

# Good practice guide on the adoption of sustainable tourism water management solutions by SMEs



**LAS NAVES**

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## 1 Introduction

Under the pressure of tourism, water demand strains supply capacity in the Mediterranean coastal areas affecting negatively the maintenance of natural & cultural heritage. In the last fifty years, the aggregate water demand in the Mediterranean has doubled, due to the tourism's water consumption which, per capita, is double than this of a local resident's. Seasonal tourist demand places enormous pressures on local water supplies in the CASTWATER destinations where water resources are more likely to be scarce. The seasonality and the localisation of tourism activities and infrastructures in arid areas highlight the importance to measure regional tourism's water effect at an appropriate temporal & spatial scale rather than just relying on national assessments. Furthermore, the adoption of water efficiency measures by the tourism industry is still very low in the Mediterranean coastal areas, where losses, leakages & wastage account for 40% of the total demand. In some cases these measures introduce conflicting interests of investments for the enterprises with regards to the retrofitting, up skilling & maintenance costs.

This document is the final deliverable of CASTWATER Activity A3.5 entitled "Collection of good practices and case studies on sustainable tourism water management". The Good Practice Guide (GPG) presents a number of cases to illustrate how tourism SMEs in Mediterranean have successfully implemented sustainable water management measures, providing guidance for others on how to promote water efficiency and accommodate the large (short-term) water demand during high touristic seasons.

The case studies provide illustrative and practical examples for elaborating a comprehensive water conservation policy, for the different measures to be employed for decreasing water consumption and promoting resource efficiency, and highlight the major results and lessons learnt during initiatives implementation.

The key objective is to create a basis, addressed to tourism SMEs in Mediterranean, for sharing successful and innovative cases of sustainable tourism water management measures and inform policy makers about possible ways to support the implementation of relevant initiatives in their regions and promote improvement of own policy instruments' implementation.

The guide is outlined as follows: section 2 provides information about the context of the CASTWATER project; section 3 outlines the main categories of water management practices as defined in the literature;

section 4 describes the methodological framework upon which the collection of cases was carried out; section 5 presents the main findings and common issues drawn from the quantitative analysis of cases; section 6 describes the approach employed for the identification of good practices including the scoring assessment grid; section 7 presents in detail the most successful cases collected by project partners, showcasing the accomplishments achieved; and section 7 elaborates on the main lessons learnt from actual implementation, delivering practical guidelines for tourism SMEs on how to improve water management.

## 2 The CASTWATER project

The "Coastal areas sustainable tourism water management in the Mediterranean - CASTWATER" project aims to support sustainable tourism water management in MED coastal areas, by improving the monitoring and assessment of the water sustainability performance of the tourism.

### 2.1 CASTWATER outputs

CASTWATER brings together 11 partners from 7 countries to minimise the impact of tourism activities on environmental heritage and improve the management of water resources. To this end, CASTWATER follows a studying, testing and transferring approach of transnational cooperation, involving public authorities, tourism enterprises, and relevant agencies and stakeholders. Main outputs include:

- Promotion of widespread uptake of water sustainability indicators & evaluation criteria to measure the tourism sector performance in water efficiency.
- Development, validation, pilot testing and evaluation of an online tool for SMEs to monitor, compare and self-assess water efficiency status & efforts, and for public authorities to identify issues, and assess the overall situation of their territories.
- Development of transferable learning & knowledge resources, and local workshops for public authorities' staff on sustainable tourism water management.
- Elaboration of transferability and action plans for public authorities to support the policy integration of sustainable tourism water management approaches into policies and measures, and for enterprises to integrate best practices in their day to day operations.




### 2.2 CASTWATER expected results

CASTWATER will provide means for managing environmental risks linked to tourism activities in the participating areas, targeting to achieve:

- Enhanced capacity of public authorities to monitor and assess the territorial tourism water sustainability.
- Improved efforts to self-assess water sustainability by a) monitoring water sustainability efforts, and b) adopting water efficiency measures, solutions and relevant staff training.

- Improved knowledge and policy transfer capacity of public authorities to integrate sustainable tourism water management into territorial plans.

## 2.3 CASTWATER partners

Country	Partner
	Municipality of Rethymno (RETHYMNO)
	Emilia Romana Region – Directorate General for Industrial Production, Trade and Tourism (RER)
	Veneto Region – Tourism Department (VR)
	Water Board of Lemesos (WBL)
	University of Patras (UPatras)
	Euromediterranean Water Institute Foundation (F-IEA)
	Institute of Agriculture and Tourism (IPTPO)
	Las Naves – Foundation of the Valencian Community to promote strategic urban development and innovation (Las Naves)
	Departmental Council of Herault (CD34)
	Malta Regional Development and Dialogue Foundation (MRDDF)
	Energy and Water Agency (SEWCU)

### 3 Categories of water management practices

Water consumption can be managed through demand-side and supply-side strategies (Gossling et al., 2011). Demand-side strategies refer to measures/solution, targeting to adjust water demand and reduce water consumption while supply-side strategies focus on increasing the availability of water through water recycling/reuse infrastructures.

#### 3.1 Demand-side management practices

All tourist facilities can save substantial amounts of water by adopting measures that can influence water demand and reduce water consumption. For instance, replacing an 18 litres per flush toilet with an ultra-low volume 6 l litres flush model represents a 70% savings in water flushed, whilst reducing indoor water use by about 30%<sup>1</sup>. Beal et al. suggest that water demand management strategies should include a combination of behavioural (e.g. educational programmes) and technical solutions (e.g. regular maintenance) in order to minimise peak water use. This section presents a number of demand side management measures, as discussed in the literature.

##### 3.1.1 Creating a water management plan

Strategic planning is a key aspect of a successful demand management strategy. Creating a water management plan, which will present buildings' water use profile and provide information about the areas for targeted interventions/improvements to increase water efficiency, will substantially facilitate the elaboration and implementation of water efficiency measures, fostering sustainable consumption and water conservation. A water management plan provides clear information/data about how a tourism establishment uses water resources, reveal the opportunities for reducing water consumption, assess the impact of selected measures based on cost effectiveness and guest experience, and provide the foundation for developing a comprehensive business strategy.

The first step to take when preparing a water management plan is to measure water usage and establish some tangible targets. Overall, the development of a water management strategy will enable tourism

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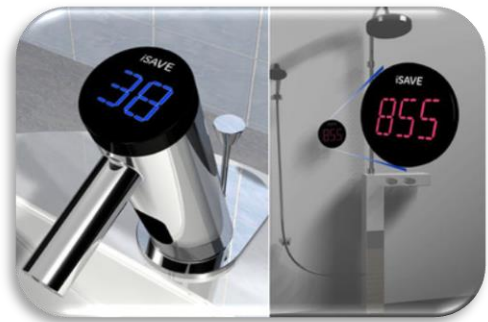
<sup>1</sup> [http://eartheasy.com/live\\_water\\_saving.htm](http://eartheasy.com/live_water_saving.htm)



SMEs to a) develop a good understanding concerning current water consumption patterns and associated costs; b) define long and short-term water conservation goals; c) determine which strategies to pursue in each facility for optimising water consumption; and d) monitor progress towards defined conservation targets. Finally, there is a number of standards available (e.g. ISO14000, EMAS) that provide practical tools for companies and organisations of all kinds (incl. tourism facilities), looking to evaluate, report, and improve their environmental performance.

### 3.1.2 Using water efficient fixtures

There are a number of affordable and easy-to-use water saving devices that can be used by tourism sector businesses (e.g. hotels, restaurants) to decrease water consumption during periods with high water demand. These appliances and fixtures can improve facilities' water efficiency in a passive way (without requiring behavioural change), requiring only installation and commissioning. Water savings



can be easily achieved by replacing older model devices with more efficient ones. For example, the replacement of conventional toilets (13 litres per flush) with low-flow toilets (6 litres per flush) can reduce water usage up to 68%. Showerheads are considered another part of a property/facility, in which water efficient behaviour can be adopted and implemented with success. Low-flow showerheads are designed to reduce the water flow without changing the feeling of the flow through flow disperser, reducing the actual amount and volume of water you use for the sink or the shower.

Several tourism SMEs in Mediterranean have outdoor spaces (i.e. gardens and landscapes) requiring irrigation, especially during the summer months. This creates an additional demand for water that strains coastal areas' supply capacity. In this case, using water-efficient technologies can make a big difference in keeping an irrigation system running efficiently. Water efficient irrigation technologies have been designed to promote water conservation in businesses' gardens and landscapes, using smart control systems and environmental sensors that can diminish water consumption for gardening and watering plants. A number of water efficient devices (e.g. rain sensors, soil moisture sensors, and "smart" irrigation controllers) can be installed to prevent the irrigation system from operating when it is not needed, utilising

weather based information. Smart irrigation controllers use local weather information/data to determine when and how much to water; while micro-irrigation or drip systems constitute a form of irrigation that saves water and fertilizer by allowing water to drip slowly to the roots of many different plants, either into the soil surface or the root zone, through a network of valves, pipes, tubing, and emitters. Drip irrigations systems use 20% - 50% less water than conventional pop-up sprinkler systems, generating savings up to 115,000 litres per year (in a hotel case).

### 3.1.3 Regular maintenance of water infrastructures

Maintenance is a key component for saving water resources. Dismantled or aging water infrastructures are responsible for losses, leakages and wastage, which account for 40% of the total water demand in the Mediterranean (Ferragina, 2010). Proper inspection and maintenance of plumbing fixtures and appliances can help minimise the occurrence of malfunctions in equipment and leaks. The simplest way to conserve water in commercial plumbing systems is to establish a regular maintenance programme, which may include conducting monthly maintenance checks in water infrastructures and appliances, to promptly detect leaks as they occur and resolve plumbing problems.

