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SUSTAINABLE USE OF WATER RESOURCES
IN THE HOSPITALITY INDUSTRY

Abstract: Tourism is an industry that is highly dependent on water resources. They are especially important for the hospitality industry. The insufficient availability of fresh water resources for the needs of the hotel industry can hinder the development of tourism in a given region. Hospitality facilities are one of the main water consumers in the tourism industry. With an increase in accommodation, the consumption of water resources in the tourist destination increases significantly. At the same time, with the development of a given region as a tourist destination and with the provision of water resources for the hotel industry, it could be possible to achieve an improvement in the water security of its inhabitants. The main objective of this paper is to present the latest trends and good practices in the sustainable use of water resources in hospitality.

Keywords: sustainable use; water; hospitality; tourism; hotels.

Introduction

Water is a fundamental resource in all hotel operations (heating, cooling, Food and Beverages Services, irrigation, SPAs, pools and water parks, guest rooms, etc. According to UNICEF[1], the World Health Organization[2] and World Data Lab[3], 31% (or one third) of the global population is affected by water scarcity, with one in three people having no access to water close to home.

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The Sustainable Hospitality Alliance states that, in some locations, the average hotel guest uses eight times more water than the local community, and a single hotel room can consume an average of 1,500 litres per day[4]. We Are Water Foundation statistics point that, in European hotels, every guest consumes about 394 litres on average per night; in Hong Kong, Singapore, Indonesia, or Thailand, the average rises to 677 litres, while in Barbados it goes to 839 litres[5]. Despite the fact that tourism uses 1% of global water consumption[6], 85% of international tourists visit places with water scarcity[7]. With an estimated 1.8 billion travel arrivals worldwide by 2030, the way tourists consume water will determine the sustainability of the planet[8].

In addition, implementing water-saving solutions in hotels has not only an environmental and social effect, but also an economic one. Hotels can improve their balance of payments because of low bills and tax savings.

Literature Review

For the purposes of this paper, different documents and statistical data by international and regional organizations have been used: United Nations, United Nations World Tourism Organization, United Nations World Health Organization, UNICEF, World Data Lab, We Are Water Foundation, European Commission, Sustainable Hospitality Alliance, Biosphere Tourism, Stockholm International Water Institute, Global Sustainable Tourism Council, Sustain-T project, etc.

Antonova et al[9]. study water resource management in the hospitality sector by introducing a sustainable balanced scorecard to measure the current status of water saving in the Macaronesia region. Their study points out that the region is far away from reaching the international standard of 140 litres per guest per night.

According to a 2015 study of the European hospitality sector, by taking water saving steps, a hundred-room hotel could save over 16,500 m³ of water and about 210,000 kWh of energy, which would have a positive impact on its balance of payments.[10]

In a study from 2015, Gössling suggests eight new indicators for water management in hotels (apart from the usually used litres per room per night, litres per guest per night, litres per year, etc.): renewable water resources per guest night in the peak season; area of irrigated land per bed; area of pool per bed; area of solar thermal and PV installed per bed; amount of meat and dairy products per guest night; energy use per guest night; share of rooms fitted with low-flow options; and kg of laundry used per guest night[11].

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[4] **Sustainable Hospitality Alliance.** Water Stewardship for Hotel Companies [online] [Accessed: 19 Jan. 2023]. https://sustainablehospitalityalliance.org/resource/water-stewardship-for-hotel-companies/

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A small investment of 2.000 to 14.000 euro for retrofitting with a useful life of at least 12 years in guest rooms, public areas, kitchen and dishwashing stations could have a profitability rate of 900 to 7,000%.[12]

In a paper published in 2005, Warnken et al. state that water consumption in hospitality depends significantly on the physicality of the buildings[13]. Some buildings, especially modern ones, facilitate the implementation of water saving systems, while others make it difficult or even impossible. In any way, it is better to design the building together with the water saving systems.

In 2007, Kelly and Williams provided a model that measures the impact of water consumption and waste water generation. They state that modelling system as the one they offered can help provide the information needed for the tourist sector to become more sustainable in terms of water use[14].

