applied sciences

MDPI

Article

The Priority of Water Consumption in the Spanish Tourism Industry: A Dilemma for Residents and Researchers

Lázaro Florido-Benítez

Department of Economics and Business Administration, University of Málaga, 29016 Málaga, Spain; lfb@uma.es

Abstract: Spain is one of the most water-stressed countries in the world. Regional governments face the challenge of ensuring long-term water security for residents and tourists. In 2024, Catalonia declared a state of emergency to tackle the problem of a lack of water. Catalonia and Andalusia regions imposed water restrictions, prohibiting residents from washing the exterior of their houses and cars or filling their swimming pools to guarantee tourism activities in hotels and other tourism companies. The research objective of the present study is to tackle the priority of water consumption in the Spanish tourism industry so that the availability of water is guaranteed for residents, without constraints on the supply. This research uses qualitative and quantitative methods to obtain a comprehensive view of the water consumption in Spain's territory and the main zones of water scarcity that are affecting residents and the tourism industry. In addition, this study uses the Web of Science (WoS) database to analyse the bibliometrics on the topic of water consumption in the tourism industry from 2000 to 2023, as well as quantify the number of articles published by researchers. Findings reveal that although the tourism industry is the economic engine of Spain, water consumption by tourists is above the level of consumption of residents, and this asymmetrical situation should be reversed in favour of the welfare of Spanish citizens. It is noteworthy that the water scarcity in Spain and its continuing restrictions in the Andalusian and Catalonian regions have caused huge problems with drinking water supply in the last few years. Indeed, local and regional Spanish governments cannot demand that a resident consume 133 L per day, while a tourist is allowed to consume between 400 and 1000 L per day. For this reason, water availability must be a priority for residents, and after that, the tourism industry. Economic interests cannot override citizens' needs and well-being. This research has helped us better understand the complex relationships between the use of water in the tourism industry and by residents in the context of climate change.

Keywords: water consumption; tourists; residents; Spain; tourism industry; researchers

check for updates

Citation: Florido-Benítez, L. The Priority of Water Consumption in the Spanish Tourism Industry: A Dilemma for Residents and Researchers. *Appl. Sci.* **2024**, *14*, 7125. https://doi.org/10.3390/app14167125

Academic Editor: Juan García Rodríguez

Received: 24 June 2024
Revised: 18 July 2024
Accepted: 7 August 2024
Published: 14 August 2024

Copyright: © 2024 by the author. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (https://creativecommons.org/licenses/by/4.0/).

1. Introduction

Water scarcity in Spain has become a topic of water for the Spanish population is one of the major challenges that the Spanish government faces today. In 2023, urgent measures and actions were taken concerning agricultural, tourism, and water matters in response to drought and the worsening of climate change by government bodies through Royal Decree-Law 4/2023 [1] in Spain and the Directive 2000/60/EC [2] of the European Parliament. Indeed, in the Catalonia and Andalusia regions, water shortages have been nothing new in the last five years. Scott et al. [3] note that the frequency, intensity, and duration of extreme heat, or agricultural and ecological drought events, have increased in many Mediterranean regions. Moreover, the World Bank [4], the World Tourism Organization (UNWTO) [5], and the Organisation for Economic Co-operation and Development, known as the OECD [6] informed that water-related losses in agriculture, health, tourism, and private property sectors can reduce the global gross domestic product (GDP) by 6% by 2050. Veritably, the use of water in the tourism sector is receiving increasing attention from these three organizations.

Adaptation to climate change is inextricably linked to water management [7,8]. Many people are suffering water use restrictions across the globe as a result of the impact of a lack of rain and the effects of climate change, and Coca-Cola, PepsiCo, Suntory, Univer, Icelandic Glacial, Amazon, or Vichy Catalan firms have seen this weakness as an opportunity to invest in bottled water and increase their profits. Tourism contributes to climate change [9]. La Vanguardia [10] and Tejada [11] reported that more than 600 municipalities in Andalusia (south of Spain) and Catalonia (northeastern Spain) regions suffered water use restrictions because some swamps were at 9 percent of their water capacity according to the Council of Agriculture, Fishing, Water, and Rural Development of Andalusia [12]. Among the strict measures taken by the Andalusian government were cutting the water supply to showers on all beaches; prohibiting residents from washing their cars in certain areas or filling their swimming pools; imposing limits on street cleaning, and temporarily suspending the watering of gardens, parks, and golf courses. Obviously, residents and the tourism sector were the most affected by these drastic measures.

The use of water by the tourism industry requires prudent and effective management to guarantee the water availability of residents. Despite the fact that water is an essential input for tourism, the consumption by the Spanish tourism industry is 15% and this is mainly concentrated in coastal areas [13]. The tourism sector has increased water consumption over the last several years due to rising tourism demand at tourist destinations [14,15], and this has led to the demand for water consumption constantly growing in the Spanish territory [16]. There are several gaps in the analysis of water consumption linked to tourism [17] and residents [18,19], but this topic needs to be studied more thoroughly in areas subject to water stress [20]. The competition for the consumption and sustainability of water use between economic sectors and residents must be researched [21]. Therefore, it is necessary to improve and extend the scope of research on water consumption in the Spanish tourism industry.

The research objective of the present study is to tackle the priority of water consumption in the Spanish tourism industry as long as the availability of water is guaranteed for residents, without constraints on the supply. Facing the priority of residents' needs vs. tourists' demand dilemma in the water consumption and tourism activity context, governments and researchers should explore and analyse the needs and priorities of each of them to make prudent decisions, especially when water management and tourism activities are intricately linked to tourism development [22]. Furthermore, this study describes some of the research gaps to which this paper contributes. Against this background, the author proposes three specific questions to stage the true situation of Spain as a destination with water use restrictions due to climate change and its great impact on the desertification of this territory [23].

RQ1. Should the availability of water for residents take precedence over tourists, or vice versa?

RQ2. How can government bodies act most effectively and timely to reduce water consumption?

RQ3. How can researchers tackle the problem of water consumption in the tourism industry?

2. Literature Review and Relevance Data

2.1. A Lack of Water in Spain Is a Serious Problem to Solve

OECD [24] reported that more than 74% of the Spanish territory is at risk of desertification, with Spain being the third European country with the highest water stress. The Spanish central government and its autonomous regions manage water policies and water resource allocation in close cooperation. Nonetheless, there is a lack of investment in water and sanitation by government bodies, and these deficiencies are one of the reasons why Spain holds the European record for the European Union (EU) sanctions for noncompliance in water treatment [25]. Spain has nearly 1300 reservoirs that help manage droughts and floods and make up for a lack of rain [26]. Water consumption differs at the regional level

depending on tourism demand, location, and water resources [18], which are rather limited in Spain.

The Spanish government faced an unprecedented water crisis in 2023 when the native population, Spanish farmers, and tourism companies demanded this problem be resolved quickly. Spain exports a large part of its agricultural production to European countries; the tourism industry is the main activity of the country; and on top of this, Catalonia declared, for the first time, the emergency of drought and the extension of water restrictions as a consequence of a lack of rain in the region and the swamps being at historical minimum levels in August 2023 [27]. This research addresses a complex social, economic, and political topic where each of the interested parties (residents, companies, and government bodies) tries to push its demands with the aim of protecting its own interests. Water is a natural resource that requires a specific strategic dimension for tourism and agricultural activities, even more so when its availability is not guaranteed [28].

Considering the fact that water is an essential input for Spanish tourism, Figure 1 illustrates zones of water scarcity in Spain and the main reservoirs by consumption in cubic hectometres in 2023. Cádiz, Málaga, Córdoba, Badajoz, Toledo, Murcia, Burgos, Lerida, and Tarragona provinces are in serious emergency situations (red colour) due to water supply (see Panel A of Figure 1). Moreover, Andalusia, Catalonia, Aragon, Castilla La Mancha, Castilla and Leon, and Extremadura regions remain in a pre-alert state (orange colour). This means that the most water-stressed Spanish regions must provide efficient and sustainable solutions to resolve the serious problem of water consumption.

In Panel B of Figure 1, which presents the total capacity of reservoirs in 2023, the Tajo and Guadiana River basins have the greatest water retention capacity thanks to the La Serena (Badajoz) and Alcantara (Caceres) reservoirs in Extremadura. Most reservoirs have a water capacity of 5 cubic hectometres in the Spanish territory, particularly in coastal areas where the tourism industry is concentrated demanding greater water resources. Mass tourism is a problem around the entire Spanish coast due to the unrestrained urban development of houses and hotels with high water consumption. Spain undoubtedly faces a short-term challenge with high water consumption by the tourism industry and tourists [19,29]. For instance, Spain is the EU country with the greatest number of second homes [30], and according to INE [31], the number of accommodations, including hotels, camping, tourist apartments, and rural tourism establishments, increased by 309.6% in Spain from 2000 (5728 establishments) to 2022 (17,732).

Average rainfall in Spain amounted to some 537 L per square metre in 2022. This represented a decline of 5.8% in comparison with the year 2021 [32]. From 1961 to 2022, Spain's wettest year was 1963 when the average precipitation reached a record high of 900 L per square metre (see Figure 2). Conversely, the six driest years were 1998, 1994, 2005, 2017, 2015, 1998, 1994, and 2022 in the period analysed. AEMET [32] notes that rainfall in Spain will be reduced due to climate change in the following years. Obviously, increasing water shortages and price rises are having negative impacts on the tourism industry [33]. For instance, the greatest concentration of golf courses in Spain is localised in the city of Málaga, with 53 golf facilities. This is quite surprising for a given territory with continuous droughts and swamps with minimum water levels.

Inefficient water management and its overuse by the tourism sector involve more serious problems of water supply in tourist destinations [34]. Some authors, like Forde [35] and Griffith [36], observed that residents have a negative view of the tourism development in cities due to the shortage of freshwater as a consequence of the unrestrained urban development of hotels and houses. García and Servera [37] revealed that tourism in Mallorca has become unsustainable due to the exhaustion of groundwater resources and a higher water demand exceeded by the floating population of the island, which is supplied with water using seawater desalination [17].

In 2020, the most water-stressed countries in the world were in the subtropics of the Middle East and the Mediterranean area [38], including Spain. The US (575 L), Australia (493), and Italy (386) are the largest consumers of water in the world by average litres con-

sumed daily per person [39]. Public administrations need to provide specific information through digital channels to make citizens aware of the need to make responsible usage of their water. This type of initiative helps reduce water consumption per inhabitant [40]. Government bodies need to guarantee the maintenance of the water in the tourism industry to promote and attract tourists from the main issuing markets to Spain [41].

