

Towards sustainable water use in the tourism sector

Water use and management in the tourist accommodation sector of Gozo, Malta

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A B S T R A C T

High water stress levels have led to high pressure on groundwater and the use of desalination (i.e. reverse osmosis) in Malta. Tourism creates an extra water demand in the country. Therefore, this study investigates how water use is managed in tourism accommodations in the country's second largest island, Gozo. Data were gathered through fieldwork in Gozo and Malta by means of interviews and surveys with actors in the tourism sector and the government, experts and tourists. Results highlight the variety of water sources used in Gozitan accommodations. Alternative water sources such as rain and seawater are used mostly for non-potable purposes, which decreases pressure on governmental water supply. However, private boreholes are also used, which increases groundwater depletion. Both direct and indirect water use of tourists in Gozo were investigated. Direct water use mainly relates to swimming pools, hot tubs and sanitary uses, whereas extensive landscaping is rare in the Gozitan accommodation sector. Concerning indirect water use, some accommodations tend to opt for local food products, resulting in extra pressures on local water resources. Long payback times on investment explain the lower use of private desalination systems and reuse of treated wastewater in Gozo. While cost saving is an important incentive to install water saving facilities and to use alternative water sources, this also leads to the use of cheaper private groundwater supply. Tourists play a role through their water using behaviour and because of the tourism sector's interest to satisfy their guests. Eco marketing can be an incentive for accommodations to install water conservation practices. Although only a small share of Gozitan accommodations is eco-certified, interest in certifications is increasing.

A R T I C L E I N F O

Keywords

Water Management, Sustainability, Tourism, Gozo and Malta, Eco Marketing

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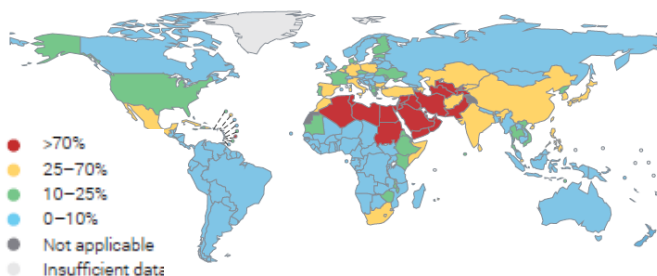


Figure 1: Water stress: withdrawal of fresh water as percentage of total fresh water resources (UN Water, 2019). Malta would show a red colour with 85.15% in 2017 (AQUASTAT, n.d.)



Figure 2: International tourist arrivals of Malta (UN Water, 2019). (World Bank, 2019)

Introduction

Worldwide, our water system is facing a crisis (UNDP, 2006; UNICEF, 2017; FAO, 2008). It is estimated that global water demand will increase by 20 to 30% by 2050 (UN Water, 2019). This results in an increasing number of countries facing problems of water scarcity in regions with limited fresh water resources (Postel, 2000), especially in arid and semi-arid regions (FAO, 2008) such as the Mediterranean region (Iglesias et al., 2007). Figure 1 illustrates this, since especially countries around the Mediterranean region show high water stress levels (UN Water, 2019). Climate change can further aggravate existing water scarcity problems. In the Mediterranean, it is estimated that climate change will result in an increased temperature, decreased precipitation and increased likelihood of droughts. All these factors will further decrease the amount of available water resources (Iglesias et al., 2007).

Located in the Mediterranean, Malta faces high levels of water stress due to a high population density in combination with limited water resources. As a result, over-abstraction has led to the deterioration of the groundwater, which besides quantitative problems, also entails qualitative problems such as increased salinity (Birdi, 1997; ERA, 2018). This forced the country to use the desalination technique of reverse osmosis (i.e. creating fresh water out of salt water) to produce drinking water since the 1980s (FAO, 2006). However, groundwater is still used for part of the governmental mains (Water Services Corporation WSC, n.d.) and is also extracted via private boreholes (FAO, 2006).