### 3.1.4 Educational programmes for staff

Water conservation strategies (at the business level) require staff participation to become a success and reach water efficiency targets/milestones. Training staff on how to make prudent use of water and how to maintain equipment for optimum energy-efficiency is highly recommended in order to mobilise personnel not only to adopt sustainable water consumption patterns



but also to adhere to business water management programme for reducing waste of resources. Keeping staff informed about water savings efforts and the negative consequences resulting from ignoring water usage problems, encouraging them to share ideas and put forward their own suggestions for water reduction and ensuring staff feel responsible for reaching efficiency goals, will essentially help maximise

the impact of efforts whilst contributing to communicating the importance of using water wisely to customers and suppliers.

The most critical point in training and engaging in water conservation is the development of clear guidelines for them to follow on daily operations, such as:

- How many times to flush the toilet when cleaning, not to leave taps running or use excessive water,
- Keeping records of maintenance activities and identified problems (e.g. leaks from the shower or tub),
- Inspecting swimming pools, irrigation systems, laundry equipment, and kitchen equipment for identifying leakages and malfunctions,
- Communicating water efficient practices to guests and customers.

### **3.1.5 Raising customers' awareness on sustainable water consumption**

A comprehensive water management strategy should involve all actors taking use of property's facilities and services, including customers and guests. Raising customers' awareness about water issues and businesses' commitment to promote sustainable management will help to make the use of water resources more prudent, preventing wasteful practices (e.g. long-time showers, letting the tap run when brushing teeth). What is more, it can increase customers' engagement to participate in voluntary actions, such as hotels' towel and sheet reuse programs. Voluntary programs that encourage guests to request clean linens when needed not only contribute to saving hundreds of gallons per year but also extend the life of sheets, towels, and washing machines and dryers.

Simple steps can be taken by tourism SMEs to increase their customers' awareness on sustainable water usage and recycling, including a) communicating the importance of fresh water resources within the area to accommodate for the increasing demand during peak touristic seasons, b) informing about the measures adopted by the enterprise for diminishing water consumption, c) encouraging to shower instead bath and not letting the faucet run when it is not in direct use, d) placing linen and towels reuse placards and signs easy to find with clear instructions, and e) encouraging to report malfunctions and leakages in water appliances and plumbing systems.

## 3.2 Supply-side management practices

Water recycling constitutes an excellent way to conserve water in an accessible, smart and effective manner, providing tourism establishments with additional water resources in situations where it's difficult to cover the growing demand for water through public utilities. Recycling refers the process of removing the solids and impurities from wastewater and rainwater to make it reusable for beneficial purposes such as landscape irrigation, toilet flushing, washing clothes and industrial processes. There are a few approaches to foster water recycling and reuse in the tourism industry (i.e. supply-side measures); the two most widely known are a) rainwater harvesting and b) greywater reuse.

### 3.2.1 Greywater reuse

Greywater refers to untreated household/business wastewater that has not come into contact with sewage (or "black water"). Common sources of greywater include showers, baths, sinks, and clothes washers. Wastewater from kitchen sinks and automatic dishwashers tend to have high concentrations of organic matter that encourage the growth of bacteria. Greywater can be reused for purposes that do not require potable water such as landscaping, agriculture, or for flushing toilets. Greywater can also be allowed to seep into the ground to recharge aquifers and reduce the volume of wastewater needing to be treated. Greywater systems range from simple low-cost devices that divert greywater to direct reuse, such as in toilets or outdoor landscaping, to complex treatment processes incorporating sedimentation tanks, bioreactors, filters, pumps, and disinfection. Grey water systems enable up to 50 per cent of wastewater to be returned to the property after treatment for toilet flushing.

### 3.2.2 Rainwater harvesting

Several tourism establishments (e.g. hotels, restaurants) have large roofs that can be used to gather fresh rainwater, as well as additional impervious surfaces such as parking lots and sports facilities, which can be utilised to capture storm water on site. Rainwater harvesting refers to the collection and storing of rainwater from rooftops and surfaces into natural reservoirs or tanks, with the aim to be reused for gardens, livestock, irrigation, indoor heating and domestic use with proper treatment. Rainwater harvesting provides an independent water supply during regional water restrictions (under excessive water demand) and is often used to supplement the main supply. With rooftop harvesting, most any

surface — tiles, metal sheets, plastics, but not grass or palm leaf — can be used to intercept the flow of rainwater and provide a business with high-quality drinking water and year-round storage.

*Figure 1: Categories of sustainable water management solutions*

#### Demand-side management practices

- Creating a water management plan
- Using water efficient fixtures
- Regular maintenance of water infrastructures
- Educational programmes for staff
- Raising customers' awareness

#### Supply-side management practices

- Greywater reuse
- Rainwater harvesting

## 4 Survey purpose and methodology

### 4.1 Purpose and research questions

The good practice guide (GPG) aims to create a basis for sharing successful and innovative cases of sustainable tourism water management measures, seeking to a) demonstrate how tourism SMEs in the Mediterranean have successfully implemented sustainable water management measures, and provide guidance for others who wish to do the same, and b) inform policy makers about possible ways to support the implementation of relevant initiatives and policies in their regions.

The collection of cases and empirical evidence provide insights on: a) key initiatives undertaken by tourism SMEs (focusing on the improvement of relevant demand and supply side measures) to improve water efficiency, whilst seeking to achieve enhanced economic performance during high touristic seasons, b) the effectiveness, cost, and impact of sustainable water management approaches to promote water efficiency and support the development of a sustainable and responsible coastal and maritime tourism in the Mediterranean area, c) the role of local administrations, the conditions and prerequisites, and the main challenges associated with the adoption/implementation of water management solutions by tourism SMEs, and d) the potential transferability and uptake of such practices by tourism SMEs, identifying under which circumstances these practices can be transferred and deployed in different regions and types of establishments.

This study therefore addresses the following research questions:

1. Which have been the most cost-effective water management solutions applied by tourism SMEs, in terms of improving water efficiency? Why have these cases been proven effective?
2. What are the main problems/challenges encountered prior to the adoption, and during the implementation of sustainable water management measures by SMEs?
3. What are the major benefits derived from the deployment of sustainable water management solutions at the SME level?
4. What lessons can be learnt from the relevant experience in adopting water management solutions?
5. How transferable are these practices in other MED coastal areas and types of establishments?
6. What type of support from local/regional authorities has been proven to be effective in the adoption of these management practices?

## 4.2 Research methodology and documentation tools

Desk research was the main research methodology employed for collecting cases on sustainable tourism water management measures/practices. The reason why desk research was selected as the primary methodology for this study is that it represents an efficient and cost-effective way to capitalise on existing knowledge (e.g. business reports, scientific articles and studies). This approach, which is focused on retrieving secondary data from different sources, also bears the advantage of providing perspectives based on already validated evidence. In our case, this type of research comprised secondary data research, during which project partners went through various texts and documents from relevant secondary sources of information, like tourism establishments' websites, official pages of water management bodies across the Mediterranean (e.g. [www.eydap.gr](http://www.eydap.gr)), and web portals on sustainable water management and water conservation issues (e.g. [www.greenhotelier.org](http://www.greenhotelier.org)).

The idea was to facilitate the identification of relevant cases by project partners, before proceeding with a more detailed investigation of the identified practices through semi-structured interviews (to be conducted by project partners) with tourism SMEs' representatives that have been involved in the implementation of sustainable water management practices.

Semi-structured interviews were scheduled to be conducted in the case that desk research had not produced the data/information required for the study. This activity meant to complement the results drawn from secondary research and facilitate the collection of experience-based views and perceptions on practices' effectiveness and impact.

The methodology provided a case documentation form to guide the identification and collection of cases and ensure that all information will be reported in a consistent and clearly structured manner. The documentation sheet was not a questionnaire addressed to tourism SMEs' representatives, but an instrument used by project partners to document all relevant evidence/information for each case (i.e. water management solution), as retrieved through desk research and semi-structured interviews.

A web-based approach was employed for reasons of practicality, and to facilitate data collection, coding, and analysis processes. The case documentation sheet was made up of 4 sections (a. Case Identity, b. Case Description, c. Needs, Barriers, Enablers, d. Results & Prospects), which were designed to address the

research questions and objectives of the good practice guide. The sheet's sections/items and their mapping to the survey's research questions are presented in the following table.

