

## THE PROTECTION OF WATER RESOURCES FOR SUSTAINABLE TOURISM UNDER CLIMATE CHANGE IN SOUTH CAUCASUS: IN THE CONTEXT OF AZERBAIJAN

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**Abstract:** Water is a vital resource for humans, but there is a lack of understanding about its value. The tourism industry will need more water because there are more tourists, hotel standards are getting better, and there are more water-intensive tourist activities. Climate change is also anticipated to affect the water supply. This study aims to investigate the role of the tourism sector in water resource depletion in Azerbaijan, a country facing water scarcity, and recommend actions for the hotel industry. This research employed a comprehensive analysis of published articles in high-ranked journals to investigate the impact of tourism on water resource depletion in Azerbaijan. The study also analyzed the current state of water resources in the country and identified the major factors contributing to their depletion. The study found that the tourism industry in Azerbaijan significantly contributes to the depletion of water resources through increased water consumption and wastewater production. The analysis also revealed that the major factors affecting water resources in the country include increasing urbanization and global warming. The study recommends that the hotel industry take action to reduce their water consumption and wastewater production to mitigate the impact of tourism on water resources. Additionally, the study proposes that policymakers should prioritize sustainable water resource management practices to ensure the availability of water resources for future generations.

**Key words:** sustainable tourism, water, climate change, South Caucasus, Azerbaijan

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### INTRODUCTION

Water is critical for the continuance of life. Water is an essential element for all inhabitants, particularly humans. Humans utilize water resources for various purposes, including daily needs. There has recently been a lack of understanding about the worth of this resource, which necessitates scientific and practical efforts to stimulate the establishment of a new cultural attitude toward water. With greater visitor numbers, improved hotel standards, and increasingly water-intensive tourist activities, the tourism industry's demand for water is anticipated to expand. Furthermore, water demand is expected to rise as a result of climate change and its effects on water supply. Warmer air can store more moisture than cool air, and in a warmer world, the air will absorb more water from seas, rivers, soil, and plants. The drier conditions left behind by this air might have a significant impact on drinking water sources. Climate change consequences on sustainable tourism are crucial because it increases the danger of species extinction, decreases freshwater, increases wildfire accidents, heat waves, and illnesses, all of which cause visitors to avoid certain places (Shariff, 2022).

The supporting strategies from countries are essential for the sustainable development of the tourism field in the future (Tung and Thang, 2022). Water's centrality in our lives and ecosystems involves considerations of its worth, management, and the functions it performs for people and the environment. At the moment, the ease of reach to water resources, which is frequently characterized by consumerist logic, risks their availability in the close future and fosters a loss of communal consciousness about the worth of water and the need for its protection, responsible utilization, and valorization. Furthermore, water is a rare resource in most places of the world, particularly in the South Caucasus. As a result, every choice and action involving water is critical. Drinking, cooking, bathing, washing clothing, dishes, and automobiles, flushing toilets and watering gardens are all ways that people utilize water frequently. Moreover, people need and demand enough water during using tourism facilities. Tourism has a high potential for water resources since it promotes the development of such appealing resources while balancing their conservation and responsible usage.

The tourism field is one of the most essential socio-economic activities and has a great potential effect on global development in the future (Lin et al., 2019; Akadiri and Akadiri, 2021; Tung, 2021; Singh and Kumar, 2022). Tourism is reliant on water resources and plays a significant role in water use. Water scarcity might also result in exorbitant expenses for ecosystem restoration. The nexus between the tourism potential of Azerbaijan and water resources is critical. Without enough water resources, the growing tourism potential of Azerbaijan could be threatened. Elshan Ahmadov (2020) claims that water resources management is essential to achieve sustainable development in many fields in Azerbaijan (Ahmadov, 2020). Phan et al. (2021) pay attention to the role of water in tourism under climate change. Ahmadi et al. (2022) highlight

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how the protection of water resources in Azerbaijan is important (Ahmadi et al., 2022). There are many ways to conserve water for sustainable tourism under climate change in the context of Azerbaijan. In this study, in the category of countries with water shortages, in Azerbaijan, where the quantity and quality of water resources are gradually decreasing due to dynamics such as increasing urbanization and global warming, the role of the tourism sector in water resources and consumption is discussed. This paper explores the importance of water resources for sustainable tourism under climate-change from Azerbaijan's perspectives in the South Caucasus. The paper illustrates how sustainable tourism is strongly linked with water security under climate change. In conclusion, tourism has become an important industry for many countries, providing significant economic gains through "invisible exports." However, the increased demand for tourism has also put pressure on the natural and cultural resources that constitute the main source of tourism.