Tourism puts an extra pressure on this water stress issue. The number of tourist arrivals increases every year (figure 2), which creates an extra water demand (World Bank, 2019). In 2015, tourism accounted for 29% of the Maltese GDP (Ministry for Tourism, 2015). Gozo, Malta's smaller sister island, is marketed as a separate tourism destination. The island promotes its tranquility, rural landscapes and a distinct cultural heritage compared to the main island of Malta (Ministry of Gozo, 2012). In 2009, the "Eco Gozo" vision was introduced, which entails that the local government wants the island to become an eco-island that strives for sustainable development (Ministry for Gozo, 2012). In line with this vision, Gozo is marketed as an eco-destination (Ministry for Tourism, 2015).

Given the extra pressure of tourism on local water resources, it is important to understand how water is used and managed in water stressed touristic regions. Therefore, the aim of this study was to understand how water use is managed in the accommodation sector in the second largest island of the country, Gozo. I carried out explorative research regarding water management in the tourism sector to understand water use practices and their drivers. A better understanding of what actually happens, is essential if we want to reduce tourism's impact on the country's limited freshwater resources.

Methodology

This paper is based on my master's thesis for the Master in Sustainable Development at KU Leuven University, Belgium. For this thesis, I conducted fieldwork for almost 6 weeks in Gozo and Malta in Autumn 2019. The trip was my first visit to the Maltese islands, and I did not speak Maltese. In general, this did not seem to be an issue for my fieldwork since English is another official language of Malta, and a host organization provided me with guidance and helpful information about the local context. I carried out interviews with actors in the tourism sector, focussing on serviced accommodations, i.e. hotels and guesthouses. Information was gathered from 19 out of 26 serviced accommodations through several means. Accommodations were interviewed once (or occasionally twice). More in-depth research was conducted in three accommodations by having several meetings. Additionally, some other accommodations filled in a survey since this consumed less time. Lastly, interviews were held with 12 experts and governmental actors and a survey was carried out with tourists.

During my stay in Gozo and Malta, it became clear that special attention needs to be given to anonymity of the respondents due to the limited size of the islands. Communities are small and tight-knit, and therefore population sizes of subcategories often become very small. For example, the fact that Gozo only has 26 serviced accommodations creates issues with what Tolich (2004) calls 'internal confidentiality', or safeguarding anonymity between insiders. When too many characteristics are mentioned in a quote or reference, the identity of an individual participant could be revealed unintentionally. Therefore, quotes and references were case by case analysed to safeguard anonymity, in line with guidelines for research of small population sizes (Saunders et al., 2015; Tolich, 2004).

Main results: water use and management in Gozitan accommodations

1. Both direct and indirect water use matter

Both direct and indirect water use of tourists were examined in this study. Direct water use relates to water used in the accommodation or during activities of the tourist. Indirect water use is the water that is needed to create certain products that tourists use, such as food and energy (Gössling et al., 2012). This indirect water use does not have to be accounted as local since these products can also be imported (Hoekstra, 2003). Direct water use depends on the accommodation facilities such as bathroom facilities, laundries and cleaning practices, kitchen appliances, swimming pools and spa facilities. Extensive landscaping - and associated irrigation - is rare in the Gozitan accommodation sector and mainly occurs in larger, higher classified accommodations. Also, the amount of swimming pools seems to increase with higher quality of the accommodation. However, it is important to bear in mind that these accommodations can also accommodate more tourists on average. Concerning the indirect water use from food consumption of tourists, some accommodations prefer to provide local food products, which in terms of indirect water use leads to an extra demand of local water resources. However, this trend seems to be restricted by the country's limited food availability (in certain seasons or in general).