*Table 1: Mapping of the case documentation sheet's items*

<b>Nr.</b>	<b>Research Questions</b>	<b>Relevant Section in Sheet</b>	<b>Field/items</b>
<b>1.</b>	Which have been the most cost-effective water management solutions applied by tourism SMEs, in terms of improving water efficiency? Why have these cases been proven effective?	Section B, C, D	<ul style="list-style-type: none"> <li>- Key initiatives</li> <li>- Economic cost</li> <li>- Benefits sought</li> <li>- Certificates &amp; awards</li> <li>- Success factors</li> </ul>
<b>2.</b>	What are the main problems / challenges encountered prior to the adoption, and during the implementation of sustainable water management measures by SMEs?	Section C	<ul style="list-style-type: none"> <li>- Challenges and problems</li> <li>- Ways to overcome the identified problems</li> </ul>
<b>3.</b>	What are the major benefits derived from the deployment of sustainable water management solutions at the SME level?	Section D	<ul style="list-style-type: none"> <li>- Challenges and problems</li> <li>- Ways to overcome the identified problems</li> </ul>
<b>4.</b>	What lessons can be learnt from the relevant experience in adopting water management solutions?	Section B, C, D	<ul style="list-style-type: none"> <li>- Motivations</li> <li>- Challenges and problems</li> <li>- Success factors</li> </ul>
<b>5.</b>	How transferable are these practices in other MED coastal areas and types of establishments?	Section D	<ul style="list-style-type: none"> <li>- History of transferability</li> <li>- Features that make the practice transferable</li> </ul>
<b>6</b>	What type of support from local / regional authorities has been proven to be effective in the adoption of these management practices?	Section C	<ul style="list-style-type: none"> <li>- Support by local authorities</li> </ul>



As mentioned above, the documentation sheet was provided as an on-line questionnaire (through Google Forms), which was directly completed by project partners. However, the majority (6 out of 11 project partners) preferred to describe and deliver their cases in a separate Word or PDF file. The research lasted for 5 months, from May 2017 until October 2017. Las Naves was the partner responsible for coordinating the collection of data/evidence, informing partners about delays or shortcomings, and encouraging them to collect as many cases as possible.

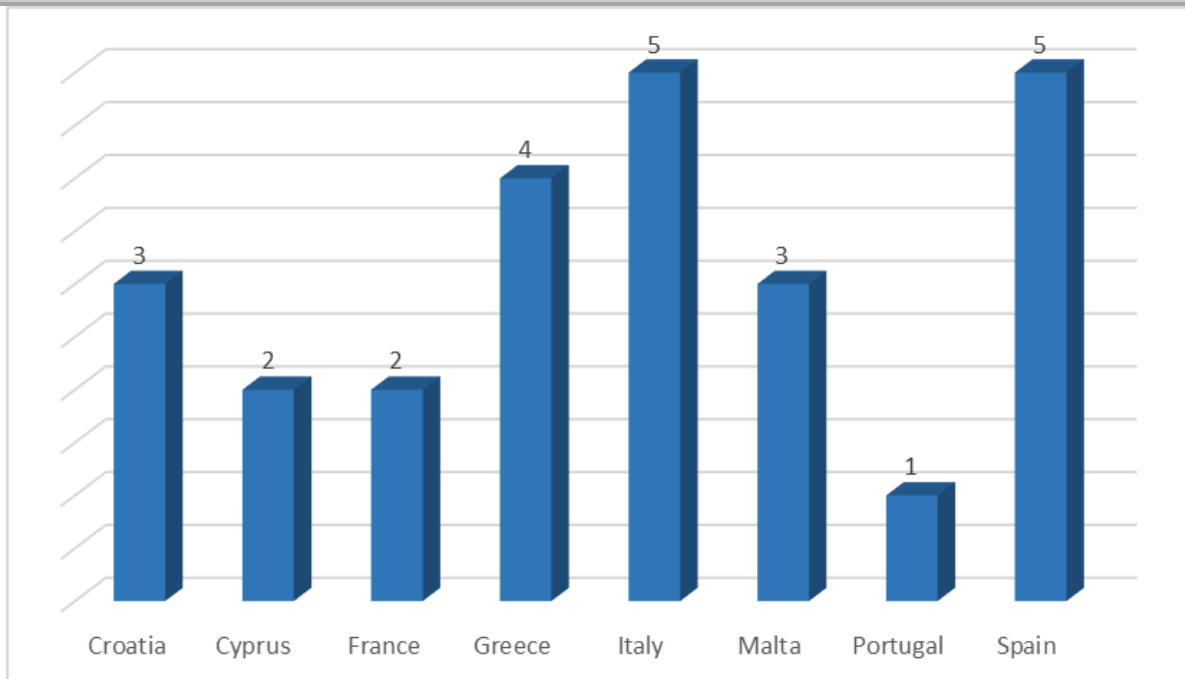
## 5 Main research findings (common issues)

This section discusses the main findings drawn from the statistical analysis of cases collected. The goal is to identify common issues and conclusions related to the successful adoption and implementation of water efficiency measures in tourism SMEs. In total, 25 cases were collected and described by project partners through the online form or as a PDF or Word file. The results are deemed representative in terms of geographical distribution and type of establishment.

### Location

Regarding geographical distribution, Italy and Spain are found to participate with the highest rate, accounting together for 40% (i.e. 5 cases from each country) of total collected cases. Greece contributes with 4 cases (15.4%), followed by Malta and Croatia with 16% participation rate. The remaining cases come from France, Cyprus and Portugal (Figure 2). It must be mentioned that all consortium partners contributed to data collection with cases from their own territory (incl. neighbouring countries), demonstrating a high level of commitment.

**Figure 2. Sustainable water management solutions: Cases per country (n=25)**



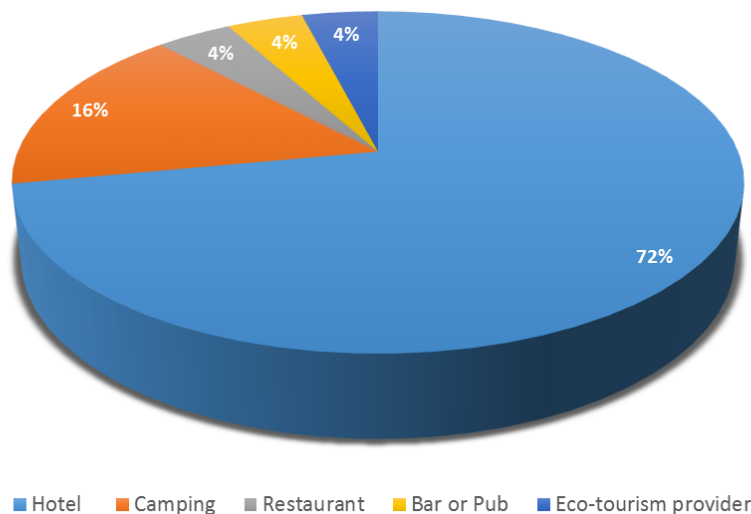
Source: CASTWATER A3.5 results

### Type of establishment

Figure 3 presents the collected cases per type of establishment. The secondary research resulted in identifying 25 cases of tourism SMEs that have implemented water management measures to promote water efficiency and environmental protection. The sample is overwhelmed by environmental initiatives carried out by hotels (72%). Environmental management has become an important issue in the hospitality industry, with more and more hotels adopting sound environmental management practices in response to the growing concerns for sustainable tourism products. Another key reason is that the hotel sector consumes far more water than the other types of establishments; thereby water savings can have a big impact on their expenses. In addition, the hotel sectors' financial capacity or easy access to loans and subsidies makes (for hotels) more affordable / feasible an investment in water efficiency technologies, which is characterised by high upfront costs and large payback periods.

**Figure 3. Sustainable water management solutions: Cases per type of establishment**

**% of collected cases (n=25)**



Type of establishment	Number of cases
Hotel	18
Camping	4
Restaurant	1
Bar or Pub	1
Eco-tourism provider	1
<b>Total</b>	<b>25</b>

Source: CASTWATER A3.5 results

A significant share of cases (i.e. 16%) describe water management measures adopted by campsites, in an effort to satisfy the increasing water demand during summer months. The remaining cases comprise practices from restaurants, bars, and eco-tourism providers. Relevant measures include the installation of water efficient fixtures such as low-flow showerheads and efficient dishwashers, greywater and rainwater harvesting systems as well as placards and signs with instructions for customers on how to change their behaviour towards water sustainability.

### **Water management solutions**

The literature review indicates that several types of water management measures (e.g. water saving devices, efficient irrigation technologies, regular maintenance, smart water metering, rainwater harvesting, and communication campaigns) can be adopted by the tourism industry to promote sustainable water management. Generally, water management can be built on two strategies; demand side management (decreasing water consumption) and supply side management (increasing water supplies). Nonetheless, a mixed approach may result in both reducing water usage and raising available water capacities. Figure 4 presents the different types of water management solutions adopted by the tourism enterprises, as described by project partners.