As a result, the concept of sustainability has become increasingly important, with many countries focusing on the efficient and responsible use of resources, including water. In the hospitality industry, hotels can play a significant role in promoting sustainable tourism by adopting measures such as repairing leaking faucets, installing low-flow showerheads, using recycle flush filters, and harvesting rainwater. By doing so, hotels can fulfil their social responsibilities towards the environment while also reducing their operational costs. It is essential for the tourism industry to promote responsible tourism practices and work towards a more sustainable future for tourism.

## METHOD

The research methodology used in this study was the document analysis approach, which involved the examination of various textual and visual resources to contribute to the research issue. Secondary data sources were used, including documents, publications, statements from influential figures in the tourism industry, press releases from the minister of tourism, official reports, statistical information from the World Tourism Organization, the OECD, Statista, news in the media, and interviews. To gather the necessary data, the study searched databases from WoS, SCOPUS, EBSCO, PROQUEST, SCIENCEDIRECT, EMERALD INSIGHT, DERGIPARK, and other worldwide sectors under the categories of service products for information on tourism using document analysis.

The flowchart of the research steps is as follows:

1. Define the research issue and objectives.
2. Identify relevant secondary data sources for document analysis.
3. Search databases and other sources for relevant documents and publications.
4. Collect and compile relevant documents and publications.
5. Read and analyze the documents and publications to identify key themes and patterns.
6. Interpret the findings and draw conclusions.
7. Present the results in a clear and concise manner.

Overall, the document analysis approach allowed for a thorough examination of the relevant resources to gain a comprehensive understanding of the role of tourism in water consumption and the need for sustainable practices in the industry.

## LITERATURE REVIEW

Water resources are essential elements for any touristic destination. Tourism's impact on water resources, particularly the hotel industry's impact on islands and coastal areas, jeopardizes the resources and, ultimately, the destination's viability. Various global institutions advocate using pricing policies to enhance efficiency and punish excessive water usage. This study examines the short-term efficacy of a water rate adjustment adopted by the Balearic Islands regional government in 2013 on hotel water use. The transition is from a linear to an increasing block rate scheme. On panel data from 2011 to 2015, the study employs quantile regression with within-artificial block modification. The findings indicate that the reform was ineffective in lowering water usage levels. The inefficiency of the reform can be explained by the disproportionate fixed component of the water price and the excessive first block of the sanitation payment (Deyà-Tortella et al., 2019). This article examines direct freshwater consumption in tourism from both quantitative and qualitative perspectives to analyze the tourist sector's present water requirement and identify existing and forthcoming governance concerns.

The research finds that, while tourism boosts worldwide water consumption, direct tourism-related water usage is less than 1% of global consumption and will not become substantial even if the field grows at the expected rate of about 4% per year (international tourist arrivals). The condition varies by location since tourism concentrates traveller flows in time and space, and frequently in arid places with limited water supplies. In addition, the comprehension of tourism's circuitous water demands, which include the production of food, construction materials, and energy, is still lacking but is expected to be greater than straight water usage. The research concludes that, given the predicted changes in worldwide precipitation patterns as a result of climate change, it is especially important for existing water-stressed areas to participate in proactive water management. There are recommendations for reducing tourism's water footprint (Gössling et al., 2012).

Tourism has developed significantly as an economic activity, adding to the local and seasonal stresses on water supply infrastructure in tourist areas across the world. This study examined tourism-related water usage in 21 states and compared it to other municipal uses using data from the AQUASTAT and EarthCheck tourist accommodation databases. Tourists' water use per guest night varied significantly, with water consumption being the greatest (up to 956 l per guest night in China) and most diversified in developing nations. The discrepancy between tourist and local water usage is likewise highest in low- and middle-income states. On the other hand, highly developed states have a high tourist water effect, with no discernible difference in water usage between tourism and non-tourism consumers. The research's implications for managing possible water disputes and the need for greater tourism destination water resource management are explored

(Becken, 2014). The purpose of this paper is to assess the regional growth hazard for the luxury tourist sector in Saidia, Morocco's northwestern area. The research's goal is to give recommendations for tourism-related water management and governance. Essential pressures on regional water resources are classified based on a thematic literature assessment from several discipline perspectives. The highlighted primary difficulties and constraints associated with the serious regional water situation are compared with Moroccan tourist policy initiatives that stress a sustainable regional tourism pathway. In addition, the practical implementation of sustainable concepts in hotel management standards was evaluated.