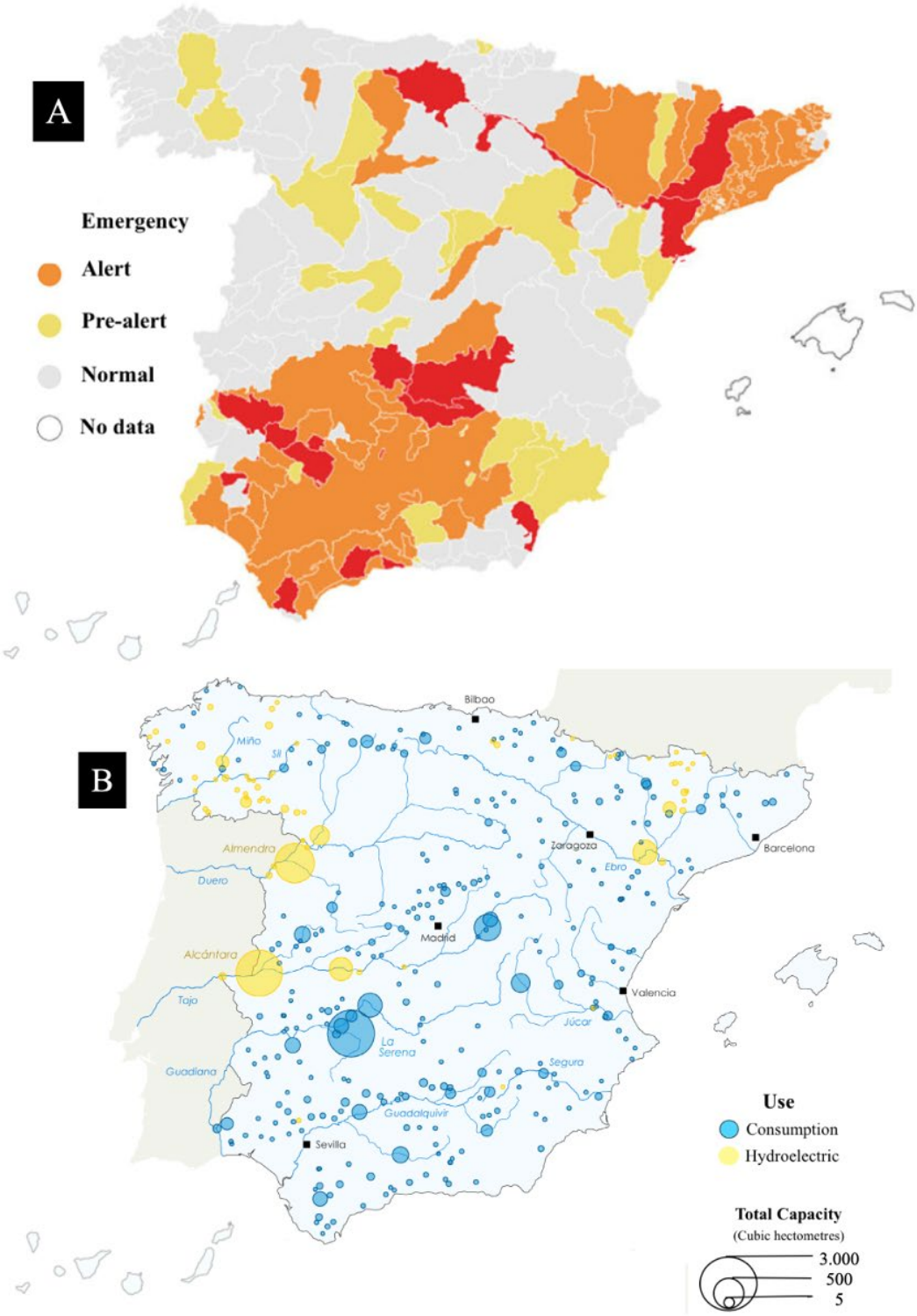


Figure 1. Areas of water scarcity vs. reservoirs in Spain (**A**,**B**) (2023). Source. Our elaboration from [26] https://www.miteco.gob.es/es/agua/temas/seguridad-de-presas-y-embalses/inventario-presas-y-embalses.html (accessed on 24 November 2023).

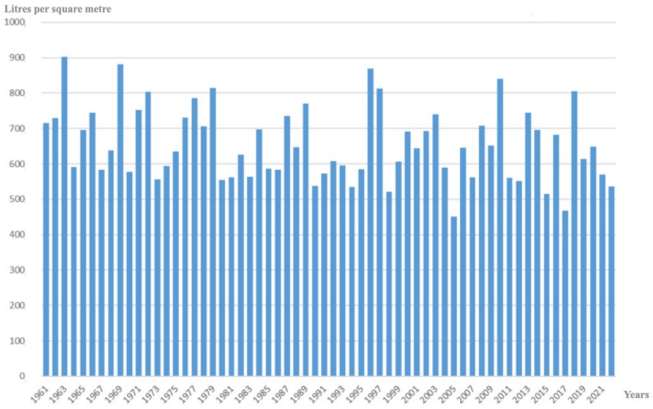


Figure 2. Average annual rainfall in Spain (1961–2022). Source. Our elaboration from [32]. Unit of measurement: litres per square metre.

2.2. The Water Consumption in the Spanish Territory and Its Relevance to the Tourism Industry

This study examines the intrinsic relationship between the abuse of water and the tourism industry as a vital resource and a tourist attraction [42]. The tourism industry consumes 1% of the global consumption of water, nothing compared with the 70% used by the agricultural sector or the industry sector, which reaches 19% [18,43]. The tourism sector is a conspicuous consumer of water, especially by hotels, at all levels, such as spas, gardens, pools, golf courses, and cleaning and washing activities, amongst many others [44]. From 2018 to 2021, Spain was the second most visited country in the world [45] and represents one of the most important coastal sun and sand tourism destinations globally [46,47]. Mass tourism takes place in Spanish tourist destinations where water is scarce to meet the demand [48–50], and therefore, it is necessary to resort to desalination [51].

Most people are not fully aware of the importance of water to life and its conservation because water is generally an undervalued resource. For this reason, this study tries to show the relevance of water as a vital source for humans and the economy across the globe. UNICEF [52] reported that 703 billion people lacked access to safely managed drinking water services in 2022, and this is another piece of data that confirms the need to conduct this research. A study carried out by Gössling et al. [18] revealed that tourists consume 300 L per day on holiday versus 160 L per day at home. The water consumption in Spanish hotels by tourists increases depending on the hotel's category and location, from 208 to 594 L per guest night [20,53]. However, these figures are even more worrying for government bodies and residents. While the average water consumption of Spanish households was 133 L per inhabitant per day in 2022 [54,55], the water consumption of a tourist is between 450 and 1000 L, depending on the season and Spanish region [56]. These figures are calculated based on the hotels, restaurants, theme parks, and municipal expenditures such as swimming pools, cooling and irrigation, kitchens, toilets, laundry, golf courses, saunas, and hygiene services [25]. UNWTO [57] noted that these figures of water consumption may reach between 2000 and 3423 L per day and room at hotels located in the tropical belt.

For instance, on a special day and without water restrictions, the water consumption may be up to 899.5 L (see Figure A1 of Appendix A) by a Spanish person [31,58]. This figure is very far from 20 L of the minimum daily supply of water per person that can cover the basic needs of personal hygiene and food according to the United Nations, known as the UN. To ensure the full realization of water rights, countries across the world should aim for at least 50 to 100 L per person per day [59]. In the end, tourists and residents alike require a safe and dependable supply of water for their daily activities, even though tourists demand more water than local residents [60].

Understanding the actual consumption of tourism water resources is vital to facing the water scarcity problem in Spanish destinations. Tourism aggravates tensions over the demand for water consumption between residents and tourists due to its scarcity, especially

in the summer [14]. This study tries to stage the delicate situation of water consumption in the Spain tourist destination as we, as government bodies and researchers, must engage in resolving this situation and provide practical solutions in terms of sustainability, efficiency, and residents' quality of life and well-being.

This implies that, from our research point of view, the availability of water for residents' consumption must be a permanent priority above the economic and commercial interests of the tourism industry. It is always the residents who bear the negative consequences of tourism activities such as mass tourism, gentrification, tourism phobia, pressure on cultural and natural resources, water restrictions, tourist saturation, bad behaviour by the tourists, rising housing prices, the displacement and/or expulsion of residents, amongst many others. All these problems reduce the quality of life of the local residents. As stated by Almeida-García et al. [61] Barcelona, Venice, Palma de Mallorca, Málaga, Amsterdam, and Berlin are living proofs of these facts.

3. Methodology

This research requires an exploratory approach to the Spanish tourist destination to analyse the priority of water consumption in the Spanish tourism industry. This study also uses quantitative and qualitative methods, which contributed to obtaining a comprehensive view of the use of water in this territory and its main zones of water scarcity that are affecting residents and the tourism industry. It is important to remember that a lack of rain over the last few years has considerably diminished the water reserves of reservoirs from which the cities are supplied. To illustrate the application of our methodology, we selected Spain as a research project for three reasons: First, Spain was the most competitive country in the world in terms of tourism in 2019 and the second most visited destination in the world [62,63]. Second, the contribution from tourism reached EUR 156 billion in 2022, representing 11.6% of the GDP [64]. And third and last, this country faced an unprecedented water crisis in 2023, which negatively impacted the quality of life for residents.

Initially, the data collected in this research combined information from different statistical sources. To analyse the collected data, we present the volume of water supplied to the network by the Spanish region from 2000 to 2020 from INE [54] as well as the average consumption of water litres per person and day by autonomous community in 2022 [54] to compare the water consumption between Spanish regions. By introducing these two indicators, it is hoped that this manuscript will provide greater visibility into the magnitude of the use of water at the global level [65]. Water consumption by residents as an indicator is required in tourism and sociodemographic investigations [66,67] to be aware of the need to save water in areas subject to water stress. For instance, water consumption decreased between 2000 and 2017 in the City of Alicante (southern Spain) due to greater environmental awareness of the need to save water, water-saving devices, and more efficient water systems [66]. Taking into account all the above, the indicators of the water supplied by the Spanish region and the water consumption by residents will help us tackle RQ1 and RQ2.

Nonetheless, we provide the distribution of supplied water by activity in Spain from 2006 to 2020 because INE [54,55] only shows data during this time period. This indicator helps us determine which activities demand greater water consumption in Spain and display their priorities in the case of water scarcity. Becken [68] found that water scarcity requires new challenges for countries and cities, but it has also become an increasingly important strategic consideration in governments and tourism firms' planning. It is important to highlight that this manuscript offers updated data from 2022, which has helped contextualise and measure the water consumption in Spain and compare this with those for earlier years.

In addition, this research collected information related to this topic from researchers (primary data) through a bibliometric study [69] to respond to how researchers can help stage the problem of water consumption in the tourism industry (RQ3), as well as the water consumption per tourist and day at accommodations in Spain, Morocco, Mediterranean, and tropical regions (data from different authors). This paper collected data from the Web

of Science (WoS) database for the literature analysis [22,70] and only included published articles concerning this study's topic.