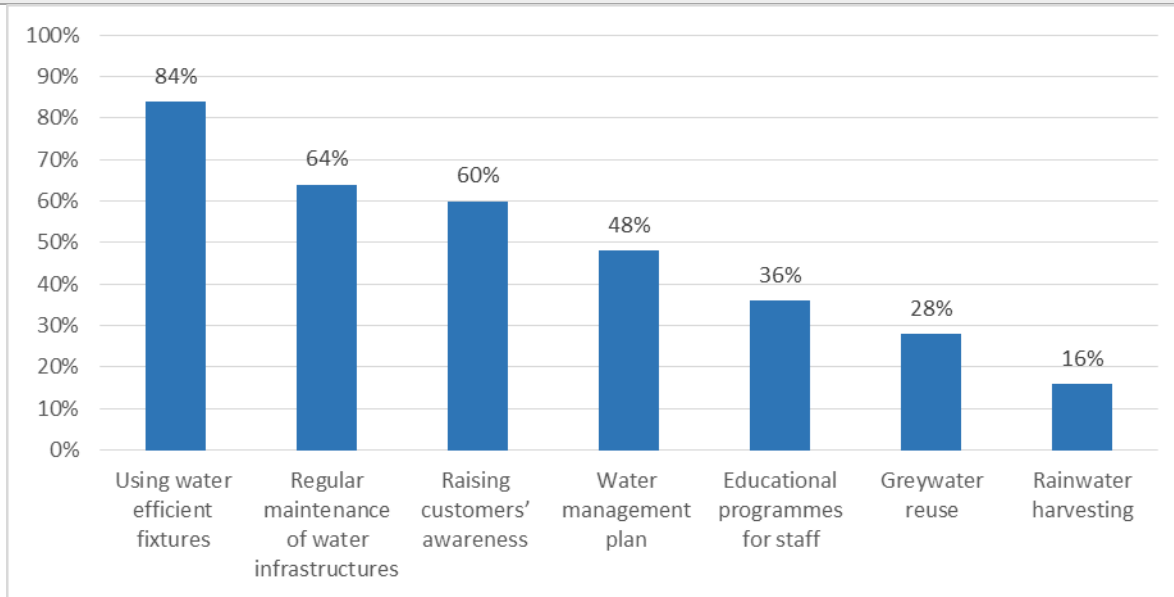
Survey results show that water efficient fixtures (e.g. pressure regulators, low-flush toilets, irrigation technologies) account for 84% of all the solutions adopted by tourism establishments. The main reason is that tourism SMEs can decrease indoor water consumption by 30% by installing water efficient fixtures, while there is even greater potential to reduce outdoor water demand. What is more, they are not associated with high investment costs and the payback period does not usually exceed two years. Maintenance is also recognised as a key measure for saving water resources. More than half (i.e. 64%) of the tourism SMEs have established a regular maintenance program for plumbing infrastructures and water devices/appliances. The main objective is to minimise the occurrence of malfunctions and leaks, which account for a significant share of indirect water use. Initiatives to raise customers' awareness on water issues follow with 60%.

The majority strives to make the use of water resources more prudent and to prevent wasteful practices by informing customers about water scarcity and sustainable water management, whilst seeking to increase their commitment/willingness to participate in sustainability practices. This is mostly realised through signs with instructions and tips on how to minimise water consumption and by employing linen

and towel reuse programs. Creating a comprehensive water management plan is also a key component of a successful water management strategy. The 48% of tourism SMEs have elaborated a water conservation program to prescribe the different measures to be taken and set specific targets and goals.

**Figure 4. Water management solutions adopted by tourism SMEs**

**% of SMEs using each solution**



Solution	Number of SMEs
Using water efficient fixtures	21
Regular maintenance of water infrastructures	16
Raising customers' awareness	15
Water management plan	12
Educational programmes for staff	9
Greywater reuse	7
Rainwater harvesting	4
Other	8

Source: CASTWATER A3.5 results

As regards supply-side measures, the use of greywater and rainwater harvesting systems appear to be a less popular option for tourism SMEs. The main reason is that the overall costs installing a greywater or rainwater harvesting system are far greater than implementing soft measures (e.g. regular maintenance, raising customers' awareness, and training staff) or purchasing low cost water efficient appliances. Indicatively, the return on investment (or else payback period) for a greywater reuse system may exceed

five years. Finally, it must be highlighted that the big majority (80%) has employed a multifaceted approach, adopting a series of different measures to reduce water consumption and promote environmental protection.

### **Problems**

To address water scarcity in Mediterranean and promote water conservation, it is critical to understand the main challenges/problems hindering the implementation of water management solutions by tourism SMEs. The literature review highlights key barriers such as the lack of political support, the perception that water resources will remain affluent, the lack of experience in applying sustainable practices, the lack of financial resources and the limited environmental awareness among suppliers. Project partners were asked to describe the problems encountered by tourism SME during the implementation of the identified water efficiency solutions, with the aim to spot the main barriers to sustainable water management.

Survey results show that 3 out of 4 tourism SMEs have encountered difficulties (at least one difficulty) prior or during the implementation of water efficiency measures. Nevertheless, the extent of these difficulties did not pose major obstacles that could essentially prevent such investments. The lack of financial resources and the limited support by local policy makers were the two most influential factor in hindering the adoption of water efficient

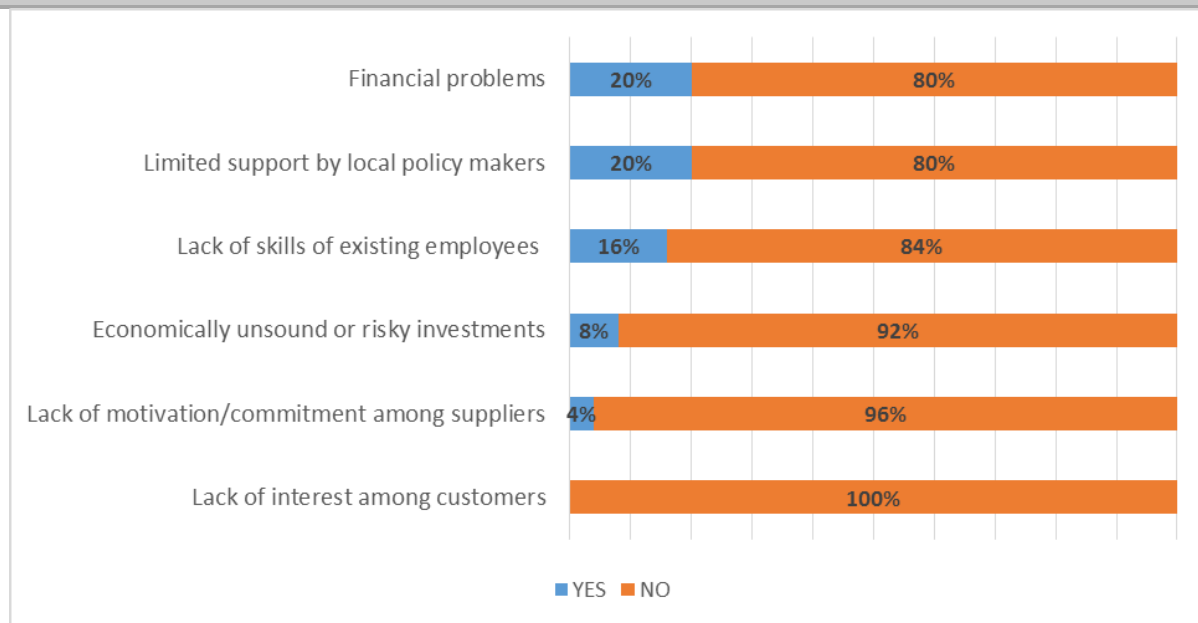
**26%** of tourism SMEs encountered no difficulties prior or during the implementation of water efficiency measures

measures (Figure 5). Financial constraints remain one of the biggest barriers to environmental protection. Tourism SMEs do not have the necessary resources to implement such investments while access to finance from external sources (e.g. banks, public authorities) seems to be limited, creating further bottlenecks. Therefore, there is an urgent need to address this challenge by bringing down the cost of environmental activities and investments (incl. sustainable water management) and increasing the availability of capital through funding programmes and support mechanisms.

When it comes to political support, public authorities should create an enabling environment for investments in sustainable water management. This is particularly true considering that policy making can affect the different dimensions/aspects underlying environmental investments/initiatives, including access to finance and technological equipment, capacity building and human resources, market linkages, and access to key information, among others, through regulations, interventions, and schemes.

Furthermore, the implementation of water efficiency measures requires staff that will be competent to perform water management procedures (e.g. leakage detection) and use water efficiency technologies. The need for highly skilful personnel with an environmental culture is necessary for all types of tourism establishments. Figure 5 presents the tourism SMEs' replies on the main problems encountered prior and during the implementation of water efficiency measures.

**Figure 5. Problems encountered by tourism SMEs prior & during the implementation of measures**



Problems	"Yes"
Funding, lack of financial resources	5
Regulation / limited support by local policy makers	5
Lack of expertise / skills of existing employees	4
Economically unsound or risky investments	2
Lack of motivation and commitment among suppliers	1
No problems encountered	6
Other	1

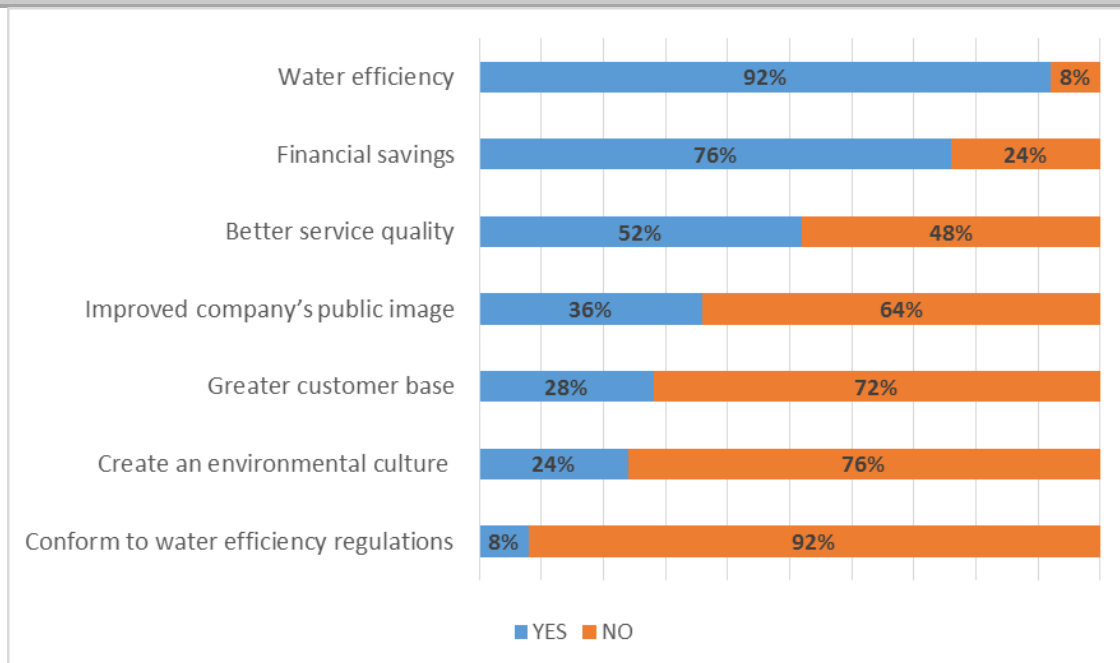
*Source: CASTWATER A3.5 results*

## Results

Sustainable water management entails considerable benefits that are not limited to improve water efficiency, but can include economic, societal and political benefits. From an environmental perspective, it allows to address key environmental issues threatening the Mediterranean Region such as water

scarcity, soil erosion, deforestation, biodiversity loss and natural landscape degradation. The shift towards sustainability practices will also contribute to MED regions' need to diversify their tourism, by adding sustainable tourism as a complementary approach to the current tourism paradigm. What is more, tourism establishments with an environmental focus will act as dissemination channels and reference points, assisting to raise environmental awareness and create a sustainability culture within the society. Finally, sustainable water management can lead to substantial financial savings for the tourism SMEs mostly through lower water bills and less expenses for maintenance and repairing.

