously indicated, the importance of each destination attribute to create satisfaction with the destination can vary significantly depending on the characteristics of the examined place (Wang & Hsu, 2010), but when the overall destination is assessed, it usually has a positive impact on satisfaction (Chen & Tsai, 2007; Chi & Qu, 2008; Jin et al., 2015). The findings of the current study are consistent with those obtained in previous destination image studies undertaken by Chi and Qu (2008), Chen and Tsai (2007) and Jin et al. (2015), demonstrating a positive relationship between the majority of the dimensions of the destination image and the satisfaction level of the tourists.

Regarding Hypothesis 5, satisfaction with the lakes was found to have a positive influence on lake destination loyalty, though not a very substantial one ($\beta = 0.07$; $p < .05$). Hypothesis 6, meanwhile, is firmly confirmed, with a strong positive influence of satisfaction with the lake destination on lake destination loyalty ($\beta = 0.79$; $p < .001$).

The findings confirm that visitors' loyalty is enhanced by a positive satisfaction with both the lake and the lake destination as a whole. The research results also make clear that lake image and lake destination image play an important role in achieving satisfaction, which in turn influences destination loyalty. The structural path between

satisfaction and loyalty is consistent with the literature on tourism destinations (Chen & Tsai, 2007; Chi & Qu, 2008).

All indirect effects (Table 6.12) are significant, with the exception of the impact of water quality on lake destination loyalty. Arguably due to the same reasons discussed above, water quality fails to impact significantly on lake destination loyalty (just as it failed to show a significant influence on satisfaction with the lake destination). Water quality is not an antecedent of satisfaction with the destination, or of visitors' willingness to return and recommend it to others. Apart from this, the results reveal that the indirect impact of motivations on both satisfaction with lakes and satisfaction with the lake destination, as well as all the other dimensions of lake destination image, contribute positively and significantly to lake destination loyalty.

Table 6.12. Indirect effects

Path	Path coefficient	t-value	p-value
Relaxing and health improvement → Satisfaction with the lakes	0.268	6.890	0.000
Relaxing and health improvement → Satisfaction with the lake destination	0.482	13.401	0.000
Relaxing and health improvement → Lake destination loyalty	0.399	11.999	0.000
Socialising and being active → Satisfaction with the lakes	0.184	4.279	0.000
Socialising and being active → Satisfaction with the lake destination	0.218	6.390	0.000
Socialising and being active → Lake destination loyalty	0.185	6.508	0.000
Water quality → Lake destination loyalty	0.009	0.183	0.855
Lake environment → Lake destination loyalty	0.126	3.180	0.001
The inexistence of pressure → Lake destination loyalty	0.148	3.585	0.000
Tourist facilities and services → Lake destination loyalty	0.154	2.830	0.005
Natural features → Lake destination loyalty	0.270	6.354	0.000
Cultural heritage → Lake destination loyalty	0.139	2.727	0.006

6.6 CHAPTER CONCLUSIONS

Despite increasing interest in lake tourism among travelers and the importance of lake destination image for tourism marketers, there is still a gap in the research concerning the lake tourism concept and lake destination image formation, its attributes, antecedents and consequences.

The research model proposed and tested in this paper using PLS-SEM provides important insights into lake destination image formation, the impacts of motivations to visit the lake destination and the effects of lake destination image on satisfaction and loyalty. All the hypotheses were confirmed, except those predicting a positive influence of motivation for socialising and being active on the inexistence of pressure and of water quality on satisfaction with the destination. Therefore, the research undertaken in this paper provides important theoretical contributions and practical implications that will be identified below.

As far as theoretical contributions are concerned, first, a comprehensive set of items that may be adopted to assess the lake destination image and various dimensions of this image, including the image of the lake and the image of the territory surrounding the lake, is identified. This measurement instrument may be used in various contexts where lake destinations are found. This extends certain previous studies, which mostly rely on assessing a restricted part of the lake destination image, namely that referring to the lake (e.g. Ditton, & Goodale, 1973; Moser, 1984; Stedman, & Hammer, 2006; Stedman et al., 2007).

Second, the test of the model shows that visitors who are more motivated by relaxing and health improvement, as well as socialising and being active, are likely to have a more positive image of the lake destination, including both the lake itself and the territory surrounding the lake. This partially corroborates the opinions of other researchers (e.g. Konu et al., 2010; Prasetyowati et al., 2014; Tatar, 2011; Tuohino, 2013, 2015) who argue that lakes have a remarkable potential for satisfying the needs underlying these motivations. The only exception was that motivations for socialising

and being active did not have a significant influence on the lake image regarding the inexistence of pressure. This probably happens because people wanting to socialise and actively participate in activities are not sensitive to pressure due to the presence of more people or to conflict over use of the lake shore.

Third, the results suggest that segments with different motivations to visit lakes may have different expectations regarding lake destinations. Hence, the testing of the hypotheses suggests that while visitors who are more motivated by relaxing and health improvement tend to assign more importance to dimensions of the lake destination image such as cultural heritage, natural features and tourist facilities and services, those who are more interested in socialising and being active – although they too assign great importance to facilities across the destination – also greatly value dimensions of the lake such as water quality and the lake environment.

Fourth, the results confirm the positive impact of images associated to lake destinations on satisfaction regarding the same destinations. In this context, they reveal that the image people have of the lake has a positive influence on satisfaction with the lake, and that the image of both the lake and the lake destination have a positive impact on satisfaction with the lake destination.

Fifth, the empirical study expands the research on the lake destination image, not only showing that images associated to these destinations tend to have a positive influence on satisfaction regarding this kind of destination, but also revealing that the impact of such images may differ according to the dimension of the lake destination considered. In this context, water quality and the lake environment seem to be the most important determinants of satisfaction with the lake, whereas natural features are revealed to be the strongest determinants of satisfaction with the lake destination. Water quality was the only dimension that did not have a significant impact on satisfaction with the lake destination, despite its high influence on satisfaction with the lake. However, this last finding corroborates, in some way, specific studies where polluted lakes did not prevent people from visiting lake destinations (Ryan et al., 2010), or where no impact of perceived environmental

degradation of lakes on attachment to the places was found (Stedman et al., 2007). This may derive, as already explained, to the difficulty visitors have in deeply and correctly analysing water quality, to visitors focusing their evaluation on other dimensions of the lake destination that are easier to assess, or to the impact of certain negative images regarding water quality not being strong enough to prevent visitors from being satisfied with visits to destinations where these lakes are located.

Sixth, the findings reveal that satisfaction with the lake destination has a much stronger impact on loyalty towards the destination, than satisfaction with only the lake itself. This underlines the importance of the territory around the lake included in the destination, and suggests that in some cases a negative image of a lake may be overcome by a good image regarding other components of the lake destination.

The findings of this study also provide important practical implications for planners and managers of lake tourism destinations. Managers of lake destinations should explore the potential of lakes for both relaxing and health improvement, as well as for socialising and engaging in activities. Since motivations of socialising and being active have a lower positive impact on lake destination image than other motivations, it is very important that those involved in managing the Shchuchinsk-Burabay resort area investigate how opportunities for socialising and actively engaging in activities such as water-based and nature pursuits can be offered. It is certainly of value to improve water quality, the environment close to the lake and the facilities and services distributed around the destination, since the motivations of socialising and being active have a higher impact on these dimensions of the image of the lake destination and the lake itself, showing that these dimensions are of major importance, creating valuable opportunities to visitors with these motivations.

Given that the results suggest that those motivated to relax and seek improved health tend to value different dimensions of the lake destination image than those who are more interested in socialising and being active, the promotion of lake destinations should be based on different positioning strategies designed for different market segments with different motivations.

Although the water quality did not have a significant impact on satisfaction with the lake destination, its strong impact on satisfaction with lakes and its great relevance to those looking for opportunities to socialise and actively engage in activities makes it important to ensure a good water quality level regarding all water components. Creating a good lake environment, encompassing pleasant scenery, good facilities on the lake shore and good accessibility to the lake, is of major importance due to the impact of the lake environment on satisfaction with the lake.

The much higher impact of satisfaction with the lake destination on loyalty regarding these destinations, compared to the impact of the satisfaction with the lake, highlights the importance of considering these destinations as a whole, not disregarding the territory surrounding the lake and all the facilities and heritage of the area. In this context, managers of lake destinations should assign special attention to the facilities and services offered by the destination, due to their high impact on satisfaction. In addition, due to the great relevance of water quality, the lake environment and facilities and services across the destination, these three components should receive great focus in the promotion of lake destinations.

Despite the important theoretical and practical contributions of this research, some limitations can be identified. First, the geographical and temporal scope of the research was limited, since the research model was only tested in a specific lake destination in Kazakhstan. The proposed model should be tested in other lake destinations in order to ascertain whether the hypotheses are confirmed in other contexts. The research was also carried out in a limited period of time, not including the whole year nor the period of highest demand. It would be of great value to conduct a research during high season, when the visitors are more engaged in water-based activities and where higher use pressure may be felt due to the presence of more people and potential congestion.

CHAPTER 7: THESIS CONCLUSIONS

7.1 KEY FINDINGS

7.1.1 Analysis of water environment of the lakes at the Shchuchinsk-Burabay resort area. The effects of tourism development

This chapter is primarily intended to analyse the situation of the lakes' environment in the Shchuchinsk-Burabay resort area. We apply GIS methodology tools in order to examine the evolution of surface area of the main lakes of the region during the last 30 years. Additionally, a set of water quality indexes (i.e., water pollution index, water quality variance rate) are used to define the quality of the examined water bodies. We also analyse the evolution of the number of tourism accommodations located around each lake, and discuss the possible influences of tourism on lakes' surface area.

The findings reveal that the main lakes of the Shchuchinsk - Burabay resort area have been facing environmental challenges during the last 30 years. The lakes have been losing surface area in that time, with variations depending on geographical location and water consumption in relation to the pattern of anthropogenic activities. According to the results, an important surface reduction has been observed in the most popular lakes of the region, that are the Ulken Shabakty Lake (15%), followed by Shortandy Lake (11%), Burabay Lake (1%). These lakes concentrate the highest number of tourism lodging businesses of the area (usually located on water catchment basin), and are quite often used for recreational activities.

The chapter also tries to contribute to a better understanding of the consequences of tourism development on water resources, in particular, on lakes' water environment. Lakes, with their vulnerable features and various anthropogenic uses (agriculture, industry, local population), can be negatively affected by and suffer from tourism activities. Further, people living on the lakeshore always rely on lake as source for water, recreation, fishing, and other needs. All this is exacerbated by the growing effects of climate change on water availability and quality.

Therefore, there is a need to understand what consequences can have tourism activity on lakes water environment in the study area. We expose a broad review of academic literature about the direct and indirect effects of tourism activities on lakes, in terms of quantity and quality. Moreover, other abovementioned factors determining environmental state of the lakes are discussed, and a number of empirical studies is exposed.

Basing on our hypothesis, we consider that an important part of the reduction in surface area and water quality of these lakes is partly due to the increasing tourism activity in the region. Therefore, uncontrolled growth of tourism activity can constitute a critical issue that could impede the success and sustainability of the destination. At this point, the sustainability principles of tourism should be taken into consideration, which refer to ensure a balance between environmental, economic and social aspects of tourism development, which in turn will guarantee long-term success of the destination (UNEP & UNWTO, 2005).