For example, bibliometric analysis is used to classify research on sustainable tourism [71], like the water consumption by the tourism industry and/or the water consumption by residents. This information will help validate and quantify the number of articles published by researchers on this topic. This is achieved by covering a time period between 2000 and 2023, classifying the articles by terms introduced and countries, and performing a different set of analyses that will allow for the creation of future research to improve the sustainability and efficiency of water use by the tourism industry. For instance, hotel establishments have been selected in our search and bibliometric analysis because they are water-intensive due to their services and operational activities [72]. Meanwhile, the temporal scope of this study (2000–2023) was selected due to the water crisis that Spain has been experiencing for the past two decades. The Desertification Research Centre (CIDE) reported that climate change, the reduction of water reserves in Spanish reservoirs as a result of a lack of rain over the last few years, and the overexploitation of groundwater are accelerating the desertification of Spain [73].

4. Findings and Discussion

4.1. Water Footprint of Spain

The tourism industry conditions the Spanish water footprint through tourist activities, hotels' locations, and the summer season when the destination receives the greatest number of tourists during the year. Figure 3 presents the volume of water supplied to the network by the Spanish community, showing the Andalusian community as the territory where a greater volume of water was supplied in the period analysed (2000–2020), followed by Catalonia, Madrid, Comunidad Valenciana, Castilla and Leon, and Galicia, among others. It is no coincidence that the largest concentration of hotels in Spain is localised in Andalusia (1768 hotels), Catalonia (1630), Galicia (1241), Castilla and Leon (956), Madrid (864), and Comunidad Valenciana (845) in the year 2021 [31,74].

Furthermore, these regions have the highest population density in Spain [75]. Therefore, the volume of water supplied in Spanish regions can be conditioned by a high population density and the number of hotels. These results coincide with those of Charara et al. [76], and Jones et al. [67] who revealed that hotel and population density indicators increase water consumption in local and regional territories. Nevertheless, Diaz et al. [77] note that the volume of water used for golf irrigation in Spain is extremely small compared with agricultural irrigation. Besides, it is strange that Andalusia and Catalonia regions have unfortunately failed to address the water consumption by tourists at hotel establishments in the Canary Islands, the Balearic Islands, or even the Comunidad Valenciana.

On the other hand, Table 1 shows us the distribution of supplied water by category or activity in Spain from 2006 to 2020. Spanish households concentrate the majority of supplied water with 28.6 million cubic metres in the period examined; the industry sector ranks second with 4.4 million cubic metres; in third place is municipal consumption (3.7 million); the service sector is in fourth place with 1,8 million; tourist and recreational use with 1.6 million occupies the fifth position; agriculture and livestock rank sixth with 467,677 thousand cubic metres; and the seventh and last is the building sector with 232,084 thousand cubic metres. That is, in percentage terms, Spanish households (69.7%), the industry sector (10.7%), and municipal consumption (9.2%) are the main three water consumers in Spain (see Figure 4).

Table 1. Distribution of supplied water by category in Spain (2006–2020). Source. Our elaboration from [54,55].

Category	2006	2007	2008	2009	2010	2011	2012	2013	2014	2016	2018	2020	Total 2006–2020	% by Activity
Households	2,615,751	2,543,714	2,539,891	2,493,842	2,412,708	2,384,386	2,308,872	2,217,686	2,237,746	2,297,352	2,271,205	2,290,800	28,613,953	69.7%
Industry	486,199	458,290	370,520	361,773	354,106	348,796	358,956	344,986	349,320	321,219	329,272	320,122	4,403,559	10.7%
Municipal consumption	386,044	382,046	358,807	305,081	305,109	303,512	317,986	298,498	291,447	270,054	287,594	270,650	3,776,828	9.2%
Services	197,889	170,235	218,522	139,933	132,513	156,582	156,970	167,628	160,375	145,542	120,250	123,993	1,890,432	4.7%
Tourist and recreational use	127,676	121,751	164,859	132,049	132,235	138,213	142,420	142,580	137,545	129,122	138,422	134,941	1,641,813	4.0%
Agriculture and livestock	53,200	62,700	61,300	58,600	48,100	37,325	34,077	22,816	25,458	20,720	22,812	20,569	467,677	1.1%
Construction	46,300	39,300	17,500	9,300	8,500	12,504	18,747	16,649	12,143	15,901	18,500	16,740	232,084	0.6%
Total	3,913,059	3,778,036	3,731,399	3,500,578	3,393,271	3,381,318	3,338,028	3,210,843	3,214,034	3,199,910	3,188,055	3,177,815	41,026,346	100.0%

Notes. The service category includes commerce, transport, offices, food, and beverage services, among others. Tourist and recreational use includes hotels, tourist accommodations, campsites, water parks, and golf courses, among others. INE does not provide 2015, 2017, and 2019 data. Unit of measurement: millions and/or thousands of cubic metres.

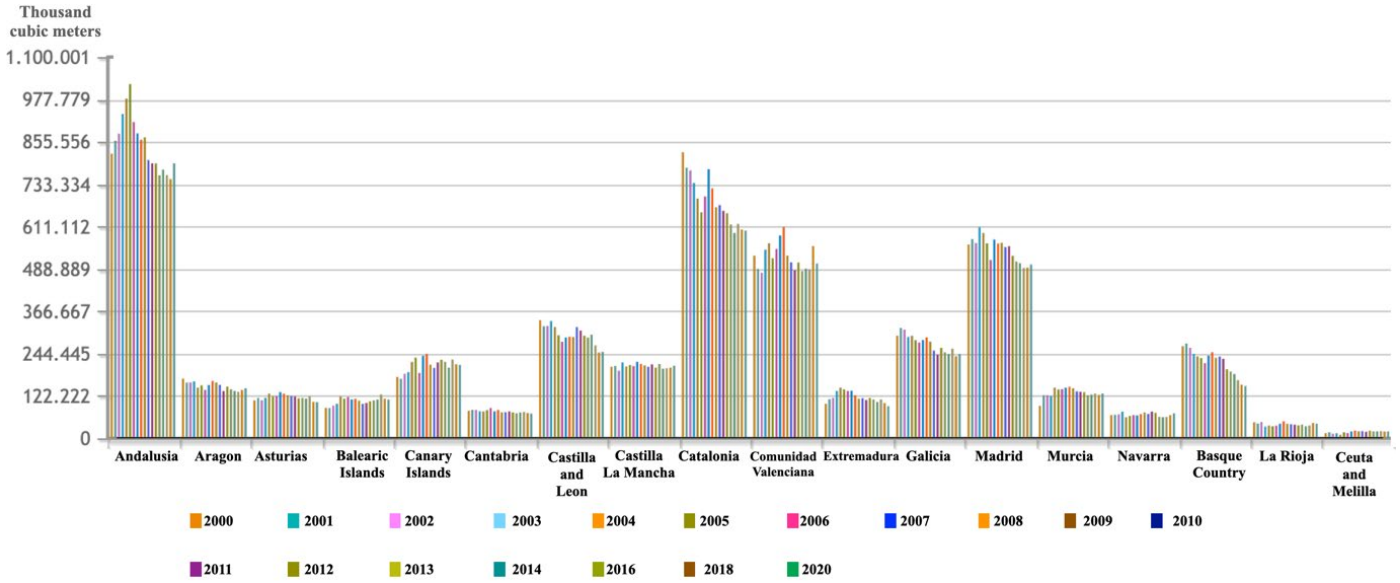


Figure 3. Volume of water supplied to the network by the Spanish community (2000–2020). Note. INE does not provide 2015, 2017, and 2019 data. Source. Our elaboration from [54].

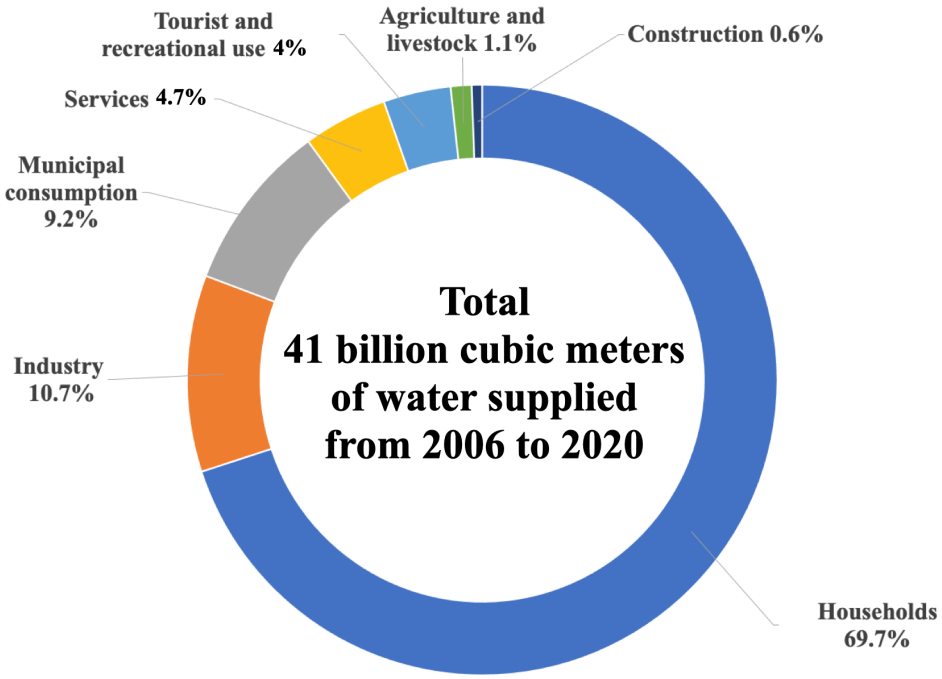


Figure 4. Percentage of water supplied by category in Spain from 2006 to 2020. Source. Our elaboration from [54,55].

These data reveal that local and regional governments are aware of the importance of supplying water to Spanish regions and their residents. Indeed, Spanish local governments are obliged to ensure water availability for households (Article 26.1 of Law 7/1985 Regulation of Competences of Local Authorities) and improve the efficiency of water resources, but each city and municipality sets its own tariffs. In the end, it is obvious that water consumption is an economic component for governments and private companies to generate income. From a financial point of view, Spanish citizens pay for water services, and these taxes are revenues for municipalities. Narbón-Perpiñá and De Witte [78] note that most of the water tariffs applied in Spanish cities are not justified on the basis of efficiency, equity, or environmental purposes. This heterogeneous tariff runs counter to equity principles and

can send the wrong signal to users about water scarcity and resource sustainability [79]. Benito et al. [80] suggest that local and regional governments need to improve the water infrastructure to increase the efficiency level of water supply and help reduce the water consumption by citizens.