**Figure 6. Achieved benefits from water efficiency measures adopted by SMEs**



Results	"Yes"
Water efficiency & resource savings	23
Profitability & financial savings	19
Better service quality	13
Improved company's public image	9
Greater customer base	7
Create an environmental culture	6
Conform to water efficiency regulations	2
Other	2

Source: CASTWATER A3.5 results



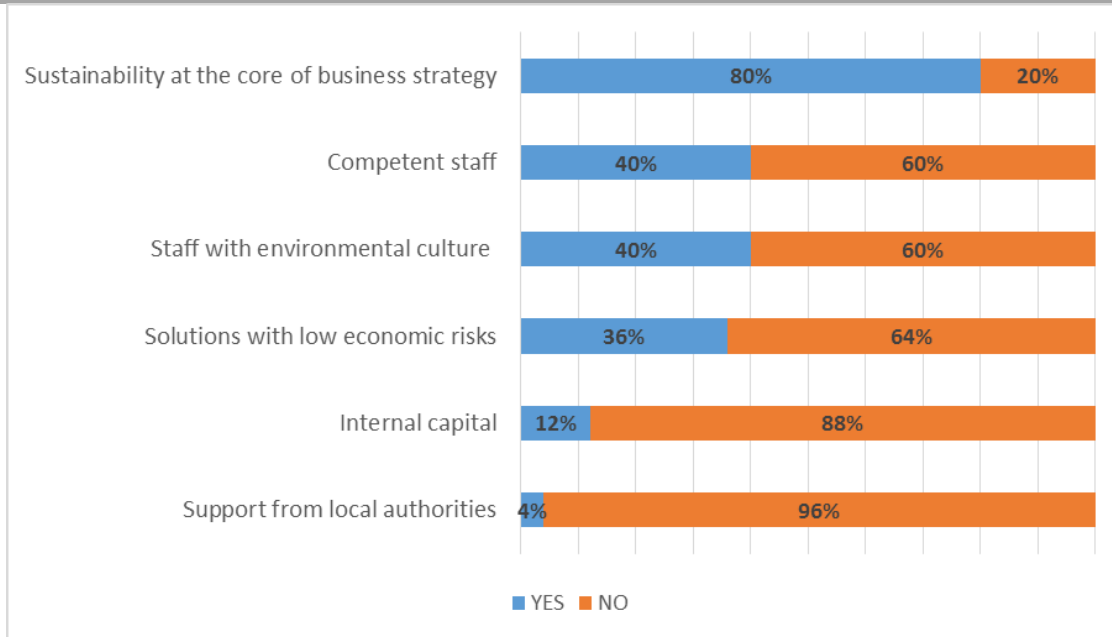
The adoption of water efficiency measures has been found by CASTWATER partners to generate positive environmental, economic and branding outcomes. Figure 6 presents an overview of the benefits created by the cases analysed. Evidence shows that 92% of tourism SMEs managed to enhance their environmental performance (i.e. i.e. water efficiency and resource savings) via the implementation of water efficiency measures. Environmental benefits are followed by economic and branding improvements. The majority (76%) of tourism SMEs report significant financial savings stemming from decreased water consumption and less repairing works. Half (52%) of tourism SMEs managed to increase clients' satisfaction score via demonstrating compliance with sustainability principles and providing better service quality. Another key benefit is the improvement of SMEs' brand. Tourism SMEs, which have adopted a sustainable water management policy, achieved to receive public recognition for their initiatives (36%), expand their customer base by attracting visitors that are particularly focused on environmental sustainability (28%) and contribute in creating an environmental culture within the society (24%).

### **Perceived key enablers**

The literature indicates that there is a great range of factors affecting companies to apply sustainable water management practices into day-to-day business operations, ranging from the prevalence of resistance to organisation change to the availability of an adequately skilled workforce and access to finance and technical/business support services. Some of these factors are internal, reflecting tourism SMEs' capability to carry out water management procedures or to convince customers to change their patterns of water consumption. Other factors are external, shaping the overall regulatory and business environment, such as market maturity and readiness to comply with environmental regulations and higher political level commitment to promote sustainable water management.

Figure 7 presents the key enablers to the adoption of sustainable water management solutions. More precisely, factors such as business' strategic focus on sustainability (80%), the availability of staff with environmental culture and competent to perform water management procedures and use water efficiency technologies (40%), as well as low economic risks (36%) have been seen as the key drivers for the successful adoption/implementation of water efficient measures. In contrast, the lack of internal capitals (12%) and the limited support received by public authorities (4%) have been identified as the main barriers to the adoption of sustainable water management solutions.

**Figure 7. Perceived enablers for the adoption of sustainable water management measures by SMEs**



Results	"Yes"
Sustainability is at the core of business strategy	20
Staff with environmental culture	10
Staff competent to perform water management procedures	10
Low economic risks	9
Internal capital	3
Support from local authorities	1
Other	3

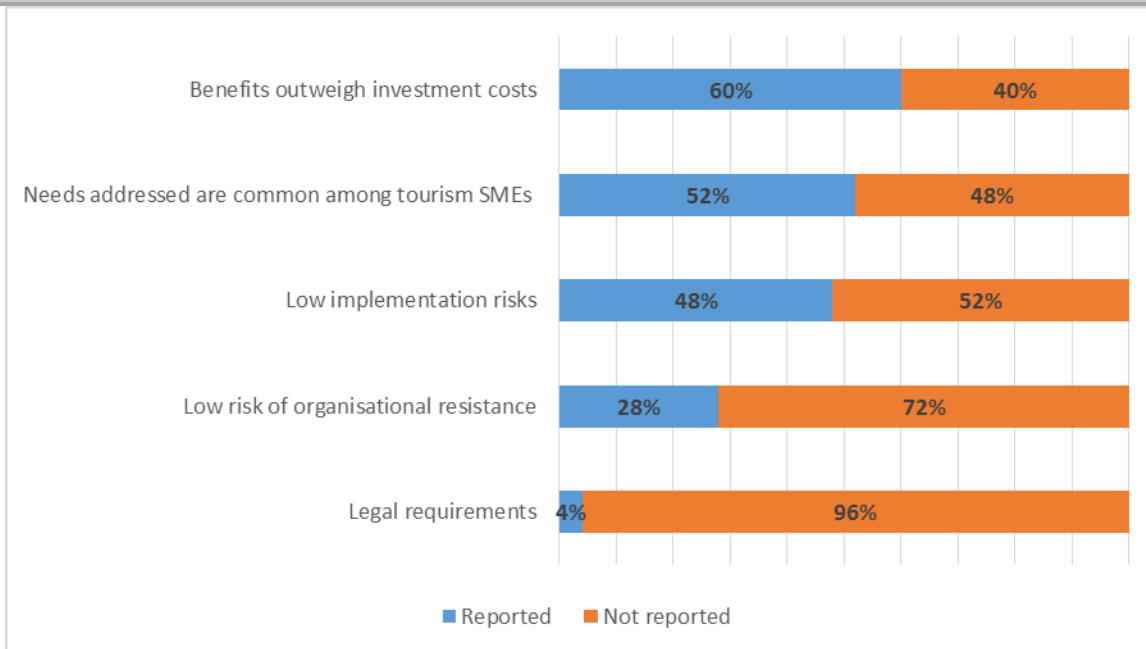
*Source: CASTWATER A3.5 results*

### **Transferability potential**

Generalizability and transferability are significant elements of any case study intended to act as an example for other organisations. Generalizability can be defined as the extension of research findings and conclusions from a study carried out on a specific sample to the large population, while transferability refers to the process of applying a particular approach to other similar situations or settings. The main purpose is to identify whether the selected cases on BWMPs include elements that make them transferable into other regions and different types of tourism establishments and to anticipate the expected results (if replicated) based on generalisation principles. The study demonstrates that a sustainable water management practice can be transferable, only if a number of conditions are satisfied.

The most important (reported) factors in determining a case's transferability is a) the demonstrated achieved benefits to outweigh the investment costs (60%) and b) the compatibility of needs addressed by the particular practice among the different tourism establishments and regions in Mediterranean (52%). Additional key elements have to do with the low implementation risks (48%) and the low risk of organisational resistance within tourism SMEs (28%). In addition, scalability is a key component of transferability, as it entails not only the creation of internal economies of scale for SMEs adopting a number of sustainable water management solutions, but also the emergence of external economies of scale in the case the tourism industry's scope of operations expands due to, for example the emergence of a niche market for sustainable tourism products or/and the construction of modern public water infrastructures.