The competing viewpoints of science and policy on possibilities and challenges serve as the foundation for a destination-specific SWOT analysis to analyze and debate current tourism development risks and opportunities. Important strategies and related measures are developed to ensure impetus for sustainable water management and governance, as well as to promote real policy implementation (Tekken and Kropp, 2015). During "World Water Day 2007," Jaques Diouf, director general of the United Nations Food and Agriculture Organization (FAO), warned of the significant concerns relating to water management that man would confront in the twenty-first century. Water is significant because it is an essential yet scarce resource. We cannot create more than the Earth provides, nor can we use water resources beyond the globe. Nonetheless, water remains a critical asset, with demand predicted to rise significantly in the future years: It is anticipated that by 2050, over half of the world's population would be subjected to hazardous water stress circumstances. The goal of this research is to examine the role of tourism on water spending, specifically the volumes of water "indirectly" consumed to suit the demands of visitors. We shall describe in detail what these "indirect consumption" entail, as well as delve into the features of the tourist sector to better comprehend the processes that connect it to water resources (D'Ascenzo et al., 2020). Water is critical for ecosystem protection as well as human well-being.

There has recently been a lack of understanding about the worth of this resource, which necessitates scientific and practical efforts to stimulate the establishment of a new cultural attitude toward water. Tourism has a high potential for water resources since it promotes the development of such appealing resources while balancing their conservation and responsible usage. On the other hand, research on the link between water tourism and territory is still uncommon. The goal of this research is to look at the existing tourism usage of aquifer sites in the Spanish area of Extremadura to see if these practices have the ability to raise awareness about the value of water and its role in socioeconomic development and environmental conservation. This study employs both qualitative and quantitative approaches, yielding findings that support the strategic role of water in ecosystem management and the development of human well-being. The empirical findings indicate the beginning of a shift in water-based tourism from both the providing and request parties. The findings propose potential new approaches that can help people comprehend the importance of water, improve everyone's quality of life, and protect ecosystems (Folgado-Fernández et al., 2019). While tourism brings economic advantages to locations, it also puts some environmental stresses on them. The geographical and temporal differential features of water consumption at tourism locations have become a focus of interest in the global context of water shortage.

The current study uses input-output analysis to calculate the change trends in China's tourism water footprint (TWF) from 2013 to 2018, analyzes regional differences in TWF changes using kernel density estimation and the Theil index, and investigates the driving factors of the TWF's spatial and temporal differentiation using the logarithmic mean Divisia index model (Xiao et al., 2021). Unsustainable water consumption, exacerbated by climate change, poses a danger to water access, potentially resulting in conflict between visitors, tourism enterprises, communities, and the environment. It also raises concerns regarding water access rights. The findings highlight the true nature and size of tourist water usage, as well as their lack of understanding of the effects of this use on the local ecosystem and community.

### **Sustainable tourism**

The World Tourism Organization defines sustainable tourism in terms of tourism development as follows (World Tourism Organization, 1998) "It is the enrichment of the resource opportunities of future businesses in an economically, socially, and aesthetically satisfactory manner, provided that the cultural integrity, sensitive ecological processes, biological diversity, and vital support systems are maintained and protected while the needs of the local people are met with the tourists offered." The plans for managing resources support cultural integration, the environment, biological diversity, and vital systems, but their main goal is to get rid of economic, social, and aesthetic problems (World Tourism Organization, 1998). The sustainable tourism phenomenon is based on sustainable development (Hardy and Beeton, 2009). Environmental awareness and evaluations, which serve as the foundation for development, are especially important in the tourism industry. Sustainable tourism is considered to be a balancing factor in economic development, the protection of environmental resources, and the satisfaction of local people and tourists (Hunter, 2002). Sustainable tourism accepts the realization of development by protecting natural resources and basing tourism development on planned foundations as a prerequisite. Thus, while protecting natural and cultural assets, economic and social development is provided in the region (Rebollo et al., 2009). One of the biggest problems in touristic destinations is the unplanned use and destruction of resources by tourism stakeholders for short-term benefits (Dimitrios, 1999). Sustainable tourism can be expressed as preserving the distinctive attractiveness of the tourist center and transferring it to the future.