The findings of this chapter also indicate that decreasing water quality of the lakes is an increasing concern. The continuous degradation of lakes environment, both in terms of quantity and quality, has been pushed up the concern about the future of the lakes, and can constitute a key challenge for the sustainability of the destination. In this sense, some studies demonstrate the importance of lakes image on tourist satisfaction and loyalty (Ryan et al., 2010). For example, the study of Nilsson and Gössling (2013) analyses the impacts of algal blooms on the perceptions of the tourists in Sweden. Their findings demonstrate that the 11% of the travelers indicated that they would select other destination for their holidays due to the algal bloom. This problem is shared by other areas around the world, like the Great Lakes in North America and the Aral and Dead seas, etc. These areas are suffering similar problems related with low water quality and low water levels, which in turn, had led to significant economic costs related to the restoration of their ecosystems (Gössling et al., 2015). Thus, urgent timely steps must be taken to address this situation and conserve lake water, since restoration of the lake water environment in the future can outweigh costs of their conservation.

Future tourism and water management policies should take into account the effects of tourism activity on lake water resources, as it is crucial for the success and sustainability of the entire region. Moreover, and according to the Water Code of the Republic of Kazakhstan, water bodies and resources, which have natural healing properties, as well as those which are favourable for therapeutic and preventive purposes, belong to the health category and are used for the purposes of recovery in accordance with the laws of the Republic of Kazakhstan (Water Resources Committee, 2017). It is advisable, therefore, for the authorities to put a special attention on water resources of the region and monitor nowadays carrying capacity of the lakes. This is particularly relevant at this time, as in the past year there has been an open debate among hydrological scientists and tourism planners on lake uses whether for tourism or balneology purposes or both.

Since the empirical findings of this study are based on one tourism destination, further research examining the impacts of tourism on water resources in other regions of the country would improve the main findings and conclusions. Comparative studies would provide to tourism planners and managers valuable insights about tourism-related water issues at different types of resorts and facilities. Furthermore, in order to examine the influence of the tourism industry on the lacustrine environment, future research may reach a complex calculus of water balance by taking into account a wide range of important environmental and socioeconomic factors from land use, agriculture, industry and population dynamics.

Thus, in this context, we propose two main lines of research that are followed in the next chapters of the thesis. First, since the lodging sector is the major water consumer within the tourism industry, significant attention should be paid to this sector. Considering this, chapter five attempts to analyse the levels and determinants of water consumption at the lodging sector. The second line of research (exposed in chapter 6), tries to provide evidence related with the lake destination image formation, and the relationships between lake destination image, motivations, satisfaction and loyalty.

7.1.2 Water consumption in the lodging sector

Given the growing accommodation sector's contribution to water consumption, the previous literature has recognised it as the highest water consumer within the tourism industry, therefore, present chapter attempts to analyse the water consumption behaviour of the lodging sector of the region.

Basing on our sample, the average water consumption of lodging sector in the area accounts for 242 L/G/N (liters per guest and night) in 2014 and 269 L/G/N in 2015. These findings are comparable with those observed in hotels in the Mediterranean region (250 litres per tourist per day), guesthouses in Zanzibar (248 litres), hotels in coastal Normandy in France (259 litres) and Germany (275 litres) (Gössling et al., 2015).

Our study tries to identify the main driving factors that explain the behaviour of water consumption at the lodging sector. Regression conclusions reveal that the total area of the lodging facility and the area of pools affect positively and significantly on water consumption levels. The type of accommodation plays also a significant role. The results conclude that the accommodation type 'Sanatoriums' are the one with the higher levels of water consumption, while 'Guesthouses' present the lower levels. With respect of the type of board, the results conclude that as higher the number of meals served at lodging facilities, higher is the level of water consumed. The regression results of our study are in the line of those obtained by previous research in other regions around the world (Bohdanowicz & Martinic, 2007; Deng & Burnett, 2002; Gössling, 2001; Tortella & Tirado, 2011).

The regression results also reveal that the introduction of water saving measures significantly reduces the levels of water consumption at the lodging sector, in the line of previous research works (Gössling et al., 2012; Hamele & Eckardt, 2006). With regards to the possible practical implications, in terms of water conservation, the accommodation businesses should work towards efficiency and reliability and reduce water use through the implementation new technologies. Moreover, a number of theoretical and empirical studies revealed encouraging results of

introducing water saving measures in the tourism accommodation sector (Barberan et al., 2013; Gössling et al., 2012; Hamele & Eckardt, 2006). This is supported by Hall et al. (2016) arguing that adoption technologies in accommodations in improving sustainable behaviour of the facilities are efficient. Further, an analysis of previous research works demonstrates that many hotels response to water consumption issues through demand side management. In other words, the lodging facilities introduce water-conserving practices and adopt technologies to reduce water use. Moreover, such interventions do not affect the conveniences of accommodation guests and even beneficial for financial savings (Gössling et al., 2012). Evidence shows that 20% water savings are possible without compromising comfort levels of the guests in Malaysian resorts (Tang, 2012).

Minimising water use by the lodging sector is certainly desirable, not only because of the savings of water consumed (and the consequent is economic profitability), but also because of the associated high volume of wastewater and polluted water bodies. This is even more crucial with increasing levels of water pollution and decreasing water volume in the surrounding lakes. The lodging sector could contribute to improving water lake quality by, for example, building sewage treatment systems and mitigate the environmental issues associated with the exploitation of lake water resources. Furthermore, measures related to knowledge transfer should be implemented, through interaction with the region's local population.

Thus, national strategies and programs of water use aim at water protection and the implementation of efficient water saving technologies, which will decrease a volume of water consumption and sewage discharge (UNDP, 2004; Water Resources Committee, 2017).

Therefore, in order to address the issues related to water management in the accommodation sector, the framework developed by Kasim et al. (2014) can be applicable in this area, since this study provides a set of good examples and strategies on how hotels of different sizes, economical, managerial, and technical and knowledge capacities can enhance their water management practices.

Nevertheless, it is questionable that tourism managers will be interested in introducing any type of water saving measures, since it will demand cost investments. Thus, in order to enhance environmental responsibility and provide incentives for the introduction of water saving measures in the accommodation facilities, local authorities should develop new policies and mechanisms. Those mechanisms could be based on fiscal incentives and the design of effective water pricing structures. The introduction of fiscal incentives for those accommodation facilities that introduce water saving measures would allow them to reduce their costs and facilitate their adoption.

With respect of tariff structure, the actual water pricing structure of the region, based on a flat rate system (that is, all levels of consumption are charged at the same price), is not an effective policy to reduce water consumption levels. Thus, it is crucial that regional policymakers design and implement new water pricing mechanisms that penalise high water consumers, like the increasing block rates structure. This structure increases the water prices charged as the amount of water consumed increases, penalising high consumers and benefitting low consumers. Furthermore, efficient water management practices within tourism can be applied to other economic sectors and be an important pre-condition for national water management policies.

Further research could address the calculation of indirect water consumption in the accommodation sector, along with the evaluation of water costs, in order to change the water consumption behaviour of accommodation businesses.

7.1.3 Lake destination image: antecedents and consequences

The research model proposed and tested in this chapter using PLS-SEM tries to provide evidence related with the lake destination image formation, and the relationships between lake destination image, motivations, satisfaction and loyalty. The results support the proposed lake destination model. All the hypotheses were confirmed, except those predicting a positive influence of motivation for socialising and being active on the inexistence of pressure and of water quality on satisfaction with the destination. Therefore, the research undertaken in this chapter provides important theoretical contributions and practical implications.

First of all, this work contributes to expanding the research on destination image applied in lake tourism context. Particularly, it allows to identify a comprehensive set of attributes that may be used to assess the lake destination image. This measurement tool can be adopted in different lake destinations worldwide. However it is advisable to take into consideration the particularities of a destination.

The findings also indicate the role of motivations relaxing and health improvement, as well as socialising and being active, in positive assessment of the lake destination. The only exception was that motivations for socialising and being active did not have a significant influence on the lake image regarding the inexistence of pressure.

Regarding satisfaction, the findings reveal that lake image has a positive influence on satisfaction with the lake, and the image of both the lake and the lake destination have a positive impact on satisfaction with the lake destination. However, water quality was the only dimension that did not have a significant impact on satisfaction with the lake destination, despite its high influence on satisfaction with the lake. This last finding is in line, in some way, with some specific studies where polluted lakes did not prevent people from visiting lake destinations (Ryan et al., 2010), or where no impact of perceived environmental degradation of lakes on attachment to the places was found (Stedman et al., 2007). Finally, our findings reveal that satisfaction with both the lake and lake destination have a positive impact on destination loyalty.

A number of important practical implications for planners and managers of lake tourism destinations should be provided. Managers of lake destinations should explore the potential of lakes for both relaxing and health improvement, as well as for socialising and engaging in activities, since these motivations are of major importance for pushing people to visit the lake destination. The promotion of lake destinations should be based on different positioning strategies designed for different market segments with different motivations.

Although the water quality did not have a significant impact on satisfaction with the lake destination, its strong impact on satisfaction with lakes makes it important to ensure a good water quality level regarding all water components. Creating a good lake environment, encompassing pleasant scenery, good facilities on the lake shore and good accessibility to the lake, is of major importance due to the impact of the lake environment on satisfaction with the lake.

The much higher impact of satisfaction with the lake destination on loyalty regarding these destinations, compared to the impact of the satisfaction with the lake, highlights the importance of considering these destinations as a whole, not disregarding the territory surrounding the lake and all the facilities and heritage of the area. In this context, managers of lake destinations should assign special attention to the facilities and services offered by the destination, due to their high impact on satisfaction. In addition, due to the great relevance of water quality, the lake environment and facilities and services across the destination, these three components should receive greater focus in the promotion of lake destinations.

As in almost all studies, some limitations can be mentioned. The research was carried out in a specific lake destination in Kazakhstan and in a limited period of time, not including the whole year nor the period of highest demand. Therefore, the proposed model should be tested in other lake destinations in order to ascertain whether the hypotheses are confirmed in other contexts. It would also be of great value to conduct a study during high season, when visitors are more engaged in water-based

activities and where higher use pressure may be felt due to the presence of more people and potential congestion.

This research area is relatively new to tourism, and more contributions are needed in order to better understand the concept of the lake destination image, as well as its antecedents and consequences. Nevertheless, this research, which provides insights into the relationship between motivations for visiting a lake destination, the lake destination image, and satisfaction and loyalty, provides useful guidelines to design appropriate managing and planning strategies for lake destinations.

As an overall conclusion of the thesis, we can say, that given tourism's importance as one of the key tools in the global economy and its great potential to increase, it will compete with other economic sectors for available share of water resources. Overall performance of this sector will demand considerable amount of water (direct and indirect consumption), additionally, will generate an enormous pressure on water environment. At the same time should be kept in mind, that water is a main asset for water-based destinations and key issue in visitor's experience, satisfaction and future behavioural intentions. Taken into consideration global water pressures and all aspects outlined above, tourism's interest and responsibility in preserving world's more precious and scarce resource, water, through an effective planning and management of tourism activity, undoubtedly by involving water management authorities and stakeholders.

REFERENCES

Abubakirova, A., Syzdykova, A., Kelesbayev, D., Dandayeva, B., & Ermankulova, R. (2016). Place of Tourism in the Economy of Kazakhstan Republic. *Procedia Economics and Finance*, 39, 3-6.

Alegre, J., & Juaneda, C. (2006). Destination loyalty: Consumers' economic behavior. *Annals of Tourism Research*, 33(3), 684-706.