"We try and go... For example, for fruit and veg we try and stay local. So we go to local suppliers. We try and get as much as we can from Gozo as well. Obviously, within reason. You can't necessarily get everything from here." (accommodation owner/manager)

2. A mix of different water sources

The results of this research highlight the variety of water sources used in Gozitan accommodations. A distinction must be made between potable and non-potable water. In Malta, these differences in quality are often referred to in both documents and speech as first and second-class water. Purposes for non-potable water are for example, irrigation of plants, toilet flushing and washing of cars.

The governmental mains water is often used for the potable water system of accommodations and consists of groundwater and desalinated seawater from reverse

osmosis plants. Alternative water sources can be used in accommodations, which decreases the pressure on the governmental water supply and its associated groundwater use. A first alternative water source used in Maltese accommodations for potable purposes is a private seawater reverse osmosis system. However, none of the surveyed Gozitan accommodations uses such a system to desalinate seawater. There are two main factors that explain this: accommodations need to be located close by the coast and need to be large enough (in terms of bed capacity) since installing a reverse osmosis system is only beneficial for accommodations with big water volumes.

Another alternative water source is the use of private boreholes. However, this practice increases pressure on the groundwater as it directly depletes groundwater reserves. Sometimes this groundwater is treated with reverse osmosis, to be used for potable purposes. Some accommodations have their own borehole while others can buy groundwater from a private groundwater supplier who delivers water by bowzers (tankers). The latter seems to be especially used to fill up the swimming pool. The main reason to opt for private groundwater supply is the lower cost compared to mains water.

"So that we don't use the tapwater. [...] Because to fill it [the pool] up from tapwater it's very expensive. So we decided to get water from a supplier, that is much more cheaper." (accommodation owner/manager; asked about why they bought private groundwater to fill up the swimming pool)

A little more than half of the Gozitan surveyed accommodations collect and use rainwater. Mentioned purposes are the use in toilets, swimming pools, laundry and plant irrigation. Since these are also purposes for second-class private groundwater supply, there is a potential to increase the use of collected rainwater to reduce the use of private groundwater supply. Mentioned barriers for accommodations to install a reservoir are the limited space in some accommodations and the weather conditions in Gozo, which make it more difficult to efficiently use rainwater since rain tends to come in storms primarily in the winter months.

Seawater without reverse osmosis treatment can also be used in accommodations, although the use seems to be limited, probably because seawater easily corrodes materials. Mentioned purposes are the use in toilets and in swimming pools.

“I believe that they are reducing its use [seawater in toilets of an accommodation], because it’s costly to maintain the pipework inside a hotel. The normal fittings fail as seawater is aggressive. So it’s costly for them to maintain every system and use stainless steel, it’s costly.” (governmental actor)

Another water source is the reuse of treated wastewater. However, none of the surveyed accommodations reuse their used water. Only exception in some accommodations is the reuse of removed water during purification of the governmental mains water for non-potable purposes. Important constraints on investing in the treatment and reuse of wastewater, are the lack of space and the high costs of the investment. These make the installation - like reverse osmosis - only beneficial for accommodations with large water volumes. Since 2018, the government started the project “New Water”, which entails that all treated wastewater in the governmental wastewater treatment plants is made available for non-potable purposes. Although New Water can be used by actors in the tourism industry, this project seems to be mainly focusing on the agricultural sector. The project is seen as successful in decreasing the use of private boreholes since interviewed experts and governmental actors state that farmers prefer this New Water.

3. Three main factors that influence water management

Through coding, I identified the following broad categories of factors that explain the water use and management in Gozitan accommodations: water pricing, the role of tourists and eco-marketing.

3.1. Water pricing as economic motivation

Economics of water plays an essential role in explaining water use and management in accommodations, since cost-saving is an incentive to install water-saving facilities and to use alternative water sources. Water-reducing appliances such as water-saving shower heads, low flow taps and dual flush toilet systems have short payback times on investment. Alternative water sources such as rainwater or seawater are also used, mainly for non-potable purposes, because these are cheaper than the governmental mains water. However, the same motivation also stimulates the use of private groundwater supply.