The World Tourism Organization has identified three basic principles for sustainable tourism. These include the protection of ecological and biological diversity, the preservation of the original socio-cultural values of the host societies, and the increase of social living standards by providing employment to the local people in the tourism sector (World Tourism Organization, 2002). "Sustainable tourism" has become a keyword in the discussion of environmentally integrated tourism development. A general result of this idea is that the environmental consequences of this rapidly growing industry cannot be ignored any longer. In the past, it was possible to assess the environmental consequences of tourism through

Environmental Impact Assessments (EIA), understanding what level of change is tolerable. Carrying Capacity Concept (CCC) and Limits of Acceptable Change System (EIA) = LAC) has been suggested (Gössling et al., 2002).

#### **Relationship between tourism and water use**

The increase in the reception of foreign tourists creates an additional burden on local infrastructure: water and electricity supply, sewerage, garbage removal, roads, transport, communications, and security services (Akbulaev and Mirzayeva, 2020). So, from a development perspective, one thinks water is your most important need that needs to be addressed. But the community was unaware of the fact that they were entitled to free, clean water. The government was supposed to provide free clean water (Tshepiso and Ramukumba, 2022). Water, which is the main source of life, appears as an important parameter in every aspect of life in every period of history. As for all living things, it is necessary for humans to consume a certain amount of water, both directly and indirectly, for their survival and health quality. According to the calculations of the World Health Organization (WHO) (World Health Organization, 2013), the total daily water consumption, which varies between 7.5 and 15 litres, is 2.5–3 litres for drinking, depending on personal and climatic reasons and personal and social norms. 2–6 litres of it serve hygienic purposes, and 3–6 litres of it serve cooking purposes, depending on the types of food consumed and social and cultural norms. The change in production dynamics for nearly three centuries has emerged as a result of the increase in agricultural areas, the rapid development of urbanization, the increasing diversity of human activities, the increase in human mobility with increasing transportation opportunities on earth, the increase in energy production and consumption, and the decrease in the amount and quality of usable freshwater resources. Regions that are a source of water for people have always been centers of attraction. For this reason, in all images imagined when tourism is mentioned, a square directly or indirectly related to water resources comes to mind.

The symbol of modern mass tourism is almost in the form of the sun, sand, and sea trio. In addition, the relationship between water resources and tourism is not limited to sea tourism. Lakes, waterfalls, streams, thermal springs, pools, water parks, nature-related sports such as surfing, fishing, skiing, and all imaginable tourism activities are directly or indirectly linked to water resources. Golf courses, agro-tourism, wildlife-related tourism activities, or tourism types based solely on ecological solutions are also dependent on the presence of water in nature. The water problems experienced constitute an obstacle to the development of tourism in many regions. For example, in the Beijing Summer Olympics held in 2008, the chemical change in the waters flowing into the sea caused algae formation (low bloom) that could affect an area of 1200 square meters. 5000 people, 1185 boats, and 200 trucks worked for 46 days, and 593 million yuan was spent (Qihong et al., 2014) to clean up about 40% of the pollution that hinders water sports. On the other hand, tourists have intense water consumption in regions that are dependent on it, especially in tropical and coastal tourism regions. In these regions, not only excessive water consumption but also waste threaten the sustainability of tourism due to infrastructure inadequacies and deficiencies such as planning, which directly affect the national, and local economy, and ecology negatively (Cole, 2012). Direct water use refers to the water used for watering the garden, golf course, and lawn; filling and maintaining pools; installing showers, tubs, and toilets in rooms; opening taps; washing and cleaning clothes; and preparing food in the kitchen on site. Indirect water use is defined as the water consumption used throughout the production chain of the product in some cases and in some cases used in the production process of the service, which we encounter in forms such as food, energy, hotel infrastructure, shopping, services, activities, sales, and marketing. Systemic water use, on the other hand, refers to other elements such as road and port construction, which are necessary for tourism production.