Alifujiang, Y., Abuduwalli, J., Ma, L., Samat, A., & Groll, M. (2017). System Dynamics Modeling of Water Level Variations of Lake Issyk-Kul, Kyrgyzstan. *Water*, 9(12), 989.

Angel, J. R., & Kunkel, K. E. (2010). The response of Great Lakes water levels to future climate scenarios with an emphasis on Lake Michigan-Huron. *Journal of Great Lakes Research*, 36, 51-58.

Arcana, K. T. P. (2017). The Correlation of Event Tourism towards Travel Motivation and Its Impact on Destination Image of Bali. *Journal of Business on Hospitality and Tourism*, 3(1), 127-146.

Assaker, G., & Hallak, R. (2013). Moderating effects of tourists' novelty-seeking tendencies on destination image, visitor satisfaction, and short-and long-term revisit intentions. *Journal of Travel Research*, 52(5), 600-613.

Azhimetova, Z., Sansyzbaykyzy, S., & Azhimetov, Y. (2013). Legal Support of Tourism Development in the Republic of Kazakhstan. *Life Science Journal*, 10 (12), 728-731.

Baker, D. A., & Crompton, J. L. (2000). Quality, satisfaction and behavioral intentions. *Annals of Tourism Research*, 27(3), 785-804.

Baloglu, S., & Brinberg, D. (1997). Affective images of tourism destinations. *Journal of Travel Research*, 35(4), 11-15.

Baloglu, S., & McCleary, K. W. (1999). A model of destination image formation. *Annals of Tourism Research*, 26(4), 868-897.

Baloglu, S. (2001). An investigation of a loyalty typology and the multideestination loyalty of international travelers. *Tourism Analysis*, 6(1), 41-52.

Baoying, N., & Yuanqing, H. (2007). Tourism development and water pollution: Case study in Lijiang Ancient Town. *China Population, Resources and Environment*, 17(5), 123-127.

Barberán, R., Egea, P., Gracia-de-Rentería, P., & Salvador, M. (2013). Evaluation of water saving measures in hotels: A Spanish case study. *International Journal of Hospitality Management*, 34, 181-191.

Barnes, S. J., Mattsson, J., & Sørensen, F. (2014). Destination brand experience and visitor behavior: Testing a scale in the tourism context. *Annals of Tourism Research*, 48, 121-139.

Becken, S. (2014). Water equity—Contrasting tourism water use with that of the local community. *Water resources and industry*, 7, 9-22.

Becken, S., Rajan, R., Moore, S., Watt, M., & McLennan, C. L. (2013). White paper on tourism and water. EarthCheck Research Institute.

Beerli, A., & Martín, J. D. (2004). Tourists' characteristics and the perceived image of tourist destinations: a quantitative analysis—a case study of Lanzarote, Spain. *Tourism Management*, 25(5), 623-636.

Bhateria, R., & Jain, D. (2016). Water quality assessment of lake water: a review. *Sustainable Water Resources Management*, 2(2), 161-173.

Bigné, J. E., Sánchez, M. I., & Sánchez, J. (2001). Tourism image, evaluation variables and after purchase behaviour: inter-relationship. *Tourism Management*, 22(6), 607-616.

Bleu, P. (2004). Issues and Concerns—Water in the Mediterranean Region.

Bohdanowicz, P., & Martinac, I. (2007). Determinants and benchmarking of resource consumption in hotels—Case study of Hilton International and Scandic in Europe. *Energy and buildings*, 39(1), 82-95.

Bonn, M. A., Joseph, S. M., & Dai, M. (2005). International versus domestic visitors: An examination of destination image perceptions. *Journal of Travel Research*, 43(3), 294-301.

Bucak, T., Trolle, D., Andersen, H. E., Thodsen, H., Erdoğan, Ş., Levi, E. E., ... & Beklioğlu, M. (2017). Future water availability in the largest freshwater Mediterranean lake is at great risk as evidenced from simulations with the SWAT model. *Science of the Total Environment*, 581, 413-425.

Budnikova, T., Musataeva, G., & Plokhii, R. (2010). Report on Integrated Ecological Studies of the Shchuchinsk- Burabay Resort Area for the Definition of the Ways of Sustainable Development (In Russian). Astana: The Institute of Geography.

Burabay akimat. (2016). General information about the the Shchuchinsk-Burabay Resort Area. Akmola region.

Burak, S. A., Dogan, E., & Gazioglu, C. (2004). Impact of urbanization and tourism on coastal environment. *Ocean & Coastal Management*, 47(9-10), 515-527.

- Cai, Y., Sun, G., Guo, Z., Liu, L., & Yang, L. (2009). Simulation for influence of climate change on the stream flow variation in Poyang Lake basin. *Resource Sciences*, 31(5), 743-749.
- Carneiro, M. J., Eusébio, C., & Caldeira, A. (2018). The Influence of Social Contact in Residents' Perceptions of the Tourism Impact on Their Quality of Life: A Structural Equation Model. *Journal of Quality Assurance in Hospitality and Tourism*, 19(1).
- Cepeda Carrión, G., Henseler, J., Ringle, C. M., & Roldán, J. L. (2016). Prediction-oriented modeling in business research by means of PLS path modeling: Introduction to a JBR special section. *Journal of Business Research*, 69(10), 4545-4551.
- Chan, W., Wong, K., & Lo, J. (2009). Hong Kong hotels' sewage: environmental cost and saving technique. *Journal of Hospitality & Tourism Research*, 33(3), 329-346.
- Charalambous, K., Bruggeman, A., & Lange, M. A. (2012). The impact of climate change on water use in the tourism sector of Cyprus. *Energy, environment and water research centre, The Cyprus Institute, Nicosia*.
- Charara, N., Cashman, A., Bonnell, R., & Gehr, R. (2011). Water use efficiency in the hotel sector of Barbados. *Journal of Sustainable Tourism*, 19(2), 231-245.
- Chen, L. J., Chen, J. S., & Basman, C. (2009). Investigation on Visitors' Perceptions of Recreation Impacts in Sun Moon Lake National Scenic Area in Taiwan. *Asia Pacific Journal of Tourism Research*, 14(3), 241-253.
- Chen, J. S., & Gursoy, D. (2001). An investigation of tourists' destination loyalty and preferences. *International Journal of Contemporary Hospitality Management*, 13(2), 79-85.
- Chen, J. S., Prebensen, N., & Huan, T. C. (2008). Determining the motivation of wellness travelers. *Anatolia*, 19(1), 103-115.
- Chen, C. F., & Tsai, D. (2007). How destination image and evaluative factors affect behavioral intentions? *Tourism Management*, 28(4), 1115-1122.
- Chen, J. S., & Uysal, M. (2002). Market positioning analysis: A hybrid approach. *Annals of Tourism Research*, 29(4), 987-1003.
- Chi, C. G. Q., & Qu, H. (2008). Examining the structural relationships of destination image, tourist satisfaction and destination loyalty: An integrated approach. *Tourism Management*, 29(4), 624-636.
- Choi, W. M., Chan, A., & Wu, J. (1999). A qualitative and quantitative assessment of Hong Kong's image as a tourist destination. *Tourism Management*, 20(3), 361-365.

Chon, K. S. (1991). Tourism destination image modification process: Marketing implications. *Tourism Management*, 12(1), 68-72.

Cole, S. (2014). Tourism and water: From stakeholders to rights holders, and what tourism businesses need to do. *Journal of Sustainable Tourism*, 22(1), 89-106.

Committee on Statistics of the Ministry of national economy. (2018). The official statistical information. Republic of Kazakhstan. Retrieved October 14 2018 from http://stat.gov.kz/faces/homePage?_afzLoop=6133072674571472#%40%3F_afzLoop%3D6133072674571472%26_adf.ctrl-state%3Dpsukn3e1r_17.

Connell, J. (2006). Medical tourism: Sea, sun, sand and... surgery. *Tourism management*, 27(6), 1093-1100.

Connor, R. (2015). *The United Nations world water development report 2015: Water for a sustainable world* (Vol. 1). UNESCO Publishing.

Cooper, C. (2006). Lakes as tourism destination resources. In Hall, C. M., & Härkönen, T. (Eds.), *Lake tourism: An integrated approach to lacustrine tourism systems* (pp. 27-42). Clevedon, Buffalo, Toronto: Channel View Publications.

Cruse, L. (2010). *Water policy in Australia: the impact of change and uncertainty*. Routledge.

Crompton, J. L. (1979). An assessment of the image of Mexico as a vacation destination and the influence of geographical location upon that image. *Journal of Travel Research*, 17(4), 18-23.

Crompton, J. (1992). Structure of vacation destination choice sets. *Annals of tourism research*, 19(3), 420-434.

Cvetkovic, M., & Jovanovic, S. S. (2016). The Application of GIS Technology in Tourism. *Quaestus*, (8), 332.

Dann, G. M. (1977). Anomie, ego-enhancement and tourism. *Annals of tourism research*, 4(4), 184-194.

David, L., Baros, Z., Patkos, C., & Tuohino, A. (2012). Lake tourism and global climate change: an integrative approach based on Finnish and Hungarian case-studies. *Carpathian Journal of Earth and Environmental Sciences*, 7(1), 121-136.

Deng, S. M., & Burnett, J. (2002). Water use in hotels in Hong Kong. *International Journal of Hospitality Management*, 21(1), 57-66.

Department of Statistics in Akmola region. (2018). Tourism statistics. Akmola region. Retrieved October 14 2018 from www.oblstat.online.kz.

- Department of Tourism in Akmola region. (2016). Tourism statistics. Retrieved November 28 2016 from www.turism.kdt.kz.
- Department of Tourism in Akmola region. (2018). Tourism information. Retrieved August 28 2018 from www.turism.kdt.kz.
- De Stefano, L. (2004). *Freshwater and Tourism in the Mediterranean*. WWF Mediterranean Programme.
- Deyà-Tortella, B., Garcia, C., Nilsson, W., & Tirado, D. (2016). The effect of the water tariff structures on the water consumption in Mallorcan hotels. *Water Resources Research*, 52(8), 6386-6403.
- Deyà-Tortella, B., Garcia, C., Nilsson, W., & Tirado, D. (2017). Analysis of water tariff reform on water consumption in different housing typologies in Calvià (Mallorca). *Water*, 9(6), 425.
- Dibike, Y. B., & Coulibaly, P. (2005). Hydrologic impact of climate change in the Saguenay watershed: comparison of downscaling methods and hydrologic models. *Journal of hydrology*, 307(1-4), 145-163.
- Ditton, R. B., & Goodale, T. L. (1973). Water quality perception and the recreational uses of Green Bay, Lake Michigan. *Water Resources Research*, 9(3), 569-579.
- Dokulil, M. T. (2014). Environmental impacts of tourism on lakes. In *Eutrophication: causes, consequences and control*(pp. 81-88). Springer, Dordrecht.
- do Valle, P. O., & Assaker, G. (2016). Using Partial Least Squares Structural Equation Modeling in Tourism Research: A Review of Past Research and Recommendations for Future Applications. *Journal of Travel Research*, 55(6), 695-708.
- Echtner, C. M., & Ritchie, J. B. (1991). The meaning and measurement of destination image. *Journal of Tourism Studies*, 2(2), 2-12.
- Ecologic. (2007). Final Report. EU Water Saving Potential (Part 1–Report) ENV.D.2/ETU/2007/0001r. Institute for International and European Environmental Policy.
- Enea, A., Hapciuc, O. E., Iosub, M., Minea, I., & Romanescu, G. (2017). WATER QUALITY ASSESSMENT IN THREE MOUNTAINOUS WATERSHEDS FROM EASTERN ROMANIA (SUCEAVA, OZANA AND TAZLAU RIVERS). *Environmental Engineering & Management Journal (EEMJ)*, 16(3).
- Ergin, A., Karaesmen, E., Micallef, A., & Williams, A. T. (2004). A new methodology for evaluating coastal scenery: fuzzy logic systems. *Area*, 36(4), 367-386.