“Well, it’s for our benefit [to save water], so if there’s a way, we do it, because it is for our own benefit of course.” (accommodation owner/manager)

The use of alternative water systems, such as reverse osmosis or wastewater treatment systems, needs bigger investments and only has beneficial payback times when large water volumes are used. Therefore, such investments are mainly beneficial for large accommodations. None of the surveyed Gozitan accommodations has a seawater reverse osmosis or wastewater treatment installation, which can be explained by the smaller size of these accommodations compared to those on the main island. Linked to this, renovations are relevant in explaining the water use in accommodations since these can come along with more water-efficient systems and the installation of alternative water systems.

“There’s a size threshold, so one would go into the medium to big hotels. The smaller ones, no it will... so the volume takes into account the payback period. But most of the big hotels do have them” (governmental actor; answering to the question if payback times of reverse osmosis systems are also small for smaller accommodations)

3.2. The role of tourists in water use and management in accommodations

Tourists play a role in the water use in accommodations through their individual water using behaviour. This behaviour seems to vary between tourists. From my interviews, it is apparent that accommodation staff often seems to link these differences directly to the level of water conservation awareness of the tourists. Also the fact that tourists do not directly pay for the water use was an argument highlighted in the interviews which may explain tourism water consumption. Furthermore, tourists play an indirect role by their (real or perceived) expectations and preferences. As the tourism sector’s interest is to satisfy the guests, aspects such as comfort, aesthetics and hygiene can take precedence over water efficiency.

3.3. Eco-marketing as incentive for sustainable water use

Last of all, next to water saving, eco marketing can be a strong incentive for accommodations to install water conservation practices. This can lead to efficiency improvements and associated cost savings and can attract environmentally aware tourists. Although only a small

share of Gozitan accommodations were identified as eco-certified, interest in certifications seems to increase, especially in the Maltese eco certification scheme. Identified barriers are the costs, time and effort associated with implementing the eco-criteria, and negative perceptions of the effectiveness of eco-certification marketing of accommodations towards tourists.

Conclusion and recommendations

It can be concluded that Gozitan accommodations use a variety of water sources. Incentives for sustainable water use are the associated cost savings and the use of eco-certification schemes for eco marketing. In contrast, inhibitors stem from the role of tourists and the accommodation size, limiting the capacity to invest in certain appliances (e.g. reuse of treated wastewater).

In order to support more sustainable practices in these accommodations, it is recommended to provide information concerning sustainable water management to tourist accommodation managers and owners. This would raise awareness about the benefits of water conservation, i.e. cost savings and eco marketing. Information about how to implement these measures and how to become eco-certified can also be beneficial.

Moreover, it is important to further regulate and price water sources to stimulate water conservation and to use alternative water sources such as rainwater and the reuse of treated wastewater. Additionally, the use of private boreholes that tap into the groundwater should be limited, as this groundwater is already under pressure. For this, providing information about the status of the groundwater is crucial. It is also beneficial to further regulate the use of boreholes and provide incentives to opt for other water sources such as rainwater collection and the reuse of treated wastewater.

Another possible solution is to adapt policies concerning water use in the tourism sector to the local context of Gozo. For example, accommodation sizes tend to be smaller than on the main island of Malta. There also lies a great opportunity for sustainable tourism in the Eco Gozo project, which entails that Gozo wants to become an eco-island (Ministry for Gozo, 2012). It would be beneficial to further develop this vision in the area of tourism.

A few avenues for future research arise from this study. First, it is recommended to investigate the water

management by self-catering accommodations, as these accommodations were not included in this research. Second, it is also relevant to study more specifically how smaller accommodations can use water more efficiently and sustainably, as accommodations (both serviced and self-catering) are smaller on the Gozitan island compared to the main island. Lastly, further research into the factors contributing to the success of eco-marketing, both in Malta and in general, could enhance sustainability in the tourism sector.

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