Calculations for tourism water consumption are made over accommodation units in general. In the literature, the amount of water consumed in hotels varies between 84 and 2425 litres with an approach that includes the water used in rooms, garden irrigation, and filling the pool, but it has been observed that these amounts increase by 300 litres in the summer months (Gössling et al., 2012). The difference in scope and methods used in the calculations makes it difficult to obtain an exact amount of water consumed in accommodations. The amount of water required by these elements varies depending on factors such as climate, precipitation, plant species, and evapotranspiration. The amount of water used for irrigation increases, especially in dry periods when the temperature increases. Regarding pools, the amount of water used for filling the pools, the evaporation factor, and cleaning are taken into account. Factors such as the area covered by the pool, volume, evaporation, air temperature and pool temperature, and humidity pressure in the air appear as the determining parameters in measuring the amount of water used for pools. In the calculations made with the assumption of an 85% occupancy rate for two five-star and one four-star hotel on the island of Rhodes, an average of 40 litres per tourist per day for filling the pool, 33 litres per tourist per day for evaporation in the pool, and 7 litres per tourist per day for cleaning the pool and spa are used. It has been determined that the pool and its operations require 2 litres of water.

The water used in the rooms is classified into four usage areas: shower, bathtub, toilet, and tap. Since it is not always possible to obtain the said usage amounts directly from the hotels, information is obtained through surveys made with tourists. The accuracy of this information is also highly doubtful. The amount of water used in the rooms is not only dependent on the economical shower heads used in the hotel and the volume of the bathtub. In addition, it varies according to the purpose of the visit and the cultural and individual preferences of the tourists.

#### **Water use categories and estimated use per tourist per day**

Although such direct water use values seem significant, indirect tourism-related water consumption is far more important, leading to the creation of water hinterlands, or areas from which "virtual" water is imported. For example, it is estimated that 17% of the world's water is consumed by the building industry, primarily for the production of cement, and that the creation of fuel can require up to 18 L of water for every 1 L of gasoline. Since biofuels presently use an estimated 2% of all irrigation water, they are particularly water-intensive and are frequently viewed as the answer to future energy constraints. The amount

of water needed to produce 1 L of liquid biofuel is currently estimated at 2,500 L. Water is also utilized for mining, hydropower, mineral extraction, and thermoelectric cooling, while pumping, transporting, treating, and desalinating water all demand energy. As a result, there are several connections between the usage of energy, building materials, and tourism.

The overall impact of tourism on local or regional water resources depends on the context, even if it may be a significant factor in total water use in some vacation spots. Some places may have a shortage of water while others may have an abundance. Additionally, there are differences in the amount of water provided locally and the share embedded in the consumption of items made abroad, as well as seasonal variations in rainfall and visitor patterns. The relative abundance and quality of water in the specific tourism region, current and projected water abstraction rates, the proportion of non-consumptive versus consumptive uses, the seasonal and spatial characteristics of water abstraction, competing uses, and the treatment of sewage and wastewater are just a few of the variables that affect how much fresh water is available and how it is used.

Because so many of these problems are connected, it is important to carefully consider all management options for freshwater resources. There may be "win-win" solutions available or trade-offs between several criteria may be necessary. Demand-side management (lowering water usage) and supply-side management are two major categories for management responses to water scarcity (increasing water provision). There are numerous potentials for many hotels to reduce water use by up to 45%. However, as a significant portion of water use could be included in the consumption of commodities imported from other countries, water management should also take indirect water consumption into account. Evidence suggests that where water usage is decreased, this can typically be done without compromising guest convenience and with a financial advantage. A few months to less than five years are typical payback periods for investments in water-saving technologies in hotels, such as new showerheads, pan and cistern replacements, or flow control taps. The average of all the data points for each hotel was calculated because several hotels provided water use data spanning more than a year, though not always the most recent. Then it was decided that this mean value was a more reliable indicator of the hotels' direct water use than any particular year. This study, in contrast to (Hadjikakou et al., 2013), did not take into consideration indirect water use by tourists, such as that resulting from food or petrol consumption. Figures 1 lists the total number of hotels, the total number of data points across years for each nation, and the typical number of years reported by each hotel.