Erkkilä, D. L. (2006). Local considerations in marketing and developing lake-destination areas. *Lake tourism. An integrated approach to lacustrine tourism systems*, 1, 207-222.

Erzhanova, S. (2014). *Priority directions of development of tourism businesses in the Republic of Kazakhstan*. PhD thesis, Eurasian National University, Kazakhstan.

Essex, S., Kent, M., & Newnham, R. (2004). Tourism development in Mallorca: is water supply a constraint?. *Journal of sustainable tourism*, 12(1), 4-28.

EPA. (2012). Saving Water in Hotels. Environmental Protection Agency. Retrieved March 2 2017 from <https://www3.epa.gov/watersense/>.

European Union. (2000). Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 on establishing a framework for community action in the field of water policy. *Official Journal of European Communities*, L327: 1–72

EUROSTAT. (2009). Water and Tourism Pilot Study. *Office for Official Publications of the European Communities*. Luxemburg.

Eusébio, C., & Vieira, A. L. (2013). Destination attributes' evaluation, satisfaction and behavioural intentions: A structural modelling approach. *International Journal of Tourism Research*, 15(1), 66-80.

Fakeye, P. C., & Crompton, J. L. (1991). Image differences between prospective, first-time, and repeat visitors to the Lower Rio Grande Valley. *Journal of Travel Research*, 30(2), 10-16.

FAO. (2014). AQUASTAT. *Food and Agriculture Organization of the United Nations*. Rome, Italy. Available at: <http://www.fao.org/nr/water/aquastat/main/index.stm>

Fayed, H. A. K., Wafik, G. M., & Gerges, N. W. (2016). The Impact of Motivations, Perceptions and Satisfaction on Tourists Loyalty. *International Journal of Hospitality and Tourism Systems*, 9(2), 14-25.

Fodness, D. (1994). Measuring tourist motivation. *Annals of tourism research*, 21(3), 555-581.

Foghagen, C. (2014). The blooming paradise: algae blooms, environmental change and tourism. *European Journal of Tourism Research*, 7, 79.

Fornell, C. (1992). A national customer satisfaction barometer: The Swedish experience. *Journal of Marketing*, 56(1), 6-21.

Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 18(1), 39–50.

Gabarda-Mallorquí, A., Garcia, X., & Ribas, A. (2017). Mass tourism and water efficiency in the hotel industry: A case study. *International Journal of Hospitality Management*, 61, 82-93.

Gabe, T. M., Lynch, C. P., & McConnon Jr, J. C. (2006). Likelihood of cruise ship passenger return to a visited port: The case of Bar Harbor, Maine. *Journal of Travel Research*, 44(3), 281-287.

Gallarza, M. G., Saura, I. G., & García, H. C. (2002). Destination image: Towards a conceptual framework. *Annals of Tourism Research*, 29(1), 56-78.

Garcia, C., & Servera, J. (2003). Impacts of tourism development on water demand and beach degradation on the island of Mallorca (Spain). *Geografiska Annaler: Series A, Physical Geography*, 85(3-4), 287-300.

Gartner, W. C. (2006). Planning and management of lake destination development: Lake gateways in Minnesota. *Lake Tourism: An Integrated Approach to Lacustrine Tourism Systems*, 32, 167.

Gladstone, W., Curley, B., & Shokri, M. R. (2013). Environmental impacts of tourism in the Gulf and the Red Sea. *Marine Pollution Bulletin*, 72(2), 375-388.

Gleick, P. H., & Palaniappan, M. (2010). Peak water limits to freshwater withdrawal and use. *Proceedings of the National Academy of Sciences*, 107(25), 11155-11162.

Gössling, S. (2001). The consequences of tourism for sustainable water use on a tropical island: Zanzibar, Tanzania. *Journal of environmental management*, 61(2), 179-191.

Gössling, S., Peeters, P., Hall, C. M., Ceron, J. P., Dubois, G., & Scott, D. (2012). Tourism and water use: Supply, demand, and security. An international review. *Tourism management*, 33(1), 1-15.

Gössling, S. (2015). New performance indicators for water management in tourism. *Tourism Management*, 46, 233-244.

Gössling, S., Hall, C. M., & Scott, D. (2015). *Tourism and Water* (Vol. 2). Bristol, Buffalo, Toronto: Channel View Publications.

Government of the Republic of Kazakhstan. (2013). Concept of development of tourism in the Republic of Kazakhstan until 2020 № 192 from 28.02.2013. Retrieved November 28 2015 from <http://adilet.zan.kz/rus/docs/P1300000192>.

Government of the Republic of Kazakhstan. (2014). Development Plan of Shchuchinsk-Burabay resort area in Akmola region for 2014 - 2016 years № 476 from

12.05.2014. Retrieved November 28 2015 from www.mid.gov.kz/.../plan_razvitiya_shchuchinsko-borovskoy_kurortnoy.

Government of the Republic of Kazakhstan. (2015). Law on tourist activity in the Republic of Kazakhstan № 211-II from 13.06.2001 with amendments and additions as of 17.11.2015. Retrieved November 28 2015 from http://online.zakon.kz/document/?doc_id=1023618.

Green Hotelier. (2013). Water Management and Responsibility in Hotels. Retrieved March 3 2017 from <http://www.greenhotelier.org/>.

Gunn, C. A. (1988). *Vacationscape: Designing tourist regions*. New York: Van Nostrand Reinhold.

Gyte, D. M., & Phelps, A. (1989). Patterns of destination repeat business: British tourists in Mallorca, Spain. *Journal of Travel Research*, 28(1), 24-28.

Hadjikakou, M. (2014). *Measuring the Impact of Tourism on Water Resources: alternative frameworks* (Doctoral dissertation, University of Surrey).

Hadjikakou, M., Chenoweth, J., & Miller, G. (2013). Estimating the direct and indirect water use of tourism in the eastern Mediterranean. *Journal of environmental management*, 114, 548-556.

Hadjikakou, M., Miller, G., Chenoweth, J., Druckman, A., & Zoumides, C. (2015). A comprehensive framework for comparing water use intensity across different tourist types. *Journal of Sustainable Tourism*, 23(10), 1445-1467.

Hadwen, W. L., Arthington, A. H., & Mosisch, T. D. (2003). The impact of tourism on dune lakes on Fraser Island, Australia. *Lakes & Reservoirs: Research & Management*, 8(1), 15-26.

Hair, J. F., Hult, G. T. M., Ringle, C., & Sarstedt, M. (2014). *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)*. Thousand Oaks: SAGE Publications.

Hall, C.M., & Härkönen, T. (2006). Lake tourism: An Introduction to Lacustrine Tourism Systems. In Hall, C. M., & Härkönen, T. (Eds.), *Lake tourism: An integrated approach to lacustrine tourism systems* (pp. 3-26), Clevedon, Buffalo, Toronto: Channel View Publications.

Hamdy, A., & Trisorio Liuzzi, G. (2004). Water scarcity management towards food security in the Middle-East region. In *Proceedings of the LNCV (Landau Network-Centro Volta) International Forum "Food Security under Water Scarcity in the Middle East: Problems and Solutions"*.

Hamele, H., & Eckardt, S. (2006). Environmental initiatives by European tourism businesses: Instruments, indicators and practical examples.

Hsu, C. H., & Lam, T. (2003). Mainland Chinese travelers's motivations and barriers of visiting Hong Kong. *Journal of Academy of Business and Economics*.

Hof, A., Morán-Tejeda, E., Lorenzo-Lacruz, J., & Blázquez-Salom, M. (2018). Swimming Pool Evaporative Water Loss and Water Use in the Balearic Islands (Spain). *Water*, *10*(12), 1883.

Hu, Z., Morton, L. W., & Mahler, R. L. (2011). Bottled water: United States consumers and their perceptions of water quality. *International Journal of Environmental Research and Public Health*, *8*(2), 565-578.

Huh, J., Uysal, M., & McCleary, K. (2006). Cultural/heritage destinations: Tourist satisfaction and market segmentation. *Journal of Hospitality & Leisure Marketing*, *14*(3), 81-99.

Hui, T. K., Wan, D., & Ho, A. (2007). Tourists' satisfaction, recommendation and revisiting Singapore. *Tourism management*, *28*(4), 965-975.

InforEuro. (2016). Currency converter. *European Commission*. Brussels, Belgium.

InforEuro. (2018). Currency converter. *European Commission*. Brussels, Belgium.

Islam, M. N., Kitazawa, D., Runfola, D. M., & Giner, N. M. (2012). Urban lakes in a developing nation: Drivers, states and impacts of water quality and quantity in Dhaka, Bangladesh. *Lakes & Reservoirs: Research & Management*, *17*(4), 253-263.

Jalili, S., Hamidi, S. A., & Namdar Ghanbari, R. (2016). Climate variability and anthropogenic effects on Lake Urmia water level fluctuations, northwestern Iran. *Hydrological sciences journal*, *61*(10), 1759-1769.

Jeon, Y., Herriges, J. A., Kling, C. L., & Downing, J. (2005). The role of water quality perceptions in modeling lake recreation demand. *The international handbook on non-market environmental valuation*. Cheltenham, UK and Nortampton, US: Edward Elgar Publishing Limited.

Jin, N. P., Lee, S., & Lee, H. (2015). The effect of experience quality on perceived value, satisfaction, image and behavioral intention of water park patrons: New versus repeat visitors. *International Journal of Tourism Research*, *17*(1), 82-95.

Juodkienė, V. (2014). Gis in Tourism Development Using Spatial Modelling. *Civil and Environmental Engineering*, *10*(2), 98-104.

Kasim, A., Gursoy, D., Okumus, F., & Wong, A. (2014). The importance of water management in hotels: a framework for sustainability through innovation. *Journal of Sustainable Tourism*, *22*(7), 1090-1107.

Kazangapova, N. B., Romanova, S. M., Alipbeki, O. A., Ponomarenko, O. I., & Batsanov, A. S. (2016). Determining surface water and bed sediment quality of Lake Kopa. *Journal of Forestry Faculty*, 17, 148-157.

Kazhydromet of the Ministry of Energy of the Republic of Kazakhstan. (2017). Environmental monitoring bulletin. Retrieved December 10 2017 from <https://kazhydromet.kz/>.

Kelly, J., & Williams, P. (2007). Tourism destination water management strategies: An eco-efficiency modelling approach. *Leisure/Loisir*, 31(2), 427-452.

Kladou, S., & Mavragani, E. (2015). Assessing destination image: An online marketing approach and the case of TripAdvisor. *Journal of Destination Marketing & Management*, 4(3), 187-193.

Konu, H., Tuohino, A., & Komppula, R. (2010). Lake Wellness—a practical example of a new service development (NSD) concept in tourism industries. *Journal of vacation marketing*, 16(2), 125-139.

Kozak, M. (2001). Repeaters' behavior at two distinct destinations. *Annals of Tourism Research*, 28(3), 784-807.