**Figure 9. Factors influencing the transferability of examined cases in a positive way**



Factors	Reported
Demonstrated achieved benefits outweigh investment costs by far	15
Needs addressed are common among tourism SMEs across MED regions	13
Low implementation risks	12
Low risk of organisational resistance	7
Legal requirements	1
Other	2

Source: CASTWATER A3.5 results

## 6 Identification of best practices

The methodology defined a number of quality specifications and evaluation criteria to make it easier to assess the collected cases on a “good practice” basis. In our case, a good practice can be defined as a water management solution that a) addresses a common problem or issue (e.g. water scarcity, resource efficiency, soil erosion, air pollution) experienced by different tourism establishments and regions, b) makes an original contribution or offers a significant improvement to a shared problem compared to existing practices, c) has proved successful by providing measurable or demonstrable results or by going through internal or external validation and evaluation, and d) can be easily transferred into other organisational or regional settings.

The selection of good practices was a two stage procedure. The first stage included an initial screening to identify whether the collected cases meet the requirements prescribed in the methodology and whether the accompanied data/information is complete and accurate. The results showed that 21 out of 25 cases met to some extent the following criteria:

- Case studies that include existing tourism sector initiatives undertaken for promoting sustainable tourism water management oriented to or implemented by tourism SMEs, whilst referring to the categories of water management solutions presented in section 4. Cases that describe the policy framework underlying water management or practices that do not promote water efficiency (e.g. salt water pool systems) were not taken into consideration.
- Cases retrieved from the countries represented in the project consortium (Greece, Italy, Cyprus, Spain, Croatia, France and Malta), and where relevant / available from neighbouring MED countries.
- Water management solutions implemented by touristic establishments such as hotels, apartments, restaurants, bars, coffee shops, leisure centres, spa, tourism attractions and event centres.
- CASTWATER partners evaluated the cases as successful or very successful examples of sustainable water management solutions.
- All selected cases have been replicated in other similar establishments, or demonstrate high transferability potential as they address common needs among tourism SMEs and regions.

During the second stage, the cases that were compliant with the aforementioned quality criteria, were evaluated on the basis of the good practice criteria (defined in the methodology), with the aim to identify

the 15 most successful ones. The cases that stood out as “good” and had the higher score, have been selected to be presented in the good practice guide. Annex A presents the evaluation criteria, together with the grading systems and the scoring thresholds for each evaluation criterion. The following table presents the scoring grid that has led to the identification of the 15 most successful cases of sustainable water management.

Table 2: Scoring assessment grid

No	Country	Establishment	Water management solution	Results	Problems	Political support	Recognition	Transferability	Total score
1	Malta	Hilton Malta	Sewage treatment plant	5	5	1	5	3	19
2	Croatia	Aminess Hotels & Campsites	Monitoring tool	3	5	1	5	5	19
3	France	La petite Motte	Rainwater harvesting	5	3	5	3	3	19
4	Croatia	Camp Lanterna	Multifaceted approach	3	5	3	5	3	19
5	Spain	La Manga Club Resort	Irrigation system	5	4	1	5	3	18
6	Greece	Aquila Porto Rethymno	Water efficient fixtures	4	5	1	5	3	18
7	Portugal	Inspira Santa Marta Hotel	Multifaceted approach	5	4	1	5	3	18
8	Greece	Grecotel Lakopetra Beach	Water management plan	4	4	1	4	5	18
9	France	Hotel de Paris	Action plan	4	5	4	1	3	17
10	Malta	Paradise Bay Resort Hotel	Greywater reuse system	5	5	1	3	3	17
11	Italy	Camping Marina Di Venezia	Pool water reuse	4	4	1	4	4	17
12	Cyprus	Atlantica Miramare Beach	Multifaceted approach	5	5	1	2	4	17
13	Italy	Hotel Panoramic	Home automation	4	5	1	3	4	17
14	Cyprus	Louis Ledra Beach Hotel	Multifaceted approach	5	3	1	5	3	17

No	Country	Establishment	Water management solution	Results	Problems	Political support	Recognition	Transferability	Total score
15	Greece	Bio Suites Hotel	Irrigation system	3	4	1	5	3	16
16	Italy	Lucciole Nella Nebbia	Multifaceted approach	4	4	1	3	3	15
17	Spain	Balneairo de Archena	Multifaceted approach	4	4	1	2	3	14
18	Italy	Hotel Derby	Multifaceted approach	3	4	1	3	3	14
19	Spain	Hotel Monteagudo	Water efficient fixtures	4	4	1	2	3	14
20	Spain	Rincon de Pepe	Water efficient fixtures	3	4	1	2	3	13
21	Spain	Restaurant "Talula"	Multifaceted approach	3	3	1	2	3	12
22	Greece	Maison Grecque	Water management plan	2	3	1	3	3	12
23	Croatia	Villa Rosetta	Multifaceted approach	2	3	1	2	3	11
24	Malta	Xrobb I-Ghagin							
25	Italy	San Marco Hotel							

\* The cases that received a score lower than 15 points are not included in the good practice guide (only the 16 higher ranking cases will be presented), while the remaining cases (24 – 25) either did not meet the quality criteria defined in the methodology report or were not accompanied with accurate and concrete information that would allow to evaluate them on a good practice basis.

## 7 Best practices from the tourism industry in Mediterranean

### 7.1 Hilton Malta – Sewage treatment plant (Malta)



Hilton Malta is located in St. Julian's district, just 15 minutes away from UNESCO World Heritage Capital City Valletta. The Hilton Malta hotel comprises 413 luxurious rooms, all with private facilities, full amenities and a terrace or balcony overlooking either the breath-taking views of the Mediterranean or the award winning Portomaso yacht marina. The hotel features three restaurants and four bars, as well as various facilities for

leisure and relaxation (e.g. outdoor swimming pools, paddle pools for kids, Jacuzzi and a private beach club). Hilton's fitness centre includes a well-equipped gymnasium, tennis & squash courts, sauna, steam room, and a dance studio. Furthermore, the hotel features a conference centre and 8 syndicate rooms accommodating up to 1330 delegates.

#### Sustainability strategy

The hotel's environmental activity is part of Hilton's commitment to living sustainably, one of the four pillars of the company's global corporate responsibility strategy, which is called "Travel with Purpose". Hilton Malta has elaborated a sustainability strategy with measures to reach the sustainability objectives and targets set by the Hilton Group, in an effort to a) reduce energy and

**Type of establishment:** Hotel

**Place:** Malta

**Main strategy:** Sewage treatment plant

**Cost:** 120,000€

**Time of implementation:** 2010 - now

water consumption, b) promote waste prevention and recycling, c) diminish greenhouse gas emissions, and d) promote social inclusion and responsibility. Among others, Hilton Malta established a waste heat recovering unit. Typically, the warm water waste produced from cooling hotel chillers is disposed directly into the sea. Hilton Malta invested in a heat pump that uses the warm water as a heat source to pre-heat the hot water used by the hotel, which was previously done by gas-fired burners. After a full year of



operation, the hotel managed to achieve a net energy reduction of 2,000,000 kWh, a CO<sub>2</sub> reduction of 280 tonnes while the financial savings can reach €120,000 per annum. Other initiatives include:

- Automatic control for lighting
- Automatic control of heating and cooling
- Automatic chemical dosing
- Solar panels/screens to reduce indoor temperature
- Power factor correction to reduce electrical transmission losses
- Energy saving lamps (e.g. LED bulbs)
- Training programmes for staff
- Raising guests' awareness on environmental and water scarcity issues

#### Water management

This good practice centres on the aspects of hotel's water conservation activities that include the installation of a sewage treatment plant. In 2010, Malta Hilton established an underground treatment system (with a maximum capacity of 120 m<sup>3</sup>/day) to treat the hotel wastewater/effluent in a way that it can be used for non-potable purposes across all hotel's facilities. The procedure includes collecting/storing the sewage generated at hotel's facilities and removing all the contaminants (i.e. large solid waste and sludge) through a biological and chemical treatment process. The filtered treated effluent is dosed with chlorine for disinfection purposes, before making it available for reuse. Overall, the treated wastewater is totally disinfected and treated to the highest standards of applications, and hence safeguarded from any health hazard. The recycled wastewater is mainly used for landscape irrigation, toilet flushing and other washing purposes. In addition to the sewage treatment plant, the hotel has adopted a series of other water saving measures including:

- The construction of two large water reservoirs for collecting/storing rainwater from roofs & surfaces.
- The adoption of an efficient irrigation system with sensors that help to optimise water usage for gardening based on environmental conditions.
- The installation of low-flow showerheads & faucets and pressure regulators in bathrooms
- The use of timers to control faucets and showers in public areas (toilets and changing rooms)

## Results

The installation of the sewage treatment plant has proven to be a success in reducing water generation. The plant produces over 70m<sup>3</sup> of water daily, which is all used in irrigation and for toilet flushing, saving more than 5,000 cubic meters per year. Apart from enhancing hotel's brand and popularity, such an investment has resulted in lower first class water consumption bills and hence lower operational costs. The total water savings achieved by all means (e.g. rainwater harvesting, water efficient fixtures) amount to 30000m<sup>3</sup> per year while the financial savings exceed €6,000. Hilton Malta is currently rated with 9 in Booking, with 4.5 in TripAdvisor and with 4.7 in Hotels.com, having also received very positive acclaims for its environmental activities and water efficiency measures. In addition, the hotel has been honoured with numerous international awards and certificates for its sustainability policy, such as the "ECO Certification by the Malta Tourism Authority", "EU Eco Label", and "Gold TravelLife Award".