However, this study also provides information about the average consumption of water in litres per person per day by the autonomous community in Spain. The purpose of obtaining these data is to compare the water consumption among regions of Spain and their capabilities to implement actions in order to save on water use. In 2022, the Autonomous Community of Cantabria had the largest average consumption of water (165 L) per person and day in Spain, followed by the Comunidad Valenciana (157), Castilla and Leon (155), Murcia (150), Andalusia (138), Asturias (136), and Aragon (134), among others, as we can see in Figure 5.

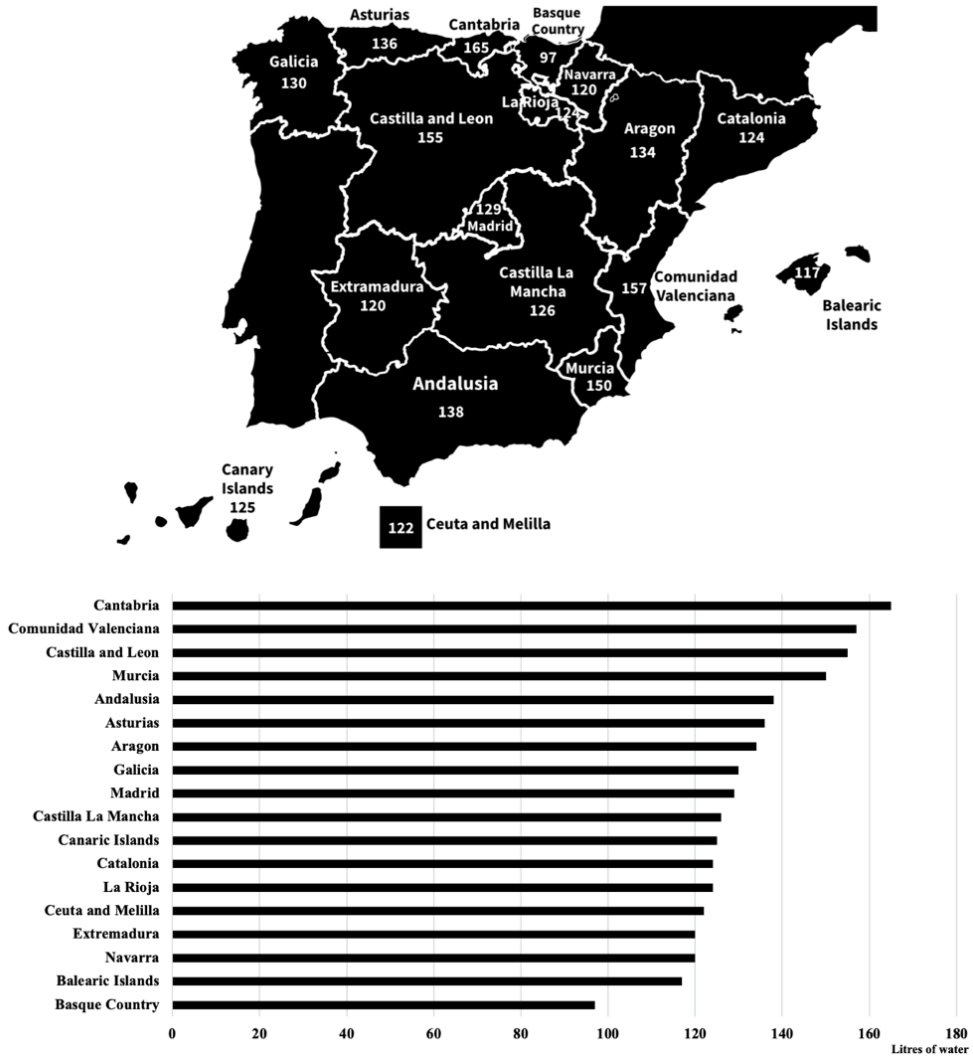


Figure 5. Average consumption of water litres per person and day by the autonomous community in Spain (2022). Source. Our elaboration from [54].

It is quite astounding that Cantabria, Comunidad Valenciana, Castilla and Leon, Asturias, Madrid, and Aragon regions have a high consumption of water when these are not included in the emergency Spanish areas of water scarcity. Although there are three EU countries that exceed the average of 200 L per person and day, like Switzerland with 300 L, Italy (211), and Portugal (203) in 2020, Slovakia is the country with the lowest water consumption in Europe, only 78 L [81]. Yet, these figures are well above between 15 and

25 L of water per person and day recommended by the World Health Organisation [82], or the minimum volume of 50 L suggested by Gleick [83].

The price of water services should be aligned with the residents' ability to pay; however, in practical terms, this is not always feasible. For instance, car washing, garden watering, and swimming pool water consumption are luxury uses for some residents, and they consume a lot of water. The rest of the lower-income households that only cover their basic needs must pay the price of water services as a luxury. The water consumption of the working class is not the same as that of hotels, restaurants, camping, water and amusement parks, or even people living in large houses with swimming pools and outdoor gardens. The high concentration of tourists between July and August in Spanish tourist destinations increases the water demand during this period, provoking strong pressure on water resources as well as water restrictions for Spanish residents [37].

Findings suggest that Spanish households and their residents are suffering severe water restrictions, and it would not be fair that they assume all the consequences that this entails when the water consumption by tourists in Spanish hotels can reach between 400 and 1000 L per guest per night [18,56,84], as we can see in Table 2, while the average water consumption of a Spanish household is 133 L. These findings coincide with those by Gössling [48] who found hotels in Zanzibar use more water than households. Residents cannot afford to pay the same price for water as tourism companies because residents need to cover their basic needs of personal hygiene and food. On the contrary, tourists' water consumption (understood as accommodation facilities and services for personal needs) can be doubled or tripled in developed countries compared with domestic consumption [85,86].

Table 2. Water consumption per tourist and day litres/guest/night. Source. Compiled by author.

Region	Type of Accommodation	Water Consumption (Litres per Guest and Night)	Authors
Spain	Hotels	400	[18]
Benidorm, Spain	Hotel (1–4 stars)	174–361	[87]
Mediterranean Region	Hotels Hotels	250 300–580	[88] [84]
Ibiza	Hotels//Tourist apartments/Peer-to-peer tourist accommodations	370	[17]
Mallorca, Spain	Hotels	541	[89]
Canary Islands	Hotel 5-start luxury	600–1000	[56]
Morocco	Hotels (3 and 5 stars)	300–600	[90]
Barbados	Hotels	320–1431	[76]
Asian countries	Hotels	677	[91]
Australia and New Zealand	Hotels	313	[91]
Tropical zones	Hotels	2000–3423	[57]
Global	Hotels	300–580	[84]

The fact that the tourism industry is the main economic engine of Spain does not mean that government bodies give top priority and preference to this sector over the basic needs of their citizens. For instance, Andalusian residents used around 125 L per day in 2023, and tourists consumed over 350 L, putting an increased strain on water supply in Andalusia [92]. In the case of the Balearic Islands, tourists consume over half the water available. As stated by García-Valiñas et al. [93], tourists increase water use per registered resident, but on top of that, they use more water on average than residents throughout the year. For this reason, Komives et al. [94] argue that the water bill should be established in line with the proportion of income that a household spends to satisfy its basic water needs. The water bills should not exceed 3–5% of a household's income [95]. For example, Barcelona City Hall estimates that local households use 99 L of water per person per day,

while tourists staying in hotels use 163 L per day [96]. In 2024, the Insular Water Council of Tenerife declared a water emergency due to drought throughout the territory, and it proposed 75 measures to mitigate its effects. Among these measures is a directive for hotels and tourist accommodations, including holiday homes, to pay higher rates for water compared with residents and farmers.

4.2. The Role of the Researchers on Water Consumption in the Tourism Industry

Given the growing researchers' interest in water consumption in the tourism industry, we decided to focus our bibliometric analysis on the period from 2000 to 2023 due to the water crisis that Spain has been experiencing for the last 22 years. We used the WoS database for the literature analysis [22,46]. The reason for choosing this database is that it provides access to the world's leading citation databases [97]. This is a leading database of scholarly work acknowledged by the research community, and the quality of articles is an essential criterion in the systematic review process [69]. To quantify the number of articles published (books, book chapters, and conferences were excluded) on this topic, we used five options in the search field: title of the article, abstract, and keywords (see Table 3).

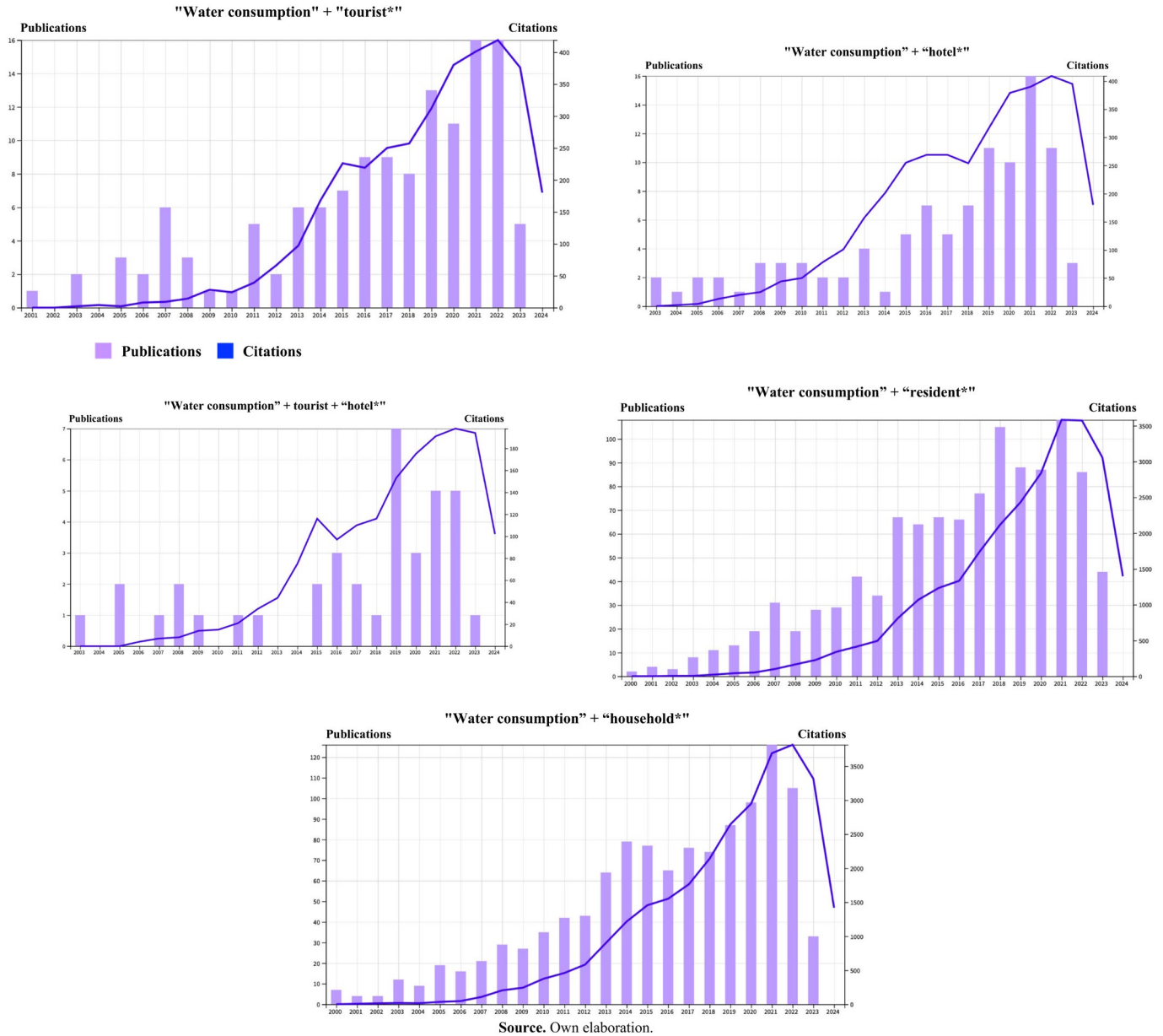
Table 3. Search procedures in the Web of Science database from 2000 to 2023. Source. Compiled by author from [70].