Kozak, M. (2002). Comparative analysis of tourist motivations by nationality and destinations. *Tourism management*, 23(3), 221-232.

Kozak, M., & Kozak, N. (Eds.). (2011). *Sustainability of tourism: Cultural and environmental perspectives*. Cambridge Scholars Publishing.

Kozak, M., & Rimmington, M. (1999). Measuring tourist destination competitiveness: conceptual considerations and empirical findings. *International Journal of Hospitality Management*, 18(3), 273-283.

Kozak, M., & Rimmington, M. (2000). Tourist satisfaction with Mallorca, Spain, as an off-season holiday destination. *Journal of travel research*, 38(3), 260-269.

Kumar, A., Sharma, M. P., & Yadav, N. S. (2014). Assessment of Water Quality Changes at Two Locations of Chambal River: MP. *Journal of Material and Environmental Science*, 5, 1781-1785.

Kuralbayev, A., Sevim, B., & Abishev, N. (2017). Econometrical Analysis of the Demand for Entrance Tourism in Kazakhstan. *International Journal of Economics and Financial Issues*, 7(1).

Kurleto, M. (2013). Sustainable management of lakes taking into consideration the tourism and nature conservation in Australia and New Zeland. *Polish Journal of Natural Sciences*, 28(1), 91–106.

- Kuttybayeva, G. (2015). Critically evaluate different types of tourism in Kazakhstan. *Science Time*, (2), 119-125.
- Lake, P. S., & Bond, N. R. (2007). Australian futures: freshwater ecosystems and human water usage. *Futures*, 39(2-3), 288-305.
- Lange, G. M. (2015). Tourism in Zanzibar: Incentives for sustainable management of the coastal environment. *Ecosystem Services*, 11, 5-11.
- Lee, L. H., & Lee, Y. D. (2015). The impact of water quality on the visual and olfactory satisfaction of tourists. *Ocean & Coastal Management*, 105, 92-99.
- Lee, Y. K., Lee, C. K., Lee, S. K., & Babin, B. J. (2008). Festivalscapes and patrons' emotions, satisfaction, and loyalty. *Journal of Business Research*, 61(1), 56-64.
- Lee, C., Hallak, R., & Sardeshmukh, S. R. (2016). Innovation, entrepreneurship, and restaurant performance: A higher-order structural model. *Tourism Management*, 53, 215-228.
- Lehmann, L. V. (2009). The relationship between tourism and water in dry land regions. *Proceedings of the Environmental Research Event 2009*, 1-8.
- Levêque, J. G., & Burns, R. C. (2017). A Structural Equation Modeling approach to water quality perceptions. *Journal of environmental management*, 197, 440-447.
- Lopes, S. D. F. (2011). Destination image: Origins, developments and implications. *PASOS. Revista de Turismo y Patrimonio Cultural*, 9(2), 305-315.
- Lowe, B., Lynch, D., & Lowe, J. (2015). Reducing household water consumption: a social marketing approach. *Journal of Marketing Management*, 31(3-4), 378-408.
- Lu, C. C., Hsu, Y. L., Lu, Y. I., & Lin, W. J. (2015). Measuring tourist satisfaction by motivation, travel behavior and shopping behavior: The case of lake scenic area in Taiwan. *International Journal of Organizational Innovation*, 8(1), 117-133.
- Mangion, E. (2013). Tourism impact on water consumption in Malta. *Bank of Valletta Review*, 47, 61-85.
- Mansfeld, Y. (1992). From motivation to actual travel. *Annals of tourism research*, 19(3), 399-419.
- Markovic, J. J., Pavic, D. J., Mézaros, M. M., & Petrovic, M. D. (2015). Measuring the quality of the lakeside tourist destinations: case study of lake Palic and lake Srebrno (Serbia). *Journal of Environmental and Tourism Analyses*, 3(1), 61-79.

Mclennan, C. L. J., Becken, S., & Stinson, K. (2017). A Water-Use Model For The Tourism Industry In The Asia-Pacific Region: The Impact Of Water-Saving Measures On Water Use. *Journal of Hospitality & Tourism Research*, 41(6), 746-767.

Meng, F., Tepanon, Y., & Uysal, M. (2008). Measuring tourist satisfaction by attribute and motivation: The case of a nature-based resort. *Journal of Vacation Marketing*, 14(1), 41-56.

Merem, E. C., Yerramilli, S., Twumasi, Y. A., Wesley, J. M., Robinson, B., & Richardson, C. (2011). The applications of GIS in the analysis of the impacts of human activities on South Texas Watersheds. *International journal of environmental research and public health*, 8(6), 2418-2446.

Meyer, B., & Lundy, L. (2014). *Integrated water cycle management in Kazakhstan*. Al Farabi Kazakh National University Publishing House. Almaty.

Millan, A., & Esteban, A. (2004). Development of a multiple-item scale for measuring customer satisfaction in travel agencies services. *Tourism management*, 25(5), 533-546.

Ministry of Natural Resources and Environmental Protection of the Republic of Kazakhstan. (2001). *Book 2. The ecological state of the regions of the Republic*. Kokshetau.

Moser, G. (1984). Water quality perception, a dynamic evaluation. *Journal of Environmental Psychology*, 4(3), 201-210.

Moyle, B., Glen Croy, W., & Weiler, B. (2010). Community perceptions of tourism: Bruny and Magnetic islands, Australia. *Asia Pacific Journal of Tourism Research*, 15(3), 353-366.

National Laboratory of Astana. (2016). Report on research and development in the field of energy efficiency and conservation, renewable energy and environmental protection for 2014-2016. Astana. Kazakhstan.

Nilsson, J. H., & Gössling, S. (2013). Tourist responses to extreme environmental events: The case of Baltic Sea algal blooms. *Tourism Planning & Development*, 10(1), 32-44.

Oppermann, M. (2000). Tourism destination loyalty. *Journal of Travel Research*, 39(1), 78-84.

Ostendorp, W., Schmieder, K., & Jöhnk, K. D. (2004). Assessment of human pressures and their hydromorphological impacts on lakeshores in Europe. *International Journal of Ecohydrology & Hydrobiology*, 4(4), 379-395.

Payne, C. S., & Sean White, O. N. S. (2014). Employment in Tourism Industries, 2009-2013.

Pike, S. (2002). Destination image analysis—a review of 142 papers from 1973 to 2000. *Tourism management*, 23(5), 541-549.

Pike, S., & Ryan, C. (2004). Destination positioning analysis through a comparison of cognitive, affective, and conative perceptions. *Journal of Travel Research*, 42(4), 333-342.

Potocka, I. (2013). The lakescape in the eyes of a tourist. *Quaestiones Geographicae*, 32(3), 85-97.

Prasetyowati, A. A., Harahab, N., & Soemarno, S. (2014). Tourist Perceptions On Supporting Infrastructure Facilities And Climate-Based Visiting Time of Ngebel Lake, Ponorogo. *Journal of Indonesian Tourism and Development Studies*, 2(2), 47-54.

Priskin, J. (2008). Implications of eutrophication for lake tourism in Québec. *Téoros. Revue de recherche en tourisme*, 27(27-2), 59-61.

Proshansky, H. M., Fabian, A. K., & Kaminoff, R. (1983). Place-identity: Physical world socialization of the self. *Journal of environmental psychology*, 3(1), 57-83.

Pyatov, E. (2007). Role of Shchuchinsk-Burabay resort area in tourism development. *International Scientific Practice Conference on Tourism, Environment and Business*, 23rd -25th May 2007, Kokshetau, Kazakhstan.

Ramazanova, M., Bulai, M., Ursu, A., Tortella, B., & Kakabayev, A. (2019). Effects of tourism development on surface area of main lakes of Shchuchinsk-Burabay resort area, Kazakhstan. *European Journal of Tourism Research: Volume 21, 21*, 69-86.

Ramdas, M., & Mohamed, B. (2013). Visitors and residents perception of tourism impact on water quality in Redang And Perhentian Island, Malaysia. In *Engaging communities in sustainable tourism development. Business enterprises for sustainable travel education network think tank XII conference proceedings*.

Razumova, M., Rey-Maqueira, J., & Lozano, J. (2016). The role of water tariffs as a determinant of water saving innovations in the hotel sector. *International Journal of Hospitality Management*, 52, 78-86.

Rico-Amoros, A. M., Olcina-Cantos, J., & Saurí, D. (2009). Tourist land use patterns and water demand: Evidence from the Western Mediterranean. *Land Use Policy*, 26(2), 493-501.

Ringle, C. M., Wende, S., & Becker, J.-M. (2014). Smartpls 3. Hamburg. Germany: SmartPLS GmbH. Retrieved May 26, 2016. from <http://www.smartpls.com>.

- Roca, E., & Villares, M. (2008). Public perceptions for evaluating beach quality in urban and semi-natural environments. *Ocean & Coastal Management*, 51(4), 314-329.
- Rodrigues, A. I., Correia, A., Kozak, M., & Tuohino, A. (2015). Lake-destination image attributes: content analysis of text and pictures. *Advances in Culture, Tourism and Hospitality Research*, 10, 293-314.
- Rodrigues, A. I., Correia, A., & Kozak, M. (2017). Assessing lake-destination image: insights from the industry side. *International Journal of Culture, Tourism and Hospitality Research*, 11(1), 5-17.
- Romanescu, G., Hapciuc, O. E., Sandu, I., Minea, I., Dascalita, D., & Iosub, M. (2016). Quality indicators for Suceava river. *Rev. Chim.(Bucharest)*, 67(2), 245-249.
- Romanova, S. M., & Kazangapova, N. B. (2013). Quality of waters lakes Kazakhstan in contemporaneous period (for example of lake Kopa). *International Journal of Biology and Chemistry*, 6(2), 65-70.
- Ryan, C., Huimin, G., & Chon, K. (2010). Tourism to polluted lakes: issues for tourists and the industry. An empirical analysis of four Chinese lakes. *Journal of Sustainable Tourism*, 18(5), 595-614.
- San Martín, H., & Del Bosque, I. A. R. (2008). Exploring the cognitive–affective nature of destination image and the role of psychological factors in its formation. *Tourism Management*, 29(2), 263-277.
- Sayili, M., Akca, H., Duman, T., & Esengun, K. (2007). Psoriasis treatment via doctor fishes as part of health tourism: A case study of Kangal Fish Spring, Turkey. *Tourism Management*, 28(2), 625-629.
- Schernewski, G., Neumann, T., Podsetchine, V., & Siegel, H. (2001). Spatial impact of the Oder river plume on water quality along the south-western Baltic coast. *International Journal of Hygiene and Environmental Health*, 204(2-3), 143-155.
- Seong-Seop, K., & Choong-Ki, L. (2002). Push and Pull Relationships. *Annals of Tourism Research*, 29 (1), 257–260.
- Sevkaznedra, Interregional Department. (2014). Results of hydrogeological work upon the object Compilation of modern hydrogeological map of the Shchuchinsk-Burabay resort area in Akmola region. Kostanay, Kazakhstan: Report.
- Shiklomanov, I.A. (1993). World fresh water resources. In Gleick, P. H. (1993). *Water in crisis: a guide to the World's fresh water resources* (pp. 13-24). New York: Oxford University Press.

Shiklomanov, I. A. (1998). *World water resources. A new appraisal and assessment for the 21st century*. Paris: UNESCO.