Table 1. Direct water use categories in contrast to L per tourist per day illustrated in this table (Source: Gössling, 2012)

Water use category - direct	L per tourist per day
Accommodation	84 - 2000
Activities	30-Oct
Water use category - indirect	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: 2000-75000

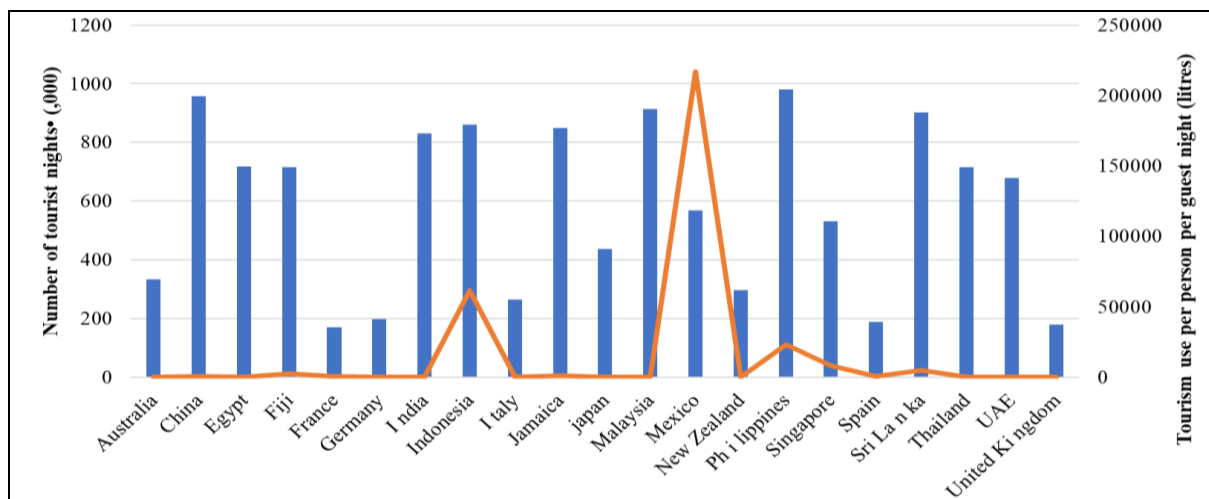


Figure 1. Summary statistics of hotels that provided water consumption data for one or more years (Source: Becken, 2014)

- Country: The name of the country for which the data is provided;
- Tourism use per person per guest night (litres): The average amount of water used per person per guest night in the tourism industry in that country, measured in litres;
- Number of tourist nights (in thousands): The total number of tourist nights spent in that country in thousands;
- Estimated tourism water use (m<sup>3</sup> per annum 2000): The estimated amount of water used by the tourism industry in that country per year, measured in cubic meters.
- Tourism's share of municipal water withdrawal (%): the percentage of the total municipal water withdrawal in the country that is used by the tourism industry.

The Figures 2 provides information about the water use of the tourism industry in different countries, highlighting the differences in water consumption patterns across destinations. The data suggests that the tourism industry in some countries, such as Fiji and Sri Lanka, uses a relatively high amount of water per person per guest night, while in other countries, such as Japan and the Philippines, the water use per person per guest night is relatively low. The table also shows

the estimated total amount of water used by the tourism industry in each country and its share of the municipal water withdrawal, indicating the potential impact of tourism on the local water resources. This information can be used to identify destinations where water conservation and management practices are particularly important and to develop strategies to promote sustainable and responsible water use in the tourism industry.