## Conclusions

What triggered the hotel to invest in wastewater treatment technologies, was the eventuality of higher water tariffs and the possible introduction of a sewage tax for tourism enterprises. The elements that can be seen as success factors are a) the company's commitment to promote resource efficiency, b) the availability of competent staff to perform water management procedures and use water efficiency technologies, and c) the company's financial capacity to support such an investment. The company did not receive any type of support by public authorities and the entire cost was covered by the Hilton Group. This technology (i.e. sewage treatment) can be easily adopted by other tourism establishments in Mediterranean, as the payback period is relatively short (2-4) years, its operation does not require any specialised technical experience and the demonstrated achieved benefits outweigh investment costs by far.

## 7.2 Aminess Hotels & Campsites – Real time monitoring tool (Croatia)



Aminess hotels and campsites ([www.aminess.com](http://www.aminess.com)) are located along the coast of lush Istria and the Dalmatia shores, one of the most popular destinations in Croatia. The company provides high quality services in the fields of wellness, sport recreation, and congress tourism. With modern wellness facilities and various sports activities, exciting entertainment programmes and refined gourmet dining, the Aminess Group provides

unique relaxation activities to thousands visitors every year. The hotels are open almost all year around to accommodate for guests' relaxation and business needs, thanks to the availability of excellent traffic connections and the diversity of amenities. The company is guided by enthusiasm and dedication in creating an inspiring setting and an unforgettable experience, nurturing a philosophy of belonging, social responsibility and partnership. The Aminess Group comprises four hotel units, namely Maestral Hotel, Aminess Lume, Amiles Grand Azur and Aminess Laguna Hotel and the campsites Aminess Park Mareda and Aminess Sirena.

### Sustainability strategy

The company is committed to implementing a comprehensive environmental protection policy to promote environmental preservation and sustainability. Company's staff work towards reducing their activities' negative impact on the environment to the smallest possible degree, seeking to contribute to a cleaner and safer environment, whilst ensuring that environmental protection will remain a key priority for the entire community. The environmental policy of Aminess Group prescribes the following:

- Meeting all relevant obligations as mandated by law and taking proactive measures geared towards meeting future requirements and standards
- Reducing the quantity of waste by establishing operational procedures and assessing their maximum effectiveness
- Preserving natural resources through the responsible use of energy, water and materials while maintaining the quality of services

- Collaborating with suppliers to purchase environmentally friendly materials
- Reducing greenhouse gas emissions by using efficient fuels and renewable energy sources
- Promoting recycling and waste sorting
- Monitoring environmental measures to check progress and take remedial actions if necessary

### Water management

Aminess Group’s water conservation program is part of its environmental protection policy. Before proceeding with improvements in plumbing infrastructures, the company carried out an audit to document/report the different uses of water resources in hotel establishments, determine water consumption and detect potential leakages and malfunctions. The audit revealed

**Type of establishment:** Hotel

**Place:** Istria, Croatia

**Main strategy:** Real time monitoring tool

**Cost:** 20,000€

**Time of implementation:** 2011 - now

opportunities for reducing water consumption through the deployment of water efficient technologies/fixtures such as dual-flush toilets, low-flow showerheads and water efficient irrigation technologies. In addition, the company decided to install an aqua control system for monitoring and benchmarking water consumption. This system enables to monitor water consumption (real time) across all hotel facilities, and when the water usage exceeds the average level, the system alerts the staff (via email or sms) so that they can check for potential leakages. The company also established a regular maintenance program for plumbing infrastructures and water devices, seeking to minimise the occurrence of malfunctions in equipment and leaks. Finally, another measure was to involve customers in water conservation efforts. This was realised by communicating the efforts made to promote water efficiency in hotels’ facilities (e.g. highlighting the problem of water scarcity in MED) and encouraging guests to abolish wasteful practices (e.g. long-time showers, letting the tap run when brushing teeth).

### Results

This practice demonstrates the ability to decrease water consumption in tourism establishments by employing a real time tool for monitoring and benchmarking water consumption in every single facility (e.g. pool, guest rooms, and gardens). The aqua control system helped the company to reduce the average

water consumption per guest night and in extension to achieve its environmental targets as regards water conservation. The Aminess Group also managed to increase clients' satisfaction score in review sites (e.g. Booking, TripAdvisor), as all hotels and campsites have been reviewed with a score above 8.5. Finally, Aminess Group's environmental performance and sustainability has been proven with numerous certificates and awards such as the "Certificate of Excellence by TripAdvisor", "Gold TraveLife Certificate", "Green Business in the Hotel Industry" and "Eco-camping Certificate".

### Conclusions

The company did not experience any significant problem prior and during the implementation of the aforementioned water management measures in group's tourism establishments. The total cost (approximately €20,000) was funded by own capitals. Due to its success, several tourism enterprises across Croatia are using the aqua control system to monitor water consumption; namely "Hotel Riviera Porec", "Skiper Resort", "Istraturist Umag", and "Hotel Punat". This is because the needs addressed are common among tourism enterprises in the country, the demonstrated achieved benefits outweigh investment costs by far; and there are low implementation and financial risks.

### 7.3 Camping La Petite Motte – Rainwater harvesting (France)



The Campsite “La Petite Motte” is located at the heart of Mediterranean in La Grande Motte (Herault), between Montpellier, Sète and Arles, Grau du Roi and Palavas, 600 meters from a long sandy beach. The campsite is open from April to September, with maximum capacity of 700 persons. It offers 200 camping pitches and 16 mobile homes. Each tent has a fridge, and access to a communal bathroom with a shower. There are plenty of green areas, BBQ facilities, a

bar and a games room including a billiards table. “La Petite Motte” offers a car rental, laundry and currency exchange service. Free Wi-Fi access is available in all public areas.

#### Sustainability strategy

The tourism industry put enormous pressure on the coastal zone during the summer period, leading to impacts such as soil degradation, water and air pollution, resource scarcity, and biodiversity loss. The consumption of water resources for hotels, campsites, swimming pools and tourists’ personal use has resulted in water shortages and degradation of water supplies, setting a major threat to local

**Type of establishment:** Camping  
**Place:** La Grande Motte, France  
**Main strategy:** Rainwater harvesting  
**Cost:** 42,000€  
**Time of implementation:** 2008 - now

community. In this context, the campsite appears strongly committed to promote resource efficiency and environmental sustainability. Campsite’s initiatives include energy saving measures to decrease greenhouse gas emissions and stimulate the use of renewable energy sources, water resource conservation, sustainable waste management and territorial valorisation. Indicative measures are: a) recycling materials and products, b) using an automatic irrigation system, c) energy efficient lamps, d) cleaning up the beach and the surrounding parks, and e) engaging guests in resource conservation activities.

## Water management

In 2008, the campsite ([www.camping-lapetitemotte.com](http://www.camping-lapetitemotte.com)) installed a harvesting system to collect the rainwater from roofs and impervious surfaces such as parking lots, garden areas and leisure facilities, seeking to reduce the consumption of groundwater. The total surface covered by the system is approximately 300m<sup>2</sup>. This project was funded by the Languedoc Roussillon Regional Council under the call “Sustainable management to save and protect water resources”. The process includes collecting the rainwater from campsites’ roofs and surfaces. The rainwater is then filtered to eliminate debris and contaminants and is stored in two holding tanks, so as to be reused for toilet flushing, laundry and gardens. Overall, the rainwater recycling system contains the following components/elements:

- Two bladders tanks to store the water collected from roof or other surfaces; namely a 40m<sup>3</sup> tank for water to be used for toilet flushing and a 80m<sup>3</sup> bladder tank for storing water to be used in laundries and gardens, and as a back-up for sanitary facilities.
- A control unit to monitor the water level in holding tanks
- A filtering system to prevent the introduction of debris (such as leaves and dirt) into the water tanks
- A separate pipe system to connect the harvested water supply with sanitary facilities and laundries.
- A backup water supply for cases the water tank runs dry

## Results

This good practice demonstrates the ability to conserve water resources via rainwater harvesting. The rainwater harvesting system provides several advantages such as decreasing the demand for underground water, reducing water bills, and promoting resource efficiency. Evidence shows that the system helped the campsite to reduce the consumption of groundwater resources by 15%. This figure would be greater if the annual rainfall volume was higher and there were not some technical failures/hitches. Furthermore, this practice has yielded substantial financial savings for the campsite (up to €6,000 per year), stemming mainly from the lower water bills and maintenance costs. The campsite is currently rated with 3.5 in TripAdvisor, with 7.8 in eurocampings.de and with 7.3 in campingcard.at.

## Problems and challenges

The campsite encountered some technical problems during the design and maintenance of the rainwater harvesting system. The first one was related to the appropriate choice of storage volume. Experience

shows that the scaling should be determined according to the minimum monthly rainfall statistics, and not at an annual basis, considering that the area can suffer a three months rain drought during the summer period. As regards the maintenance of installations, all filters should be cleaned regularly to prevent debris from entering the storage tanks. This need becomes even greater if the facilities are located near green areas (e.g. gardens, parks) where there are abundant quantities of pollen and particles (especially during spring) that can clog the filters.