Shmueli, G., Ray, S., Velasquez Estrada, J., & Chatla, S. (2015). The elephant in the room: Evaluating the predictive performance of partial least squares (PLS) path models. Available at SSRN: <https://ssrn.com/abstract=2659233> or <http://dx.doi.org/10.2139/ssrn.2659233>.

Smailova, A. (2012). *Tourism in Kazakhstan 2006-2012*. Astana: Kazakhstan.

State National Natural Park Burabay (SNNP). (2017). Surface and underground water. Retrieved September 10 2017 from www.parkburabay.kz.

Sobirov, B. (2018). Innovative development of tourism in Uzbekistan. *American Journal of Economics and Business Management*, 1(1), 60-74.

Stedman, R. C. (2003). Is it really just a social construction?: The contribution of the physical environment to sense of place. *Society & Natural Resources*, 16(8), 671-685.

Stedman, R. C., & Hammer, R. B. (2006). Environmental perception in a rapidly growing, amenity-rich region: The effects of lakeshore development on perceived water quality in Vilas County, Wisconsin. *Society and Natural Resources*, 19(2), 137-151.

Stedman, R. C., Lathrop, R. C., Clark, B., Ejsmont-Karabin, J., Kasprzak, P., Nielsen, K., & Zhukova, A. (2007). Perceived environmental quality and place attachment in North American and European temperate lake districts. *Lake and Reservoir Management*, 23(4), 330-344.

Stern, E., & Krakover, S. (1993). The formation of a composite urban image. *Geographical analysis*, 25(2), 130-146.

Sulnu, U. (2003). Environmental impacts of tourism. In Camarda D. (ed.), Grassini L. (ed.). *Local resources and global trades: Environments and agriculture in the Mediterranean region. Bari: CIHEAM, Options Mediterraneans: Series A. Seminars Mediterraneans*, 57, 263-270.

Sun, Y. Y., & Hsu, C. M. (2018). The Decomposition Analysis of Tourism Water Footprint in Taiwan: Revealing Decision-Relevant Information. *Journal of Travel Research*, 58(4), 695-708.

Syzdykbayeva, B., Raimbekov, Z., Khydyrbekuly, D., Temirbulatova, M., & Bayandinova, A. (2015). Research note: Evaluation and projection of economic indicators of tourism development in Kazakhstan. *Tourism Economics*, 21(6), 1315-1322.

Tandyrak, R., Parszuto, K., & Grochowska, J. (2016). Water quality of Lake Ełk as a factor connected with tourism, leisure and recreation on an urban area. *Quaestiones Geographicae*, 35(3), 51-59.

Tang, F. E. (2012). A study of water consumption in two Malaysian resorts. *World Academy of Science, Engineering and Technology*, 68, 1162-1167.

Tapper, R., Hadjikakou, M., Noble, R., & Jenkinson, J. (2011). *The impact of the tourism industry on freshwater resources in countries in the Caribbean, Mediterranean, North Africa and other regions* (Research project for the Travel Foundation). London, UK: Tourism Concern and the Environment Business and Development Group.

Tasci, A. D., & Gartner, W. C. (2007). Destination image and its functional relationships. *Journal of Travel Research*, 45(4), 413-425.

Tătar, C. (2011). Befitting and disruptive practices of water-based tourism in the crișuri mountains. *Annals of the University of Oradea, Geography Series/Analele Universitatii din Oradea, Seria Geografie*, 21(1), 117-126.

Therkelsen, A. (2003). Imagining places: Image formation of tourists and its consequences for destination promotion. *Scandinavian Journal of Hospitality and Tourism*, 3(2), 134-150.

Tortella, B. D., & Tirado, D. (2011). Hotel water consumption at a seasonal mass tourist destination. The case of the island of Mallorca. *Journal of environmental management*, 92(10), 2568-2579.

Tuohino, A. (2013). The potential of lakes and lake landscape in the concept of Nordic wellbeing. *PUBLISHER UWM*, 267.

Tuohino, A. (2015). In search of the sense of Finnish lakes: a geographical approach to lake tourism marketing. *Nordia Geographical Publications*, 44(5), 77-77.

Tuohino, A., & Pitkänen, K. (2004). The transformation of a neutral lake landscape into a meaningful experience—interpreting tourist photos. *Journal of Tourism and Cultural Change*, 2(2), 77-93.

U. N. D. P. (2004). *Water resources of Kazakhstan in the new millennium*. Almaty, Republic of Kazakhstan: UNDP Publication in Kazakhstan.

UNEP. (2017). UN Environment's Freshwater Strategy 2017-2021. Retrieved October 20 2018 from <https://www.unenvironment.org/resources/publication/un-environments-freshwater-strategy-2017-2021>.

UNEP and UNWTO. (2005). Making Tourism More Sustainable - A Guide for Policy Makers. p.11-12.

- UNESCO. (2016). Great SPAS of Europe. Retrieved November 15 2016 from <http://whc.unesco.org/en/tentativelists/5928/>.
- UNWTO. (2007). *A Practical Guide to Tourism Destination Management*. Madrid, Spain: World Tourism Organization.
- UNWTO. (2013). *World Tourism Day 27 September 2013. Tourism and Water: Protecting our Common Future*. Madrid, Spain: World Tourism Organization.
- UNWTO. (2018). Compendium of Tourism Statistics dataset [Electronic], UNWTO, Madrid, data updated on 17/09/2018. Retrieved December 10 2018 <http://statistics.unwto.org/news/2018-03-23/methodological-notes-tourism-statistics-database-2018-edition>.
- UNWTO. (2018). UNWTO Tourism Highlights, 2018 Edition, UNWTO, Madrid. Retrieve December 10 2018 from <https://doi.org/10.18111/9789284419876>.
- Vetitnev, A., & Dzubina, A. (2013). Spa-services and sanatorium-resort complexes of Russia. *Turizam: međunarodni znanstveno-stručni časopis*, 61(2), 187-200.
- Visit Kazakhstan. (2018). Official tourism website of Kazakhstan. Retrieved December 25 2018 from <http://visitkazakhstan.kz/en/about/75/>.
- Wang, C. Y., & Hsu, M. K. (2010). The relationships of destination image, satisfaction, and behavioral intentions: An integrated model. *Journal of Travel & Tourism Marketing*, 27(8), 829-843.
- Water Resource Committee of the Ministry of the Agriculture of the Republic of Kazakhstan. (2015). Water Code of the Republic of Kazakhstan. Retrieved November 5 2015 from http://cwr.kz/index.php?option=com_blog_calendar&year=2011&month=12&monthid=47&Itemid=0.
- Water Resources Committee of the Ministry of Agriculture of the Republic of Kazakhstan. (2016). Report on household water consumption. Retrieved November 10 2016 from <http://mgov.kz/en/komitet-po-vodnym-resursam-msh-rk/>.
- WEF. (2017). The Travel and Tourism Competitiveness Report 2017. World Economic Forum. Geneva. Retrieved April 10 2018 from http://www3.weforum.org/docs/WEF_TTCR_2017_web_0401.pdf.
- White, S. B., & Fane, S. A. (2002). Designing cost effective water demand management programs in Australia. *Water Science and Technology*, 46(6-7), 225-232.

- Wilkinson, P. F. (2015). Tourism and water. *Journal of Ecotourism*, 14 (1), 91-93.
- Wolf-Watz, D. (2014). Traveling for nature? On the paradox of environmental awareness and travel for nature experiences. *Turizam: međunarodni znanstveno-stručni časopis*, 62(1), 5-18.
- World Resources Institute. (2008). *Water Resources and Freshwater Ecosystems*. Retrieved December 25 2018 from <http://earthtrends.wri.org/features/index.php?theme=2>.
- Wu, J., Liu, W., Zeng, H., Ma, L., & Bai, R. (2014). Water quantity and quality of six lakes in the arid Xinjiang Region, NW China. *Environmental Processes*, 1(2), 115-125.
- Yapiyev, V., Sagintayev, Z., Verhoef, A., Kassymbekova, A., Baigaliyeva, M., Zhumabayev, D., & Jumassultanova, S. (2017). The changing water cycle: Burabay National Nature Park, Northern Kazakhstan. *Wiley Interdisciplinary Reviews: Water*, 4(5), 1-14.
- Yessengabylova, A., Bekbulatova, A., Suraganova, S., Bissekov, A., & Zhumanova, B. (2016). Recreational Potential of Kazakhstan and Prospects of Medical Health Tourism in This Country. *International Journal of Environmental and Science Education*, 11(15), 8447-8469.
- Yoon, Y. S., Lee, J. S., & Lee, C. K. (2010). Measuring festival quality and value affecting visitors' satisfaction and loyalty using a structural approach. *International Journal of Hospitality Management*, 29(2), 335-342.
- Yoon, Y., & Uysal, M. (2005). An examination of the effects of motivation and satisfaction on destination loyalty: a structural model. *Tourism Management*, 26(1), 45-56.
- Yuan, Y., Zeng, G., Liang, J., Huang, L., Hua, S., Li, F., ... & He, Y. (2015). Variation of water level in Dongting Lake over a 50-year period: Implications for the impacts of anthropogenic and climatic factors. *Journal of Hydrology*, 525, 450-456.
- Zhang, H., Fu, X., Cai, L. A., & Lu, L. (2014). Destination image and tourist loyalty: A meta-analysis. *Tourism Management*, 40, 213-223.
- Zhang, Y., Huang, K., Yu, Y., & Yang, B. (2017). Mapping of water footprint research: A bibliometric analysis during 2006–2015. *Journal of Cleaner Production*, 149, 70-79.
- Zhansagimova, A. (2013). *Formation of tourist cluster in the development of innovative processes in the economy of the Republic of Kazakhstan*. PhD Thesis, Eurasian National University, Kazakhstan.