Hadjikakou et al.[15] state that indirect water use should be considered as important as the direct one. They measure the tourists' diet as a main component of the indirect water footprint. Their model uses virtual water contents for each ingredient of the diet, together with the distance they travel to come to the hotel accommodation and with the fuel footprint (as the oil production and exploration are particularly water intensive).

Most of the good practices with regard to saving water take place in popular destinations with water shortage or scarcity: Maldives[16], Canary Islands[17], Mallorca[18], Bali[19], India[20], Singapore[21], Egypt[22], Georgia[23], Azerbaijan[24], etc.

Data and Methods

For the purposes of this research, the following sources have been reviewed: statistical data, reports and scientific articles published by international organizations, non-governmental organizations, industry organizations, representatives of the hotel business, scientists, professionals, etc. The descrip-

[12] **Barberán, R. et al.** Evaluation of Water Saving Measures in Hotels: A Spanish Case Study. *International Journal of Hospitality Management*, vol. 34. 2013, pp. 181–191.

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[14] **Kelly, J, and Williams, P. W.** Tourism Destination Water Management Strategies: An Eco-Efficiency Modelling Approach. *Leisure / Loisir*, vol. 32(2), 2007, pp. 427–452.

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[24] **Sustainable Hospitality Alliance.** Hotel Water Management Initiative [online] [Accessed: 19 Jan. 2023]. https://sustainablehospitalityalliance.org/resource/hotel-water-measurement-initiative/

tive method was used to present the current status of water saving practices in the hospitality industry. The analytical method was applied to make conclusions regarding the state of the problem. The integral approach helped to illustrate the relationship between sustainable water use practices and cost reduction in hotels. Examples of good practices were provided and recommendations for sustainable use of water resources in the hotel industry were made.

Results

One of the world's leading water conferences, raising awareness about sustainable water use, is the World Water Week organized by the Stockholm International Water Institute (SIWI). SIWI is a non-profit institute with a wide range of expertise in water governance – from sanitation and water resources management to water diplomacy. It also awards the Stockholm Water Prize. Since 1991, it has been awarded to people and organizations for water-related achievements.

Another important forum is the 2013 World Tourism Day (27 September) called "Tourism and Water: Protecting Our Common Future," which was dedicated to water. It was in line with the International Year of Water Cooperation, proclaimed by the UN General Assembly[25]. The main conclusions drawn after the event are as follows:

– With over one billion people travelling the world every year, the tourism sector can play an educational role as a water-conscious sector;

– Although tourism uses only 1% of global water consumption, challenges to water use remain at destinations, since the sector often competes with other sectors for water;

– There is significant room for increasing efficiency and reducing the cost of water consumption in hotels;

– Investing in green technology is economically beneficial, with profits from water sanitation and wastewater treatment having a return on investment (ROI) of one to three years;

– Given tourism's size and reach, the sector is well-positioned to make a real contribution to preserving the world's precious water resources.

According to UNWTO, tourism can play a significant role in all 17 Sustainable Development Goals, adopted by the United Nations in 2015, which are also known as the 2030 Agenda for Sustainable Development. Number Six of them is Clean Water and Sanitation, where UNWTO sees the role of tourism as follows: "Tourism can play a critical role in achieving water access and security, as well as hygiene and sanitation for all. The efficient use of water in the tourism sector, coupled with appropriate safety measures, wastewater management, pollution control, and technology efficiency, can be a key to safeguarding our most precious resource."

Certification is a very important incentive tool to make the hospitality sector aware of the importance of environmental protection. There are two big international non-profit associations working in this area:

– the Responsible Tourism Institute, set up with the support of UNESCO and its Biosphere Sustainable Certification System, aligned with the 2030 Agenda;

– the Global Sustainable Tourism Council whose members are national and provincial governments, leading travel companies, hotels, tour operators, NGOs, individuals, and communities. Its certification system is also aligned with the 2030 Agenda.