Options	Words Included	Final Results (N° Articles)	% Average Growth N° Publications (2000–2023)	The Top Five Country by Number of Articles
1st	"Water consumption" + "tourist*"	132	26.3%	Spain (52); China (8); Greece (7); Italy (7); France (7)
2nd	"Water consumption" + "hotel*"	101	37.7%	Spain (29); US (11); China (8); Poland (6); UK (5)
3rd	"Water consumption" + "tourist*" + "hotel*"	38	44%	Spain (20); Australia (3); Mexico (3); Netherlands (3); Italy (2)
4th	"Water consumption" + "resident*"	1.102	24.5%	US (246); China (136); Australia (105); Spain (98); China (79)
5th	"Water consumption" + "household*"	1.152	25%	US (205); Australia (112); UK (101): China (100); Spain (70)

Initially, we introduced "water consumption" and "tourist*" terms included with an asterisk to cover "tourism", "tourist", and "touristic" words, and the search results provided 132 articles published in the period analysed. The second option included "water consumption", and "hotel*" terms to cover "hotel" and "hotels" words, yielding 101 articles. However, in the third option "water consumption" "tourist*" and "hotel*" were inserted into the field, and the results produced only 38 articles in the period examined. This is because the Boolean operator (AND) and the wildcard (*) help define more precise searches in the WoS database. It is important to highlight that in the search results of the first three options (water consumption/tourist/hotel), Spain, with a total of 101 papers, is actually the country that provides more articles on this topic, followed by China (16), the US (11), and Italy (9), as we can see in Table 3. These findings reveal that Spanish universities and their researchers are very committed to finding a solution to the water consumption problem in the tourism industry, but less so for residents and households. That is, of course, no coincidence that Spanish researchers are focused on water consumption for residents and the tourism industry because Spain is among the European countries facing considerable water shortage problems and desertification.

Australia (217), Spain (168) and the UK (101) are in the fourth and fifth options, respectively. These data show that US researchers are world leaders in the topics of water consumption by residents and households. In the US, around 471,000 households, or 1.1 million people, lacked piped water access between 2013 and 2017 [98]. Craig et al. [99] found that in US regions where droughts have occurred, a lack of water availability in households has become a key concern for local residents, researchers, and the national government. Meehan et al. [100] note that household water access is far from universal in developed countries. Regarding the consumption of water associated with the resident population and households in the US, China, Australia, and Spain, researchers are investigating residents' understanding of water availability, climate change, and where desalination

technologies are playing a leading role [101]. According to the trend in publications and citations related to the focus of this study, Figure 6 shows how the number of publications and citations has increased exponentially in the five options analysed from 2000 to 2023.



Source. Own elaboration.

Figure 6. Number of articles and citations on water consumption by the tourism industry, residents, and households (2000–2023). Source. Our elaboration from [70].

A recent study carried out by Ricart et al. [102] revealed that studies related to the management of water resources in the tourism industry are dominated by a handful of researchers, most of whom are affiliated with Spanish universities, and they have helped significantly improve the efficiency of water consumption in the tourism sector. It is clear that, in pursuit of water interests, organizations and researchers heighten water inequalities for residents. The impact of tourism on water availability for residents and tourism companies remains an ongoing concern for researchers and Spanish government bodies. Consequently, water demand and consumption in Spanish tourist destinations can differ notably according to the number of tourist arrivals, tourism cities' models (e.g., smart cities, urban cities, or rural destinations), and type of management by local and regional governments. For example, the City of Benidorm is a smart city and one of the most

important tourist destinations in Europe, and this smart city has high water requirements to supply hotels, resorts, campsites, villas, etc., and millions of tourists who visit this territory. Surely, the future of tourism development and the urbanistic model in Benidorm will depend on the water requirements and demand, the number of residents, tourism expansion, infrastructure, and the number of tourist arrivals [87]. Thanks to scientific studies carried out by researchers, efficiency and management of water consumption in cities are fundamental to guaranteeing the residents' quality of life and the tourism sector's sustainability [103].

That is, the results reveal that the researchers help stage the problem of water consumption in the tourism industry among residents; therefore, the management of water consumption is becoming increasingly pressing for government bodies with the aim of improving the sustainability and efficiency of this vital and increasingly scarce resource to be used rationally. For instance, more than 75% of Asian and Pacific countries are experiencing water stress, and this situation is seriously affecting the cities' tourist development and households [91].

Spanish researchers, such as Gomez-Guillen et al. [104] and Santamarta et al. [105], argue that water consumption limits tourism supply in tourist destinations and requires a re-evaluation of practices and strategies to ensure sustainability and environmental responsibility in the tourism sector. Zhang et al. [106] carried out a bibliometric study about water footprint research from 2006 to 2015, and they found that this topic became popular in recent years for researchers and government bodies due to citizens' concerns about the availability of water and its efficient utilisation. Ortega-Ballesteros et al. [107] analysed the evolution of the publications related to water utilities (2000–2020), and they identified that the main keywords were water quality, water management, and water optimization. Climate change poses a threat to both water quantity and quality in cities in the immediate future due to global warming [108]. Understanding and adapting to climate change in the context of water supply systems is a key challenge for governments and water companies in order to guarantee drinking water to residents, tourists, and the hospitality sector.

5. Conclusions

The aim of this study was to tackle the priority of water consumption in the Spanish tourism industry as long as the availability of water is guaranteed for residents and there are no constraints on the supply. Findings reveal that although the tourism industry is the economic engine of Spain, water consumption by tourists is above the level of consumption of residents, and this asymmetrical situation should be reversed in favour of the welfare of Spanish citizens. It is noteworthy that the water scarcity in Spain and its continuing restrictions in the Andalusian and Catalonian regions have caused huge problems with drinking water supply in the last few years. Indeed, local and regional Spanish governments cannot demand a resident consume 133 L per day, while a tourist is allowed to consume between 400 and 1000 L per day. For this reason, water availability must be a priority for residents, and after that, the tourism industry, and the main goal of this research and RQ1 are answered. Economic interests cannot override citizens' needs and well-being. Greater efforts by local and regional governments are needed to establish and monitor water consumption by hotels and tourists in Spanish tourist destinations to enhance the efficiency of water consumption.

This research has helped us better understand the complex relationships between water consumption by the tourism industry and by residents in the context of climate change. Our findings are aligned with the Gonzalez-Perez et al. [21] results that the water consumption in the tourism industry is very intensive and generates many conflicts between tourism companies and residents, especially during peak times from June to August and that the hospitality sector uses far more water than the general population. For example, in the case of hotels' swimming pools, the use of water increases because the client must shower before a swim in the pool. For instance, Suárez-Fernández et al. [109] analysed water consumption in 361 hotels in Colombia from 2012 to 2015, and they note

that reductions in water consumption decrease hotel costs, enhance their competitiveness, and improve sustainability of the tourist destination. Thereby, adequate water management is vital for the sustainability of tourism cities, travel, and tourism activities, as well as the maintenance of drinking water for residents during the entire year.

Regarding RQ2, government bodies must act most effectively to reduce water consumption. Government bodies are aware of the importance of water supply to Spanish regions and their residents, but the water tariffs applied by Spanish cities are not justified on the basis of efficiency, equity, or environmental purposes. This uniformity of the tariffs sends the wrong signal to Spanish residents about water scarcity and reduces water consumption. If the water is a scare resource in some Spanish areas, tourism companies or tourists should pay a fee for excess water consumption by the principle of fairness. Surprisingly, we do not understand why government bodies are not taking urgent measures to tackle the water crisis, which is becoming more grave in the wake of the drought currently sweeping across the Spanish territory. For instance, local and regional governments should establish and promote a water bill in which residents and companies are rewarded for efficient and responsible use of water. This would be an excellent initiative and a good example of how to make society aware of efficient water use. Moreover, regional governments of Andalusia, Catalonia, Madrid, and Comunidad Valenciana that provide the highest volume of water supplied to the network should implement directive for hotels and restaurants to pay higher rates for their high water consume because these four regions receive million tourists annually. National and regional governments must also engage with residents to raise their awareness of the water footprint of their consumption and ways to reduce it, especially in the summer.

Last, this research reveals how Spanish researchers critically staged the problem of water consumption in the Spanish tourism industry (RQ3) through research articles in the last two decades. Indeed, Spanish researchers are the ones providing the most articles on this topic (water consumption/tourist/hotel) in the world, followed by Chinese, American, and Italian researchers. Furthermore, our findings suggest that Spanish researchers are very committed to finding a solution to the water consumption problem in the tourism industry, but less so for residents and households. Another aspect to be highlighted is that US researchers have contributed the most to solving the problem of water consumption by residents and households in the articles published, followed by Chinese, Australian, Spanish, and English researchers. Results indicate that researchers are highly committed to the topic addressed in this study. The scientific community should be proud of its ability to research the problems facing today's society in the management and sustainability of water as a vital resource for present and future generations. Mass tourism in Spanish tourist destinations has generated a great imbalance between the needs and availability of water resources for residents, and this big problem must be immediately solved.