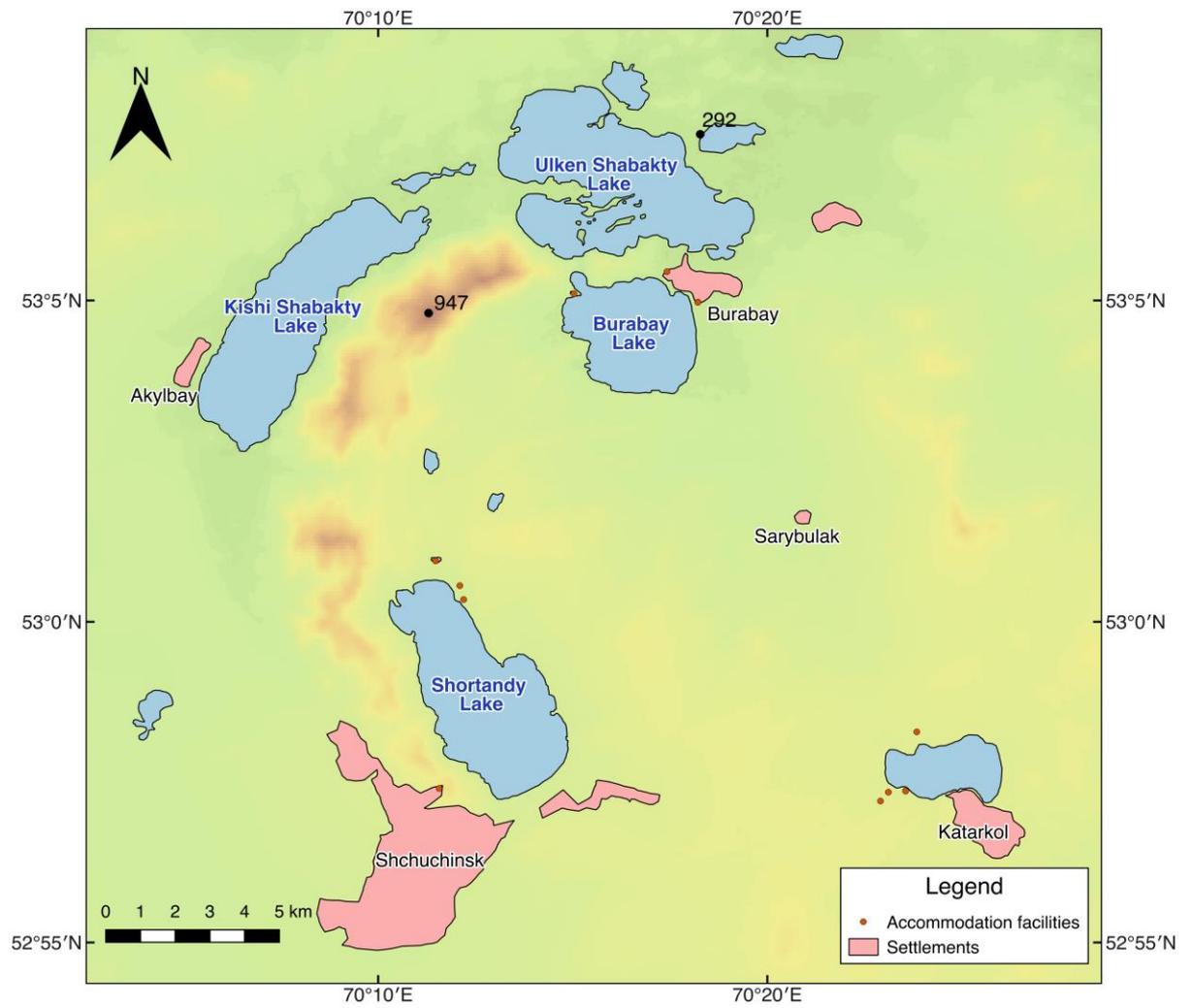
Zhidkoblinova, O. V. (2013). State Policy of Tourism Industry Development in the Republic of Kazakhstan. *Karaganda Economic University of Kazpotrebsoyuz, Karaganda, Kazakhstan World Applied Sciences Journal*, 23(8), 1079-1084.

Zhong, L., Deng, J., Song, Z., & Ding, P. (2011). Research on environmental impacts of tourism in China: Progress and prospect. *Journal of environmental management*, 92(11), 2972-2983.

APPENDIXES

Appendix A.

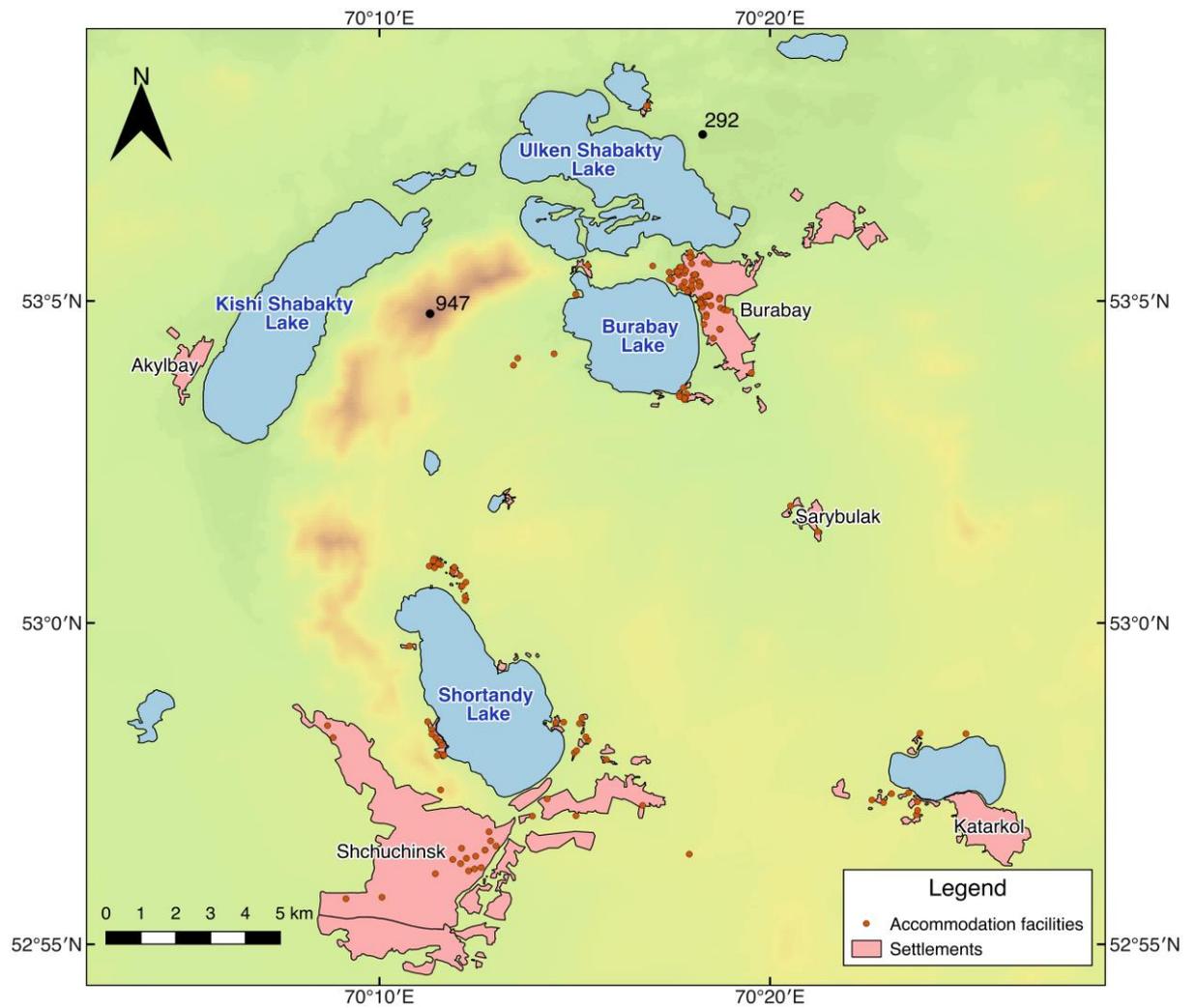
Map of the main lakes of the Shchuchinsk-Burabay resort area (1987)



Sources: GIS outputs

Appendix B.

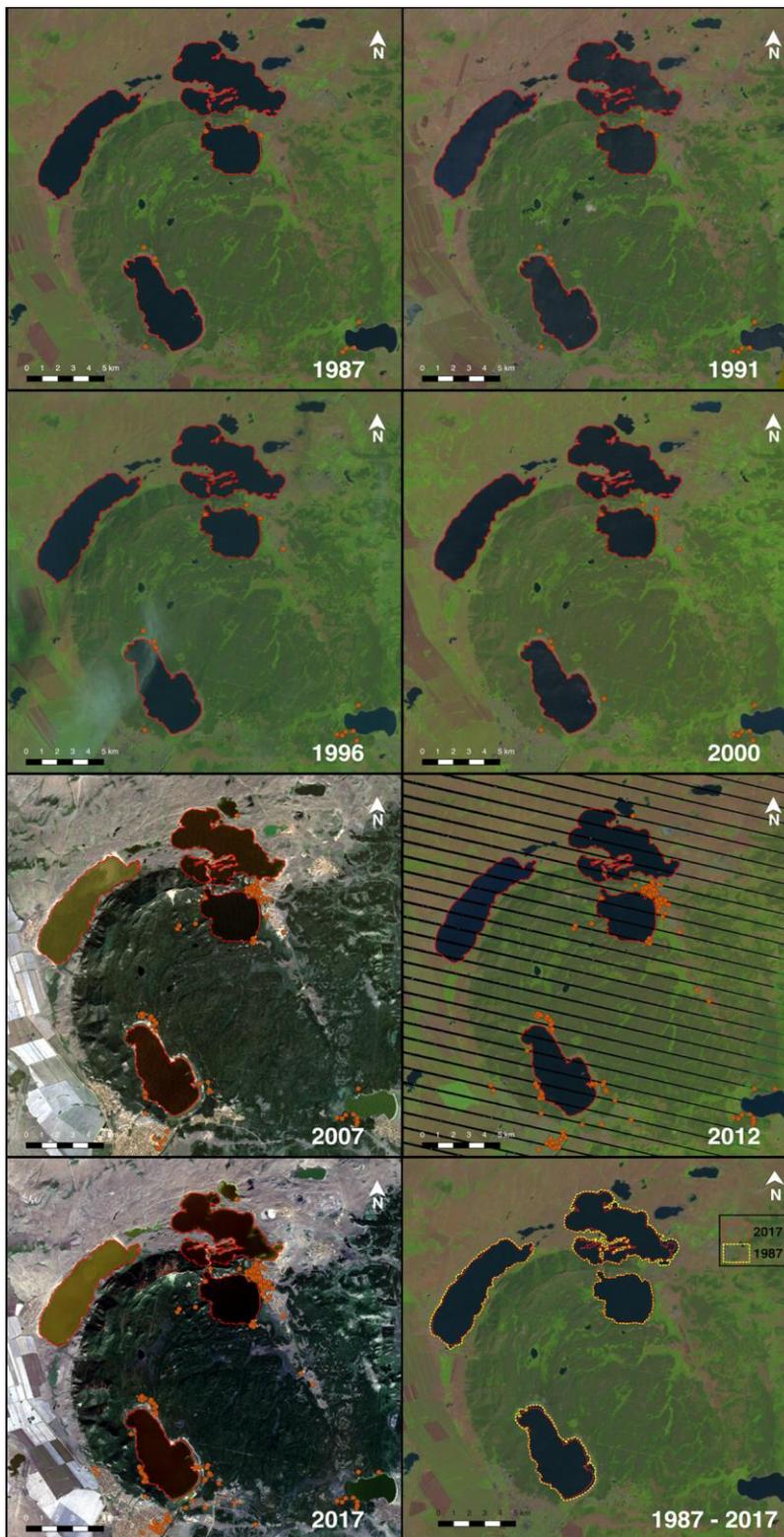
Maps of the main lakes of the Shchuchinsk-Burabay resort area (2017)



Sources: GIS outputs

Appendix C.

Dynamics of changes in the lakes' surface area and evolution of accommodation facilities ,1987-2017



Sources: GIS outputs

13. Other facilities an their area (in m.sq)
 - a. Conference room
 - b. Restaurant
 - c. Banquet hall
 - d. Summer cafe
 - e. Lobby
 - f. Massage room
 - g. Swimming pool (indoor)
 - h. Swimming pool (outdoor)
 - i. SPA
 - j. Sauna
 - k. Area of the fitness, sport facilities
 - l. Green area
 - m. Golf
 - n. Other facilities, please indicate

14. Official price of the single room per night, KZT
15. Official price of the double room per night, KZT
16. Official price for other rooms, please indicate
17. Occupancy of the hotel in percentage for 2014 (please provide information for each month)
18. Occupancy of the hotel in percentage for 2015 (please provide information for each month)

19. Average occupancy rate in percentage for 2014?
 - a. in high season
 - b. In low season

20. Average occupancy rate in percentage for 2015?
 - a. in high season
 - b. In low season

21. Maximum number of the guests can be accommodated in the hotel?
22. What was the country of origin of the customers in 2014 (%)?
23. What was the country of origin of the customers in 2015 (%)?