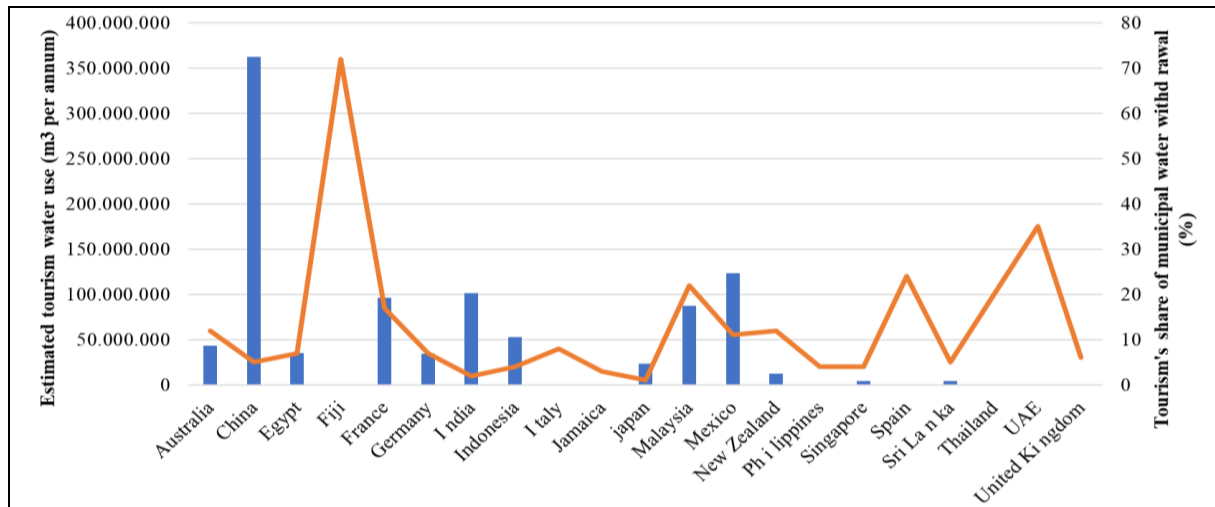


Figure 2. Summary statistics of hotels that provided water consumption data for one or more years (Source: Becken, 2014)

### Azerbaijan

Generally, climate and growth-management strategies are appropriated after determining the menaces influencing public water systems and stores. On the other hand, territories without remarkable population growth frequently collapse to enact the resource governance policies essential for adapting to current and further water-providing risks. The South Caucasus already suffers from a lack of water resources. Few rivers, small size of groundwater, low precipitation, high evaporation, unstable situation, and other human activities are major reasons that create this problem. During armed conflicts between countries, barriers are created to access water resources in the region. Conflicts between countries decrease the chance of regional cooperation in transboundary water and the management of water resources. The safety of tourists seems to be acting an increasingly essential role in terms of the market place (Kaszás and Keller, 2022).

Moreover, the impact of climate change exacerbates the scarcity of water and decreases the productivity of human activities such as sustainable tourism. Water is a vital element of the Planet and human activity and without enough water resources, the environment can not be rich. An environmental approach generally ensures the main goals for sustainable tourism growth as nature is frequently a crucial restricting element. On the other hand, there is a need to protect environmental resources by decreasing the ecological influence of tourist actions. Environmental water resources interest millions of tourists, whose trips have an impact on the precious environment. Tourists need and spend water resources (own hygiene and laundry, ski or golf tourism, spas, wellness places, swimming pools, maintaining gardens and landscaping of accommodations places and attractions, etc) (Gössling, 2001). The next part evaluates current literature on responsible tourism with an emphasis on water management and gives an in-depth analysis of the major aspects or indicators discussed in the literature. The topics of inclusive conversation have included sustainable water planning and the sustainable development of tourism locations. An examination of significant elements or indicators can aid in the development of improved solutions for the planning and management of sustainable tourism in various contexts.

Some authors have centred the discussion on identifying and organizing the aspects that should be included in a comprehensive collection of indicators. The research of indicators in sustainable tourism management (quantitative and qualitative indicators) and water management in tourism objectives (mainly quantitative indicators) has revealed that the completion of appropriate indicators in both contexts with a focus on stakeholder perspectives has not been widely investigated.

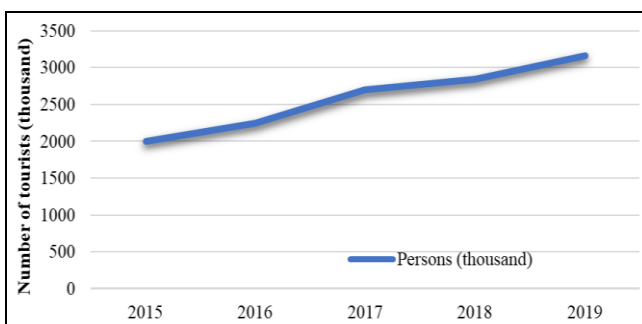


Figure 3. Statistics of tourists visiting Azerbaijan by years (Source: The State Statistical Committee of the Republic of Azerbaijan, 2023)

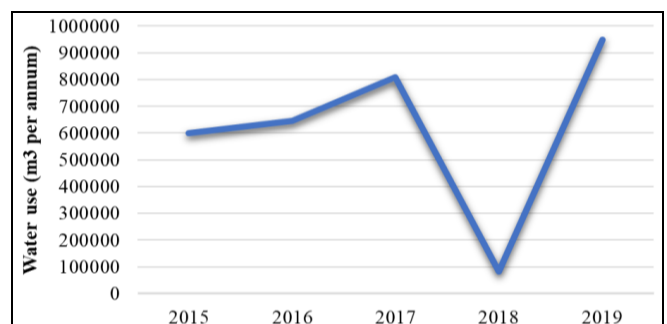


Figure 4. The estimated amount of water used by the tourists coming to Azerbaijan (m³ per annum) This data illustrates how water use by tourists increased year by year from 2015 to 2019