5.1. Theoretical and Managerial Implications

The manuscript provides significant theoretical implications for water consumption in the tourism industry and residents' topics. Initially, this research has contributed to having a more global understanding and vision of the big problem of water use due to climate change. Second, this study has tried to tackle the priority of water use in Spain because it is the third most water-stressed country in the EU. And third and last, the results of the research demonstrate that the scientific community is deeply involved with water consumption in tourism activities, contributing to the growing literature on this topic. According to published scientific studies related to reducing tourist and hotel water consumption, researchers and governments need to publish more reports and studies to highlight the importance of saving water by the Spanish tourism industry and the rest of the world [110]. Also, the crisis of a lack of water in some regions of Spain needs to be redefined and managed according to their primary needs, economic or tourism model, and the number of tourist arrivals. A different governance model should be applied to arid

regions with a specific economic, geographic, and climatic point of view to assist citizens with their concerns and complaints about water consumption and local economies [111].

On the other hand, this research also has some managerial implications, which should be implemented by governments and tourism companies. The findings of this research should be taken into account by local and regional Spanish governments to support economic and territorial development policies that promote the reduction of water consumed by the tourism sector. Hotel managers must implement efficient measures to reduce water consumption and find solutions to minimize the impact on water resources. In order to adapt to inevitable changes in water availability and reduce the pressure on limited water resources, the tourism industry must participate jointly with government bodies in water management and supply. For instance, regional governments and hotel operators should provide a decalogue of best practices to promote and raise the awareness of clients and staff about the importance of responsible water use. To guarantee the future and sustainability of the Spanish tourism industry, greater efforts are required to reduce the use of water by tourists and residents [17].

5.2. Study Limitations and Future Research

In any case, this investigation also has certain limitations. Regional governments are reluctant to provide information related to the water consumption by hotels and other tourism companies. This information would be interesting to compare water consumption between hotels and restaurants, or even hotels with other tourist apartments, in a future search. Data about water consumption in the tourism industry are not readily accessible, and they are limited and only gathered for individual case studies [108].

Moreover, there are limited studies of tourists' behaviour with water consumption at tourist destinations or even the residents' perceptions regarding water consumption by hotels and tourists [89]. Future research could propose new models of sustainable production, consumption, and distribution. Measuring the efficiency and sustainability of water consumption in the tourism sector is an important indicator of good or bad management by government bodies. Meanwhile, we recommend repeating this study in the Mediterranean and tropical regions to compare results and help governments make better and more efficient decisions based on available scientific evidence.

Funding: This research received no external funding.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Data Availability Statement: The original contributions presented in the study are included in the article.

Acknowledgments: The author would like to thank anonymous reviewers and editors for providing valuable suggestions and comments.

Conflicts of Interest: The author declares no conflicts of interest.

Appendix A

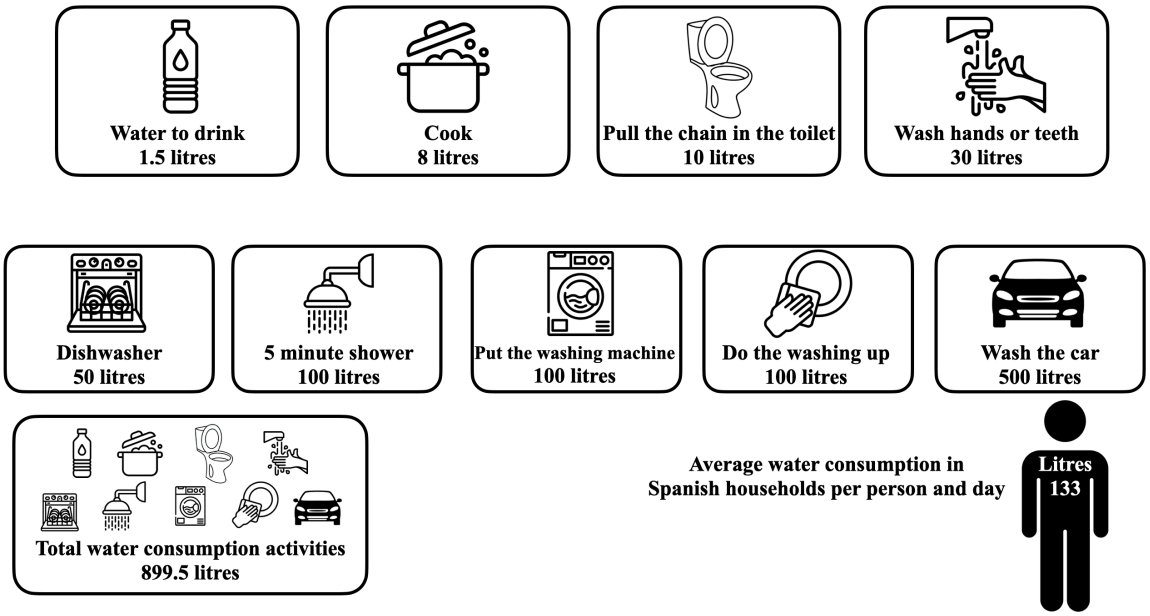


Figure A1. Water consumption activities by Spanish people in 2022. Source. Own elaboration from [31,58].

References

1. Royal Decree-Law 4/2023. 2023. Available online: https://www.boe.es/buscar/doc.php?lang=en&id=BOE-A-2023-11187 (accessed on 26 January 2024).
2. Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 Establishing a Framework for Community Action in the Field of Water Policy. 2000. Available online: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:32000L0060 (accessed on 6 January 2024).
3. Scott, D.; Hall, C.M.; Rushton, B.; Gössling, S. A review of the IPCC Sixth Assessment and implications for tourism development and sectoral climate action. *J. Sus. Tour.* **2023**, *4*, 1–18. [CrossRef]
4. The World Bank. Water. As the World's Largest Multilateral Source of Financing for Water in Developing Countries, the World Bank is Committed to Water for People and Planet. 2016. Available online: https://www.worldbank.org/en/topic/water/overview#2 (accessed on 9 October 2023).
5. UNWTO. Water and Tourism: Challenges and Opportunities. 2023. Available online: https://www.unwto.org/news/water-and-tourism-challenges-and-opportunities (accessed on 9 June 2024).
6. OECD. Financing Water. Investing in Sustainable Growth. 2018. Available online: https://www.oecd.org/water/Policy-Paper-Financing-Water-Investing-in-Sustainable-Growth.pdf (accessed on 2 May 2024).
7. Pan, S.-L.; Wu, L.; Morrison, A.M. A review of studies on tourism and climate change from 2007 to 2021. *Int. J. Contemp. Hosp. Manag.* **2024**, *36*, 1512–1533. [CrossRef]
8. Keesen, A.M. Adaptation to climate change in European water law and policy. *Utrecht Law Rev.* **2012**, *8*, 38. [CrossRef]
9. Scott, D.; Hall, C.M.; Gössling, S. Global tourism vulnerability to climate change. *Ann. Tour. Res.* **2019**, *77*, 49–61. [CrossRef]
10. La Vanguardia. Más de 600 Municipios de Andalucía y Cataluña Sufren Restricciones de Agua. 2023. Available online: https://www.lavanguardia.com/sociedad/20230804/9151582/mas-600-municipios-andalucia-cataluna-sufren-restricciones-agua.html (accessed on 4 November 2023).
11. Tejada, P. Casi 30 Municipios de Málaga con Restricciones de Agua. 2023. Available online: https://www.malagahoy.es/malaga/municipios-Malaga-restricciones-agua_0_1815419980.html (accessed on 1 May 2024).
12. Council of Agriculture, Fishing, Water, and Rural Development of Andalusia. Summary Levels of Andalusian Reservoirs. 2023. Available online: http://www.redhidrosurmedioambiente.es/saih/resumen/embalses (accessed on 31 December 2023).
13. Cándido, C. En el Día Mundial del Agua España se Muere de Sed. 2017. Available online: https://www.eleconomista.es/economia/noticias/8238534/03/17/En-el-Dia-Mundial-del-Agua-Espana-se-muere-de-sed.html (accessed on 27 January 2024).
14. Cao, S.; He, Z.; Wang, S.; Niu, J. Decoupling Analysis of Water Consumption and Economic Growth in Tourism in Arid Areas: Case of Xinjiang, China. *Sustainability* **2023**, *15*, 10379. [CrossRef]
15. Roson, R.; Sartori, M. Climate change, tourism and water resources in the Mediterranean: A general equilibrium analysis. *Int. J. Clim. Chang. Strat. Manag.* **2014**, *6*, 212–228. [CrossRef]