24. Which percentage over total guests represents?
 - a. Only bed
 - b. Bed and breakfast
 - c. Half board
 - d. Full board

25. Gross operating profit of your hotel is?
 - a. Average
 - b. Higher than average
 - c. Lower than average

26. Which is your ADR (average daily rate) for single room?
 - a. in high season
 - b. In low season

27. Which is your ADR (average daily rate) for double room?
 - a. in high season
 - b. In low season

III. WATER INFORMATION

1. Total water consumption of the hotel in 2014?
2. Total water consumption of the hotel in 2015?

3. Water is used for?
 - a. Guests rooms
 - b. Kitchen
 - c. Public Toilet
 - d. Laundry
 - e. Central area conditioning
 - f. Swimming pool
 - g. SPA
 - h. Gardens, plants
 - i. Others, please specify

4. The sources of water in the hotel are?
 - a. Tap water, central water system
 - b. Well water
 - c. Borehole
 - d. Lakes
 - e. Others, please specify

5. Is it possible to drink water from the tap? Yes No

6. Water tariff applied to the hotel (Increasing block rate or flat rate)?
 - a. Current price for 1 cubic meter? b. Previous price for 1 cubic meter, please specify in which year?

7. You have to pay for sewage water? Yes No

8. *If yes, what is the current price for 1 cubic meter?*
9. *If yes, what was the previous price 1 cubic meter, please specify in which year?*

10. Sewage water production in 2014? 11.. Sewage water production in 2015?

12. What do you think about the price of water? High Low

13. Which % represents the cost of water over your total costs?

14. The hotel has introduced measures (mechanisms, processes) to reduce water consumption?
Yes No
15. *If yes, which measures (mechanisms, processes, devices, etc)*

16. Which are the reasons of introducing these measures (mechanisms, processes, devices, etc)?
 - a. Marketing: to improve hotels image
 - b. For Law reasons, obligation
 - c. Cost reasons
 - d. Because they really reduce consumption)
 - e. Because the guests really demand these things

17. Do you have any ecolable certificate? Yes No 18. If yes, please specify
19. Why you introduce ecolabels?
 - a. To improve the hotels image
 - b. By requirements of tour operators
 - c. By requirements of the guests
 - d. It is a way to reduce the costs.

Thanks for your contribution!

Appendix E.

SURVEY QUESTIONNAIRE FOR A VISITOR OF THE SHCHUCHINSK-BURABAY RESORT AREA

Dear visitor!

You are an important part of research about "Tourist's perceptions on water quality of the lakes in the Shchuchinsk - Burabay resort area. This research is conducted by Makhabbat Ramazanova as part of PhD degree in Tourism at the University of Balearic Islands.

Please let me kindly ask you to answer to the following questions.

Thank you very much for your contribution!

Lake image, satisfaction with the lakes

1) Which lakes are you going to use for recreational purposes during your visit to this resort area? (Choose one or more options)

- Burabay
- Shortandy
- Ulken Shabakty
- Kishi Shabakty
- Others, please specify

2) Which recreational activities are you going to practice at these lakes during your visit to this resort area? (Choose one or more options)

- Swimming
- Boating
- Fishing
- Water sports
- Sunbathing
- Others, please specify

3) Please indicate your level of agreement with the following statements concerning the lakes of the resort area. Scale: 1- Strongly disagree, 7 – Strongly agree

They are very scenic	1	2	3	4	5	6	7
They have many species of wildlife and plants	1	2	3	4	5	6	7
They are favourable for water based activities like swimming, boating, fishing	1	2	3	4	5	6	7
They have very clear water	1	2	3	4	5	6	7
They are very peaceful	1	2	3	4	5	6	7
They are accessible	1	2	3	4	5	6	7
Their shore is very forested	1	2	3	4	5	6	7
Their shore has enough tourism facilities	1	2	3	4	5	6	7
Their shore is not overloaded by tourism facilities	1	2	3	4	5	6	7
They are not very crowded	1	2	3	4	5	6	7
There is no conflict between users (agriculture, industry, local people and tourism)	1	2	3	4	5	6	7
They are not being harmed by overuse	1	2	3	4	5	6	7
Lakes water level is not decreasing	1	2	3	4	5	6	7
Water is not polluted	1	2	3	4	5	6	7
They have a colour that suggests there is no pollution	1	2	3	4	5	6	7
They do not have a bad odour	1	2	3	4	5	6	7
There are no sediments on the surface of the lakes	1	2	3	4	5	6	7

There are no sediments on the bottom of the lakes	1	2	3	4	5	6	7
There are no plenty of algal/reeds	1	2	3	4	5	6	7
There are no litter from animal	1	2	3	4	5	6	7
I have good overall perception of the lakes	1	2	3	4	5	6	7

4) Please rate your overall satisfaction with visiting these lakes.

Scale: 1- Strongly disagree, 7 – Strongly agree

I am satisfied with the decision to visit these lakes	1	2	3	4	5	6	7
Overall, I am very pleased with the lakes	1	2	3	4	5	6	7

5) Please indicate whether you agree that the following factors generate lake water pollution.

Scale: 1- Strongly disagree, 7 – Strongly agree

Discharging sewage from nearest towns/villages	1	2	3	4	5	6	7
Discharging sewage from industry	1	2	3	4	5	6	7
Discharging sewage from tourism infrastructure	1	2	3	4	5	6	7
Tourism activities on the shoreline of lakes	1	2	3	4	5	6	7
Water extraction for irrigation	1	2	3	4	5	6	7
Agricultural runoff	1	2	3	4	5	6	7
Lack of control on fishing practices	1	2	3	4	5	6	7
Using lakes as drinking source for animals	1	2	3	4	5	6	7
Climate change (increasing evaporation, decreasing precipitation)	1	2	3	4	5	6	7
Others, please specify	1	2	3	4	5	6	7

6) Which of the following actions would be effective in controlling water quality of the lakes in the studied area? (Choose one or more options)

- Purification of lakes from pollutants and animal litter
- Purification of lakes from algal/reeds
- Improve the urban infrastructure on the sites (sewage system)
- Improve the tourism infrastructure on the sites (sewage system in accommodations)
- Control tourism activities on the lakeside
- Development and implementation of strict environmental laws and regulations
- Stakeholder participation

Lake destination image, motivations, satisfaction and loyalty

7) Please indicate whether you agree that the following factors motivated you to visit this resort area. Scale: 1- Strongly disagree, 7 – Strongly agree

Physical relaxation	1	2	3	4	5	6	7
Mental relaxation	1	2	3	4	5	6	7
Physical therapy	1	2	3	4	5	6	7
Health improvement	1	2	3	4	5	6	7
Outstanding scenery / landscape	1	2	3	4	5	6	7
Good weather	1	2	3	4	5	6	7
Unpolluted area	1	2	3	4	5	6	7
Cultural experience	1	2	3	4	5	6	7
Nightlife and entertainment	1	2	3	4	5	6	7
Attractive towns/villages	1	2	3	4	5	6	7

Socialising with friends and relatives	1	2	3	4	5	6	7
Friendly local people	1	2	3	4	5	6	7
Meeting people	1	2	3	4	5	6	7
Opportunity to get away from crowds	1	2	3	4	5	6	7
Opportunities to do various activities (cycling, hiking)	1	2	3	4	5	6	7
Opportunities to do water activities (swimming, boating, fishing)	1	2	3	4	5	6	7
Luxury hotels	1	2	3	4	5	6	7
Budget accommodation	1	2	3	4	5	6	7

8) Please indicate your level of agreement with the following statements concerning the destination attributes? Scale: 1- Strongly disagree, 7 – Strongly agree

Spectacular landscape and natural environment	1	2	3	4	5	6	7
Gorgeous trees and plants	1	2	3	4	5	6	7
Scenic mountains and valleys	1	2	3	4	5	6	7
Attractive lakes	1	2	3	4	5	6	7
Good water quality of lakes	1	2	3	4	5	6	7
Opportunities to practice water activities (boating, fishing)	1	2	3	4	5	6	7
Cleanliness of beaches	1	2	3	4	5	6	7
Clean and tidy environment	1	2	3	4	5	6	7
Safe and secure environment	1	2	3	4	5	6	7
Favorable and pleasant climate	1	2	3	4	5	6	7
Good quality accommodation facilities	1	2	3	4	5	6	7
Good quality restaurants and cafes	1	2	3	4	5	6	7
Diverse shop facilities	1	2	3	4	5	6	7
Good local transport services	1	2	3	4	5	6	7
Easy access to tourist information	1	2	3	4	5	6	7
High range of sightseeing facilities	1	2	3	4	5	6	7
Enjoyable nightlife and entertainments	1	2	3	4	5	6	7
Reasonable price for accommodation	1	2	3	4	5	6	7
Reasonable price for attractions and activities	1	2	3	4	5	6	7
Rich historical and cultural heritage	1	2	3	4	5	6	7
The range of cultural events, shows and exhibitions	1	2	3	4	5	6	7
Friendly local people	1	2	3	4	5	6	7
High quality of balneology services	1	2	3	4	5	6	7
High quality of wellbeing services	1	2	3	4	5	6	7
Opportunities to relax and refresh the mind	1	2	3	4	5	6	7
I have good overall perception of the destination	1	2	3	4	5	6	7

9) Please rate your overall satisfaction with your visit to the destination?

Scale: 1- Strongly disagree, 7 – Strongly agree

I am satisfied with the decision to visit this destination	1	2	3	4	5	6	7
Overall, I am very pleased with the destination	1	2	3	4	5	6	7

10) How likely you are to repeat your trip again and recommend this destination to other people?

Scale: 1- Very unlikely, 7 – Very likely

Will you repeat your trip to this destination next year?	1	2	3	4	5	6	7
Will you recommend this destination to other people?	1	2	3	4	5	6	7

Sociodemographic profile of sample

1) **Country of origin** (please specify the region)

2) **Age**

3) **Gender** Male Female

4) **Marriage status**

Single

Married

Divorced

Other, please specify

5) **Education level**

Primary school

High/secondary school

Professional/diploma

University degree

Postgraduate degree

Other, please specify

6) **Occupation**

State employee

Private organisation

Entrepreneur

Retired

Student

Other, please specify

7) **Monthly income**

Less than 33 000 KZT

33 001 – 66 000

66 001-90 000

90 001-132 000

More than 132 000

Characteristics of the trip

8) **Have you been to Schuchinsk - Burabay resort area before?**

Yes (how many times)

No

9) **How many nights do you stay in the area during this visit?**

10) **Where do you stay during your visit? (choose one option)**

Hotel

Sanatorium

Guesthouse

Apartment

Other, please specify

11) Where is situated your accommodation? (choose one option)

- On the coastal zone of Burabay Lake
- On the coastal zone of Shortandy Lake
- On the coastal zone of Ulken ShabaktyLake
- On the coastal zone of Kishi Shabakty Lake
- Other, please specify

12) Which transport system do you use inside the Schuchinsk - Burabay resort area?

- Car
- Bus
- Bicycle
- Walking
- Other, please specify

13) How much do you spend per day in Schuchinsk - Burabay resort area during this visit (including accommodation and transport system)?

- Less than 3300 KZT
- 3 301 – 10 000 KZT
- 10 001 – 16 500 KZT
- 16 501 – 33 000 KZT
- 33 001 – 50 000 KZT
- More than 50 000 KZT

Thank you for your cooperation!