In 2021 Biosphere Tourism, in cooperation with UNESCO, seven keystones for hotel managers to save water resources are suggested:

1. Establishing a water management plan – the first step in creating a water saving management plan is the measurement of water consumption. For that, water facilities need to install counters and perform their regular readings;

2. Developing strategies for each area – after knowing the volume consumed, the second step is to establish guidelines to follow. If, for example, the hotel has a green area, one of the key factors is the

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irrigation system. By knowing the characteristics of the flora, the hotel staff knows how much water they need and how often, which will allow them to establish patterns of action to avoid over-irrigation;

3. Controlling and reducing water consumption – there are various systems that continuously save water in hotels. By incorporating in the facilities these low-power systems, such as toilets with low-capacity tanks, low-flow taps or shower heads, the amount of water used is considerably reduced. Rainwater and water from pools, water parks and showers can be filtered and reused for flushing and irrigation (greywater). There are lots of smart washing machines, dishwashers and cleaning systems that can be implemented for water saving. Desalinated water can be used for every purpose, even for drinking. Pool covers can be used during the pool's non-working hours to avoid water evaporation. The chemicals used for cleaning, laundry and dish-washing need to be eco-friendly. Salt water taken directly from oceans and seas can be used in the pools and water parks instead of tap water;

4. Maintaining properly functioning facilities – ensure that the water saving facilities work properly. Reviewing them periodically will prevent leakage or inefficiencies and possible faults that produce an opposite effect;

5. Optimizing the use of systems – in the case of laundry service, for example, the hotel staff must ensure that the devices operate in the most efficient way possible; in this context, that the washers are fully charged. With these measures, in addition to reducing water consumption, hotels will reduce other costs associated, such as the amount of detergent used and energy consumption (Styles et al., 2015);

6. Training staff – promote actions and attitudes in the employees that demonstrate ethical behaviour. The human factor is critical in any action for improvement in the organization: they must be trained in water conservation and constantly informed about improvements or changes. Also, guidelines for responsible consumption must be incorporated into their routines and activities. Furthermore, hotels must implement mechanisms or systems that allow them to receive feedback, so as to know which processes work and which do not in order to make corrections and changes as necessary;

7. Raising awareness among customers – with simple behavioural changes, such as reducing the number of towels a day or closing the taps when they are not being used, hotels can make improvements and involve guests in a management system that takes care of the environment and is sustainable over time. In this case, the feedback using questionnaires is also very important.

The Sustainable Hospitality Alliance is a member organization of 21 of the world's leading hotel chains, which cover over 35% of the global hotel industry (in terms of rooms). Among them are Hilton, Hyatt, Radisson, Marriott, Iberostar, BWH, Deutsche Hospitality, etc. Key partners of the organization are the World Travel and Tourism Council, UNWTO, the Global Sustainable Tourism Council, the Global Business Travel Association, Travalyst, Booking.com, the TUI Care Foundation, Humanity United, the Global Fund to End Modern Slavery, the Global Labour Organization, UN Migration, etc. The Alliance has published two important documents in terms of sustainable water use:

– Hotel Water Measurement Initiative (HWMI) – a methodology and tool for hotels to calculate water use in their property per occupied room per day and per area of meeting space per hour. The methodology includes all activities within the hotel premises, which include both direct building uses and ancillary activities. It also includes, if applicable, outsourced operations.

– Water Stewardship for Hotel Companies – the report recommends six steps that every hotel should take to manage their impact on water: understand current water consumption; set goals and create a unique action plan; manage water sustainability in operations; work with suppliers to reduce water footprint; introduce a water stewardship strategy to build resilience; and collaborate on sustainable water management.

Conclusion

In conclusion, it can be said that there are many solutions for the sustainable use of water resources in the hospitality industry. Unfortunately, their application at the moment is in most cases at the request of hotels. Most documents on the subject are aspirational rather than imperative. The organizations that are most active in the sustainable use of water in tourism are mainly industry alliances and NGOs. There

is still a lack of a unified policy worldwide to reduce the ecological footprint of tourism and, in particular, to protect water resources and their sustainable use. In this regard, it is very important that the hospitality industry, tourists, local population and authorities, water suppliers and scientists join efforts to introduce effective policies and practices for the sustainable use of water in the hospitality industry.

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