16. Iniesta, A.; Villanueva, V. Internacionalización del Sector del Agua Español: Balance 2022 y Perspectivas Para 2023. 2023. Available online: https://www.iagua.es/noticias/icex-espana-exportacion-e-inversiones/internacionalizacion-sector-agua-espanol-balance-2022 (accessed on 3 August 2023).
17. Pérez, D.M.G.; Martín, J.M.M.; Martínez, J.M.G.; Sáez-Fernández, F.J. An analysis of the cost of water supply linked to the tourism industry. An application to the case of the Island of Ibiza in Spain. *Water* **2020**, *12*, 2006. [CrossRef]
18. Gössling, S.; Peeters, P.; Hall, C.M.; Ceron, J.P.; Dubois, G.; Scott, D. Tourism and water use: Supply, demand, and security. An international review. *Tour. Manag.* **2012**, *331*, 1–15. [CrossRef]
19. Hof, A.; Schmitt, T. Urban and tourist land use patterns and water consumption: Evidence from Mallorca, Balearic Islands. *Land Use Policy* **2011**, *28*, 792–804. [CrossRef]
20. Rico, A.; Olcina, J.; Baños, C.; Garcia, X.; Sauri, D. Declining water consumption in the hotel industry of mass tourism resorts: Contrasting evidence for Benidorm, Spain. *Curr. Issues Tour.* **2020**, *23*, 770–783. [CrossRef]
21. Gonzalez-Perez, D.M.; Martín, J.M.M.; Martínez, J.M.G.; Pachón, A.M. Analysing the real size of the tourism industry on the basis of an assessment of water consumption patterns. *J. Bus. Res.* **2023**, *157*, 113601. [CrossRef]
22. Antonova, N.; Ruiz-Rosa, I.; Mendoza-Jiménez, J. Water resources in the hotel industry: A systematic literature review. *Int. J. Contemp. Hosp. Manag.* **2021**, *33*, 628–649. [CrossRef]
23. European Union. The Relationship between Desertification and Climate Change in the Mediterranean. 2011. Available online: https://cor.europa.eu/en/engage/studies/Documents/relationship-desertification-climate-change.pdf (accessed on 7 March 2024).
24. OECD. Financing Compliance with the EU Water Acquis—Recommendations. 2019. Available online: https://www.oecd.org/environment/resources/financing-water-supply-sanitation-and-flood-protection-spain-workshop.pdf (accessed on 11 February 2024).
25. WeareWater Foundation. Tourism and Water, a Difficult Relationship That Should Be Exemplary. 2017. Available online: https://www.wearewater.org/en/tourism-and-water-a-difficult-relationship-that-should-be-exemplary_282641 (accessed on 31 December 2023).
26. Ministerio Para la Transición Ecológica y el Reto Demográfico. Inventory of Dams and Reservoirs. 2023. Available online: https://www.miteco.gob.es/es/agua/temas/seguridad-de-presas-y-embalses/inventario-presas-y-embalses.html (accessed on 24 November 2023).
27. Marinas, R.; Palmer, C.G. Catalonia Declares a Drought Emergency for the First Time in Around Twenty Municipalities and Extends Restrictions. 2023. Available online: https://elpais.com/espana/catalunya/2023-08-02/cataluna-declara-por-primera-vez-la-emergencia-por-sequia-en-una-veintena-de-municipios-de-girona-y-amplia-restricciones.html (accessed on 3 December 2023).
28. Rico, A. Water consumption patterns in urban/tourist supplies in the Region of Valencia. *Investig. Geogr.* **2007**, *42*, 5–34.
29. Villar-Navascués, R.A.; Pérez-Morales, A. Factors Affecting Domestic Water Consumption on the Spanish Mediterranean Coastline. *Prof. Geogr.* **2018**, *70*, 513–525. [CrossRef]
30. Adamiak, C.; Szyda, B.; Dubownik, A.; García-Álvarez, D. Airbnb Offer in Spain—Spatial Analysis of the Pattern and Determinants of Its Distribution. *ISPRS Int. J. Geo-Inf.* **2019**, *8*, 155. [CrossRef]
31. INE. Estimated Establishments and Vacancies, Staff Employed by Type of Accommodation and by Autonomous Communities and Cities. 2023. Available online: https://www.ine.es/jaxiT3/Datos.htm?t=2942 (accessed on 7 August 2023).
32. AEMET. AEMET OpenData. 2023. Available online: https://www.aemet.es/es/datos_abiertos/AEMET_OpenData (accessed on 22 June 2024).
33. Lamei, A.; van der Zaag, P.; von Münch, E. Water resources management to satisfy high water demand in the arid Sharm El Sheikh, the Red Sea, Egypt. *Desalin. Water Treat.* **2009**, *1*, 299–306. [CrossRef]
34. Martínez-Ibarra, E. Climate, water and tourism: Causes and effects of droughts associated with urban development and tourism in Benidorm (Spain). *Int. J. Biometeorol.* **2015**, *59*, 487–501. [CrossRef] [PubMed]
35. Forde, L. Water resources. In *Natural Resource Management for Sustainable Development in the Caribbean*; Goodbody, I., Hope, E.T., Eds.; Canoe Press: Oak Park, IL, USA; The University of the West Indies: Kingston, Jamaica, 2002; pp. 93–142.
36. Griffith, A. The Characteristics of Water Use in Three Residential Areas in Barbados, Implications for a Conservation Strategy. Master's Dissertation, The University of the West Indies, Kingston, Jamaica, 2001.
37. García, C.; Servera, J. Impacts of tourism development on water demand and beach degradation on the island of Mallorca (Spain). *Geogr. Ann. Ser. A Phys. Geogr.* **2003**, *85*, 287–300. [CrossRef]
38. Orient Planet Research. Water Management and Sustainability in the Gulf Cooperation Council: Addressing Scarcity. 2020. Available online: https://www.opresearch.me/reportDetails.aspx?id=148 (accessed on 13 April 2024).
39. UN-HABITAT. Comprender las Dimensiones del Problema del Agua. 2021. Available online: https://onuhabitat.org.mx/index.php/comprender-las-dimensiones-del-problema-del-agua?fb_comment_id=1919706488040991_2396617700349865 (accessed on 6 May 2024).
40. Castillo, A.; Gutiérrez, A.; Gutiérrez, J.M.; Gómez, J.M.; García-López, E. Water consumption on Spanish households. *Int. J. Humanit. Soc. Sci.* **2013**, *7*, 532–535.
41. Alonso-Álvarez, A. The value of water: The origins and expansion of thermal tourism in Spain, 1750–2010. *J. Tour. Hist.* **2012**, *4*, 15–34. [CrossRef]
42. Folgado-Fernández, J.A.; Di-Clemente, E.; Hernández-Mogollón, J.M.; Campón-Cerro, A.M. Water Tourism: A New Strategy for the Sustainable Management of Water-Based Ecosystems and Landscapes in Extremadura (Spain). *Land* **2019**, *8*, 2. [CrossRef]
43. WeareWater Foundation. Water in Spain: The Challenge of a Dry Land. 2022. Available online: https://www.wearewater.org/en/water-in-spain-the-challenge-of-a-dry-land_349631 (accessed on 19 May 2024).

44. Lehmann, L. *Valuing Water in Dry Land Tourism Regions*; WIT Press: Southampton, UK, 2008; pp. 207–220.
45. World Tourism Organization. World Tourism Barometer. 2022. Available online: https://www.e-unwto.org/doi/epdf/10.18111/wtobarometereng.2022.20.1.4 (accessed on 5 January 2024).
46. Florido-Benítez, L. The impact of tourism promotion in tourist destinations: A bibliometric study. *Int. J. Tour. Cities* **2022**, *8*, 844–882. [CrossRef]
47. Florido-Benitez, L. COVID-19 and Brexit crisis: British Isles must not kill the goose that lays the golden egg of tourism. *Gran Tour* **2022**, *25*, 61–100.
48. Gössling, S. Tourism and water. In *Tourism & Global Environmental Change: Ecological, Social, Economic and Political Interrelationships*; Gössling, S., Hall, C.M., Eds.; Routledge: Abingdon, UK, 2006; pp. 180–194.
49. Cazcarro, I.; Hoekstra, A.; Chóliz, J.S. The water footprint of tourism in Spain. *Tour. Manag.* **2014**, *40*, 90–101. [CrossRef]
50. Gabarda-Mallorquí, A.; Garcia, X.; Ribas, A. Mass tourism and water efficiency in the hotel industry: A case study. *Int. J. Hosp. Manag.* **2017**, *61*, 82–92. [CrossRef]
51. Downward, S.R.; Taylor, R. An assessment of Spain's Programa AGUA and its implications for sustainable water management in the province of Almería, southeast Spain. *J. Environ. Manag.* **2007**, *82*, 277–289. [CrossRef] [PubMed]
52. UNICEF. Progress on Household Drinking Water, Sanitation and Hygiene 2000–2022: Special Focus on Gender. 2023. Available online: https://data.unicef.org/resources/jmp-report-2023/ (accessed on 6 July 2024).
53. Tirado, D.; Nilsson, W.; Deyà-Tortella, B.; García, C. Implementation of water-saving measures in hotels in Mallorca. *Sustainability* **2019**, *11*, 6880. [CrossRef]
54. INE. Statistics on Water Supply and Sanitation. 2023. Available online: https://www.ine.es/dyngs/INEbase/es/operacion.htm?c=Estadistica_C&cid=1254736176834&menu=ultiDatos&idp=1254735976602 (accessed on 13 April 2024).
55. INE. Volume of Water Supplied to the Network by Autonomous Communities and Cities, Type of Indicator and Period. 2023. Available online: https://www.ine.es/jaxi/Tabla.htm?tpx=53447&L=0 (accessed on 12 April 2024).
56. Cruz-Pérez, N.; Rodríguez-Martín, J.; Martín, J.F.A.; García, C.; Ruiz-Rosa, I.; Santamarta, J.C. Improvements in hotel water consumption: Case study of a five-star hotel (Canary Islands, Spain). *Urban Water J.* **2022**, *19*, 32–39. [CrossRef]
57. UNWTO. Water Management. 2023. Available online: https://www.unwto.org/sustainable-development/unwto-international-network-of-sustainable-tourism-observatories/tools-water-management (accessed on 13 April 2024).
58. Fundación Aquae. Consumo Medio de Agua en los Hogares Españoles. 2023. Available online: https://www.fundacionaquae.org/en-que-se-utiliza-el-agua-en-espana/ (accessed on 4 July 2024).
59. United Nations. Rights to Water and Sanitation. 2023. Available online: https://sr-watersanitation.ohchr.org/en/rightstowater_5.html (accessed on 14 May 2024).
60. Essex, S.; Kent, A.; Newnham, R. Tourism Development in Mallorca: Is Water Supply a Constraint? *J. Sustain. Tour.* **2004**, *12*, 4–28. [CrossRef]
61. Almeida-García, F.; Cortés-Macías, R.; Parzych, K. Tourism Impacts, Tourism-Phobia and Gentrification in Historic Centers: The Cases of Málaga (Spain) and Gdansk (Poland). *Sustainability* **2021**, *13*, 408. [CrossRef]
62. World Economic Forum. These Are the Top Countries for Travel and Tourism in 2019. 2019. Available online: https://www.weforum.org/agenda/2019/09/most-travel-tourism-competitive-countries-2019/ (accessed on 15 June 2024).
63. La Moncloa. Spain Retains its Leadership as Most Competitive Tourism Country in World. 2019. Available online: https://www.lamoncloa.gob.es/lang/en/gobierno/news/Paginas/2019/20190904tourismleadership.aspx (accessed on 9 August 2024).
64. INE. Spanish Tourism Satellite. Statistical Review 2022. 2022. Available online: https://www.ine.es/dyngs/INEbase/en/operacion.htm?c=estadistica_C&cid=1254736169169&menu=ultiDatos&idp=1254735576863 (accessed on 2 June 2024).
65. Spang, E.S.; Moomaw, W.R.; Gallagher, K.S.; Kirshen, P.H.; Marks, D.H. The water consumption of energy production: An international comparison. *Environ. Res. Lett.* **2014**, *9*, 105002. [CrossRef]
66. Morote, Á.-F.; Olcina, J.; Rico, A.-M.; Hernández, M. Water Management in Urban Sprawl Typologies in the City of Alicante (Southern Spain): New Trends and Perception after the Economic Crisis? *Urban Sci.* **2019**, *3*, 7. [CrossRef]
67. Jones, A.Q.; Dewey, C.E.; Dore, K.; Majowicz, S.E.; McEwen, S.A.; Waltner-Toews, D. Drinking water consumption patterns of residents in a Canadian community. *J. Water Health* **2006**, *4*, 125–138. [CrossRef] [PubMed]
68. Becken, S. Water equity–Contrasting tourism water use with that of the local community. *Water Resour. Ind.* **2014**, *7*, 9–22. [CrossRef]
69. Florido-Benítez, L. A Bibliometric Overview of the International Airports and Airlines 'IAA' Topic in Journals and Scientific Community. *Logistics* **2023**, *7*, 35. [CrossRef]
70. WoS. Selection of Data (2000 to 2023). 2024. Available online: https://www.webofscience.com/wos/woscc/basic-search (accessed on 23 June 2024).
71. Sanchez-Cañizares, S.M.; Castillo-Canalejo, A.M.; Cabeza-Ramírez, L.J. Sustainable tourism in sensitive areas: Bibliometric characterisation and content analysis of specialised literature. *Sustainability* **2018**, *10*, 1525. [CrossRef]
72. Aliyev, V.; Suleymanov, F. The protection of water resources for sustainable tourism under climate change in south caucasus: In the context of Azerbaijan. *Geoj. Tour. Geosites* **2023**, *47*, 515–522. [CrossRef]
73. CIDE. Desertification and Environmental Quality. 2023. Available online: https://www.uv.es/uvweb/desertification-research-centre/en/investigation/desertification-environmental-quality/presentation-1286279736790.html (accessed on 17 July 2023).