Because tourists use more water when on holiday, here estimated at an average of 300 L per day (direct water use), than at home (160 L per day), tourism increases global water use; an argument also supported by Eurostat (Eurostat, 2009). Based on this information, if we multiply the number of tourists coming to the country annually by the daily water consumption, we can find how many m<sup>3</sup> of water they use annually. Looking at the figures, we can see that the amount of water used in 2015 was 601,800 m<sup>3</sup>, in 2016 it was 647,000 m<sup>3</sup>, in 2017 it was 809,100 m<sup>3</sup>, in 2018 it was 855,000 m<sup>3</sup>, and in 2019 it was 951,000 m<sup>3</sup> and 2022 it was 206,400 m<sup>3</sup> have used (m<sup>3</sup> per annum).

## CONCLUSION AND RECOMMENDATION

Today, tourism is considered one of the most basic service industries in the world. At the same time, the number of people participating in international tourism activities is increasing day by day. After World War II, developments in transportation technologies and the shortening of working hours in working life, along with increasing welfare and income levels, enabled people to participate more in tourism activities. Today, considering the data of the World Tourism Organization, we see that approximately 1 billion people participate in tourism activities. In this sense, tourism has become an important industry through which countries obtain foreign exchange through "invisible exports." This situation has caused significant pressure on the natural and cultural values that constitute the main source of tourism, or, in other words, the touristic product, in order for countries to get a larger share from tourism.

Although the income from tourism seems to be an important economic gain for countries in the short term, it is obvious that there will be a decrease in income as a result of the destruction of resources in the long term. In this context, as the idea that environmental resources are consumed rapidly but these resources are scarce grows, the concept of sustainability has come to the fore as countries and societies begin to spread, and some studies have been carried out around the world so that future generations can benefit from these resources, taking into account the exhaustibility of these resources. In this respect, the following are the recommendations that can be given to them:

### Efficient Use of Water in Hotel Rooms

A leaking toilet cistern consumes an average of 185 liters of extra water per day. Leaking faucets, toilet cisterns, and showers should be repaired or replaced immediately. While conventional shower heads consume an average of 15 - 22 liters of water per minute, it is possible to reduce water consumption to 7 - 9.5 liters with low-flow shower heads with aerators. Thus, it is possible to do the same with 45–60 liters of hot water instead of 90 - 120 liters of hot water during a shower of 5 - 6 minutes.

- ✓ Therefore, water is used efficiently. Room cleaning staff should be trained on the efficient use of water during cleaning.
- ✓ The temperature of the hot water coming into the bathroom should not be too high. If this is provided, no water will be wasted trying to make the hot water warm with cold water.
- ✓ It is necessary to pay attention to the efficient use of water in the hotel kitchens and the efficient use of water in the laundry.

### Efficient Water Use in Swimming Pools

- ✓ The water level in the pool should be kept a little low to prevent splashing and dispersal of the water.
- ✓ Using recycle flush filters can help you save water.
- ✓ Pools should be covered with a pool cover to prevent evaporation and heat loss when not in use.
- ✓ To prevent the splashing water from going out of the pool, a channel should be built around the pool.

### Efficient Use of Water in Open Areas and Gardens of the Hotel

- ✓ A rainwater storage tank should be placed in the garden in order to benefit from rainwater for garden irrigation.
- ✓ The grass in the green areas of the hotel should not be cut short. It is necessary to let the grass grow as long as possible. Long grass cuts prevent moisture from remaining in the soil and water evaporation.
- ✓ Irrigation of green areas and plants in hotels should be done early in the morning and late in the evening. Irrigation should not be done at other times. In this way, the evaporation of water will be minimized.

Today, hotel businesses are responsible for more than just their customers and employees. In addition, they have to be sensitive to the environment. With the efficient use of water, hotel businesses will fulfil their social responsibilities towards the environment, and thus, a significant reduction in accommodation costs will occur. By developing and evaluating it within the framework of tourism principles and focusing on alternative tourism types, it can have an opportunity to benefit the whole country from the economic and social benefits of tourism. It should be stated that an effective organization is also necessary in order for this approach to be adopted and implemented effectively. In this way, Azerbaijan will have the opportunity to progress by consolidating its place in world tourism.

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