74. Rodríguez-Antón, J.M.; Alonso-Almeida, M.d.M. COVID-19 Impacts and Recovery Strategies: The Case of the Hospitality Industry in Spain. *Sustainability* **2020**, *12*, 8599. [CrossRef]
75. INE. Population by Autonomous Communities and Cities and Sex. 2023. Available online: https://www.ine.es/jaxiT3/Tabla.htm?t=2853&L=0 (accessed on 18 June 2024).
76. Charara, N.; Cashman, A.; Bonnell, R.; Gehr, R. Water use efficiency in the hotel sector of Barbados. *J. Sustain. Tour.* **2011**, *19*, 231–245. [CrossRef]
77. Diaz, J.A.R.; Knox, J.W.; Weatherhead, E.K. Competing demands for irrigation water: Golf and agriculture in Spain. *Irrig. Drain.* **2007**, *56*, 541–549. [CrossRef]
78. Narbón-Perpiñá, I.; De Witte, K. Local governments' efficiency: A systematic literature review—Part II. *Int. Trans. Oper. Res.* **2018**, *25*, 1107–1136. [CrossRef]
79. Arbués, F.; García-Valiñas, M. *Water Tariffs in Spain*; Oxford Research Encyclopedias: Oxford, UK, 2020. [CrossRef]
80. Benito, B.; Faura, U.; Guillamón, M.D.; Ríos, A.M. The efficiency of public services in small municipalities: The case of drinking water supply. *Cities* **2019**, *93*, 95–103. [CrossRef]
81. Smart Water Magazine. Water Ranking in Europe 2020. 2021. Available online: https://smartwatermagazine.com/news/locken/water-ranking-europe-2020 (accessed on 7 February 2024).
82. World Health Organisation. Domestic Water Quantity, Service Level and Health. 2020. Available online: https://iris.who.int/bitstream/handle/10665/338044/9789240015241-eng.pdf (accessed on 13 July 2024).
83. Gleick, P.H. Basic water requirements for human activities: Meeting basic needs. *Water Int.* **1996**, *21*, 83–92. [CrossRef]
84. Diaz-Perez, F.J.; Otin, M.R.; Mouhaffel, A.G.; Martin, R.D.; Chinarro, D. Energy and Water Consumption and Carbon Footprint in Tourist Pools Supplied by Desalination Plants: Case Study, the Canary Islands. *IEEE Access* **2018**, *6*, 11727–11737. [CrossRef]
85. UNWTO. *Background Report Tourism in the Green Economy*; World Tourism Organization: Madrid, Spain, 2012.
86. Garcia, C.; Deyà-Tortella, B.; Lorenzo-Lacruz, J.; Morán-Tejeda, E.; Rodríguez-Lozano, P.; Tirado, D. Zero tourism due to COVID-19: An opportunity to assess water consumption associated to tourism. *J. Sustain. Tour.* **2023**, *31*, 1869–1884. [CrossRef]
87. Rico-Amoros, A.M.; Olcina-Cantos, J.; Saurí, D. Tourist land use patterns and water demand: Evidence from the Western Mediterranean. *Land Use Policy* **2009**, *26*, 493–501. [CrossRef]
88. Grenon, M.; Batisse, M.; Pujol, D.S. *Futures of the Mediterranean Basin. The Blue Plan. Environment and Planning*; Oxford University Press: Oxford, UK, 1990.
89. Tortella, B.D.; Tirado, D. Hotel water consumption at a seasonal mass tourist destination. The case of the island of Mallorca. *J. Environ. Manag.* **2011**, *92*, 2568–2579. [CrossRef] [PubMed]
90. Hadjikakou, M.; Chenoweth, J.; Miller, G. Estimating the Direct and Indirect Water Use of Tourism in the Eastern Mediterranean. *J. Environ. Manag.* **2013**, *114*, 548–556. [CrossRef] [PubMed]
91. Mclennan, C.J.; Becken, S.; Stinson, K. A water-use model for the tourism industry in The Asia-Pacific Region: The impact of water-saving measures on water use. *J. Hosp. Tour. Res.* **2017**, *41*, 746–767. [CrossRef]
92. Bostyn, Y. Tourists Face Water Restrictions in Spain's Andalusia This Year Due to Ongoing Drought These Are Some of the Measures. 2024. Available online: https://www.theolivepress.es/spain-news/2024/03/04/tourists-face-water-restrictions-in-spains-andalucia-this-year-due-to-ongoing-drought-these-are-some-of-the-measures/ (accessed on 12 June 2024).
93. García-Valiñas, M.A.; Martínez-Espiñeira, R.; González-Gómez, F. Affordability of residential water tariffs: Alternative measurement and explanatory factors in southern Spain. *J. Environ. Manag.* **2010**, *91*, 2696–2706. [CrossRef] [PubMed]
94. Komives, K. *Water, Electricity, and the Poor: Who Benefits from Utility Subsidies?* World Bank Publications: Washington, DC, USA, 2005.
95. OECD. Pricing Water Resources and Water and Sanitation Services. 2010. Available online: https://www.oecd-ilibrary.org/deliver/9789264083622-1-fr.pdf?itemId=/content/component/9789264083622-1-fr&mimeType=application/pdf (accessed on 5 May 2024).
96. POLITICO. Barcelona Is Parched and Angry at Quenched Tourists. 2024. Available online: https://www.politico.eu/article/spain-barcelona-tourists-catalonia-anger-rain-water-drought/#:~:text=Barcelona%20city%20hall%20estimates%20that,use%20163%20liters%20per%20day (accessed on 13 July 2024).
97. Shyju, P.J.; Singh, K.; Kokkranikal, J.; Bharadwaj, R.; Rai, S.; Antony, J. Service quality and customer satisfaction in hospitality, leisure, sport and tourism: An assessment of research in web of science. *J. Qual. Assur. Hosp. Tour.* **2023**, *24*, 24–50. [CrossRef]
98. Meehan, K.; Jurjevich, J.R.; Chun, N.W.; Sherrill, J. Geographies of insecure water access and the housing-water nexus in U.S. cities. *Proc. Natl. Acad. Sci. USA* **2020**, *117*, 28700–28707. [CrossRef] [PubMed]
99. Craig, C.A.; Feng, S.; Gilbertz, S. Water crisis, drought, and climate change in the southeast United States. *Land Use Policy* **2019**, *88*, 104110. [CrossRef]
100. Meehan, K.; Jepson, W.; Harris, L.M.; Wutich, A.; Beresford, M.; Fencl, A.; London, J.; Pierce, G.; Radonic, L.; Wells, C.; et al. Exposing the myths of household water insecurity in the global north: A critical review. *WIREs Water* **2020**, *7*, e1486. [CrossRef]
101. DeNicola, E.; Aburizaiza, O.S.; Siddique, A.; Khwaja, H.; Carpenter, D.O. Climate change and water scarcity: The case of Saudi Arabia. *Ann. Glob. Health* **2015**, *81*, 342–353. [CrossRef] [PubMed]
102. Ricart, S.; Villar-Navascués, R.; Reyes, M.; Rico-Amorós, A.M.; Hernández-Hernández, M.; Toth, E.; Brgalli, C.; Neri, M.; Amelung, B. Water–tourism nexus research in the Mediterranean in the past two decades: A systematic literature review. *Int. J. Water Resour. Dev.* **2023**, *40*, 57–83. [CrossRef]

103. André, F.J.; Buendía, A.; Santos-Arteaga, F.J. Efficient water use and reusing processes across Spanish regions: A circular data envelopment analysis with undesirable inputs. *J. Clean. Prod.* **2024**, *434*, 139929. [CrossRef]
104. Gomez-Guillen, J.-J.; Arimany-Serrat, N.; Tapias Baqué, D.; Giménez, D. Water and Energy Sustainability of Swimming Pools: A Case Model on the Costa Brava, Catalonia. *Water* **2024**, *16*, 1158. [CrossRef]
105. Santamarta, J.C.; Hernández-Alemán, A.; Cruz-Pérez, N.; Gamallo-Paz, I.; Rodríguez-Martín, J.; de Martín-Pinillos Castellanos, I.; García-Gil, A. Optimizing Water Sustainability: Revealing Cost Recovery Strategies in the Canary Islands (Spain). Stochastic Frontier Model. *Environ. Process.* **2024**, *11*, 13. [CrossRef]
106. Zhang, Y.; Huang, K.; Yu, Y.; Yang, B. Mapping of water footprint research: A bibliometric analysis during 2006–2015. *J. Clean. Prod.* **2017**, *149*, 70–79. [CrossRef]
107. Ortega-Ballesteros, A.; Manzano-Agugliaro, F.; Perea-Moreno, A.-J. Water Utilities Challenges: A Bibliometric Analysis. *Sustainability* **2021**, *13*, 7726. [CrossRef]
108. Żywiec, J.; Szpak, D.; Wartalska, K.; Grzegorzek, M. The Impact of Climate Change on the Failure of Water Supply Infrastructure: A Bibliometric Analysis of the Current State of Knowledge. *Water* **2024**, *16*, 1043. [CrossRef]
109. Suárez-Fernández, S.; Zapico, E.; Boto-García, D. Water-saving strategies at hotels: Which are more effective? *Curr. Issues Tour.* **2024**, *1*, 1–20. [CrossRef]
110. Sánchez-Pérez, C.; López-Ortiz, M.-I.; Fernández-Aracil, P. La Marina Baja Water Consortium (1950–1978): Hydro-Economic Model of Water Governance behind Tourism Development in Benidorm (Spain). *Water* **2024**, *16*, 1832. [CrossRef]
111. Gabarda-Mallorquí, A.; Deyá, B.; Tirado, D. Exploring research on water-saving measures applied to the hotel sector. A critical systematic review. *Int. J. Hosp. Manag.* **2024**, *120*, 103747. [CrossRef]

Disclaimer/Publisher's Note: The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.