### Conclusions

The key enablers behind the success of this practice was company's commitment to promoting resource efficiency and preserving the environment, as well as the support provided by public authorities in the form of direct funding. As mentioned above, the installation was partly financed (80%) by the Languedoc Roussillon Regional Council under the call "Sustainable management to save and protect water resources". This type of support (i.e. direct funding) was necessary to make the business case for such an investment. A rainwater harvesting system incurs initial high costs that can be covered in 10-15 years, which again depends on the amount of rainfall and system's technology level. The system can be easily installed in any tourism establishment, demonstrating high transferability potential. Nevertheless, tourism enterprises should take into account a number of factors before investing in rainwater harvesting such as rainfall volume in the region, topographic location, tanks' proximity to green areas, roof surface for water collection, and type of technology.



## 7.4 Camp Lanterna – Multifaceted approach (Croatia)



The Lanterna Camping Resort is an eco-friendly family resort situated opposite the town of Krk, part of the Camping Adriatic of the Valamar Group. With a modern family orientation, this camp site is located amidst the well-preserved Mediterranean greenery of the Lanterna peninsula on the western Istrian coast between the fishing town of Novigrad and the tourist resort Porec. The Adriatic Camping

comprises several campsites in one. The company recognises all the aspects of sustainable environmental management, and pays particular attention to complying with legal requirements and environmental standards. Company's focus revolves around a) preventing soil and air pollution prevention, b) promoting the rational use of natural resources, c) reducing waste generation and promoting recycling, and d) training staff to apply sustainable practices and handle potential hazardous situations. The campsite includes a new Campsite Piazza with shops, restaurants, bakeries, grocery stores, children's playground and event area, indoor family entertainment zone with theatre and cinema and also a dedicated teenager area with game lounge. It also features a large aqua park and heated pools.

### Sustainability strategy

The resort boasts of its environmental preservation and sustainability approach to natural resources, protection of the Adriatic Sea, energy saving, management of waste and awareness raising on environmental issues among guests, employees and suppliers. The resort functions under an umbrella programme called "Green Valamar", which includes energy efficiency projects and various environmental protection initiatives, in the context of everyday operations and awareness-raising activities among guests, employees and the local community that focus on the preservation of the Adriatic coast and sea. There are recognised appliances and fixtures can improve facilities' water efficiency in a

**Type of establishment:** Campsite

**Place:** Istria, Croatia

**Main strategy:** Multifaceted approach

**Cost:** 1.082.000 €

**Time of implementation:** 2016 - now

passive way (without requiring behavioural change), requiring only installation and commissioning. As measured by keys, 80% of the campsite resorts and 63% of the hotel and resort keys are ISO 14001 certified, while 58% of hotel and resort keys boast a TravelLife certificate confirming commitment to managing quality and processes according to international standards, as well as managing environmental impact and preserving natural resources.

### Water management

The campsite's water conservation policy is mainly focused on the use of water efficient fixtures, regular maintenance of water infrastructures, raising customers' awareness on sustainable water consumption and greywater reuse. Relevant initiatives include: a) monitoring and benchmarking water consumption, b) the installation or retrofitting of low-flow showerheads or pressure regulators, and c) the installation of sensors or timers to control faucets and showers, low-flush and dual-flush toilets. The use of rainwater or pool water for toilet flushing is used to minimise the waste water. The same use of low-flow high pressure spray valves and efficient dishwashers with water reuse enables water saving. Moreover, the pools of the site are optimised by back washing operations; the use of pool covers during closing hours; and maintaining appropriate temperature to reduce chemical consumption. Often, water efficient irrigation technologies have been designed to promote water conservation in businesses' gardens and landscapes, using smart control systems and environmental sensors that can diminish water consumption for gardening and watering plants. To facilitate irrigation the camping resort has created green areas with indigenous species and maintained an efficient irrigation system, which makes use of greywater and waste water. Lastly, efficient washing machines have been purchased with the use of green procurement.

### Results

The project is expected to decrease the amount of water consumed across all departments/areas by 65,000 m<sup>2</sup> per year. The investment was partly funded by the EU Cohesion Funds Water Co-Financing Framework. This investment is expected to bring significant environmental and social impacts; extending and upgrading wastewater collection networks, which are likely to be site-specific and readily identified and subsequently addressed through adequate mitigation measures. As a result of the Corporate Social Responsibility Index competition organized by the Croatian Sustainable Development Business Council (HR PSOR) and the Croatian Chamber of Commerce (HGK), Valamar Riviera d.d. won the Corporate Social Responsibility Index Award for responsible environmental management policies and practices. The

recognition came by systematic review, which encompassed the compilation of detailed reports on energy and water consumption, waste management (with specific measures to save resources and reduce the quantity of waste), and care for employees and the local community.

### Conclusions

The Camping Lanterna ([www.camping-adriatic.com/lanterna-camp-porec](http://www.camping-adriatic.com/lanterna-camp-porec)) managed to upgrade its services and systems through a large investment project started in 2016, and which has also led to be awarded as the Best Campsite in Croatia (2016). Additionally, it received the INOVACAMP 2016 recognition for its innovative concepts. As one of the leading camping resorts in the area, they bring additional corporate responsibility to preserve the natural environment of Istria, which is region's main growth factor. For this reason, sustainability was found at the core of the business after the restructure of facilities in 2016, when the business group and camping resort has taken a number of initiatives towards the improvement of environmental protection and sustainable development. Another aspect of the investment is that two other enterprises are interested in implementing a similar project, in an effort to decrease water consumption and contribute to resource efficiency. They are particularly interested in deploying a greywater reuse system that will allow to recycle water for irrigation purposes.

## 7.5 La Manga Club Resort – Efficient irrigation system (Spain)



La Manga Club (<https://lamangaclub.com>) is an exclusive holiday, sports and leisure resort in the region of Murcia, 15 minutes from Cartagena. The resort is located in a privileged setting bordered by natural parks and unspoilt beaches to offer luxury, leisure and sport with wonderful weather all year round. Covering an area of 560 hectares, the resort provides guests with exclusive accommodation, first-class professional sports facilities

and fine dining, ideal for those seeking exceptional tranquillity, security and privacy, coupled with superlative service. Established in 1972, La Manga Club has attracted thousands holidaymakers, athletes and professionals in its outstanding facilities, which are designed to the highest international standards. Overall, the resort comprises a five-star hotel, luxury apartments and 450 hectares of sports facilities, including three 18-hole golf courses, 28 tennis courses and eight soccer fields. It also offers countless leisure services, such as the La Manga Club Spa, conference facilities and more than 20 restaurants and bars.

### Sustainability strategy

La Manga Club is leading the way towards environmental sustainability, having made substantial reductions in energy consumption and water usage. The resort has elaborated on an environmental management plan to promote resource efficiency and improve facilities' environmental performance, whilst retaining and enhancing the quality of amenities/services. The

**Type of establishment:** Hotel

**Place:** Cartagena, Spain

**Main strategy:** Efficient irrigation system

**Cost:** 1,000,000€

**Time of implementation:** 2006 - now

first action was to conduct an energy audit to analyse energy flows and find opportunities for diminishing energy expenses and carbon footprints. The results showed that there was an energy saving margin of nearly 25% without reducing the amount of energy used, while the adoption of sustainable water and waste management measures will make the resort a more environmentally responsible touristic

destination. By implementing a series of energy-efficient measures, the resort managed to achieve considerable resource savings. Solar power now provides between 30 and 40 per cent of the energy required for hot water and the heating of the pool in the five-star Hotel La Manga Club Principe Felipe.

### Water management

As part of its environmental management plan, the resort implemented a host of simple measures to promote water conservation, including:

- The introduction of aerators on taps, flow control and timer mechanisms in guest rooms.
- The installation and maintenance of an efficient irrigation system to optimise water usage for gardening based on environmental conditions. To achieve this, the company established its own weather station in the field to measure temperature, wind speed and humidity, coupled by an irrigation software that collects and analyses data on the different variables (e.g. temperature, wind speed, humidity) to determine when and how much to water.
- The planting of green areas (especially golf courses) with species that minimise irrigation requirements and are adjusted to areas' humidity level.
- The valorisation of greywater and wastewater for irrigation purposes. This water is provided by the waste water treatment plant located in Camposol.
- Organising dissemination campaigns to raise guests' awareness about sustainable water management and scarcity issues.

### Results

The introduction of water efficient fixtures in guest rooms, such as aerators on taps, flow control and timer mechanisms, reduced water consumption in hotel's facilities by 60%. In addition, 70% of the water used in maintaining La Manga Club's three championship golf courses, eight international standard sports pitches and its numerous gardens is recycled water (in the form of greywater) provided by the waste water treatment plant in Camposol. The use of an efficient irrigation system based on environmental conditions and measurements on different variables has helped to optimise water consumption and create financial savings due to decreased water and energy bills. Furthermore, the resort has been granted several awards for its environmental performance and high quality services, such as "Best International

Resort 2017”, “Certificate of Excellence by TripAdvisor 2016”, and “Top 5 Worldwide Golf Resorts 2014-2016”.

### Problems and challenges

Resort’s environmental initiatives encountered difficulties that rose from the lack of financial resources to cover the entire investment cost which exceeded €1,000,000. To overcome financial problems, the company had to prioritise investments (e.g. the installation aerators on taps, flow control) that had a shorter return on investment (ROI) or else payback period, whilst engaging company’s own staff into maintenance or installation works (rather than purchasing external construction services). This helped to save money from labour to be used for the purchase of water efficient plumbing equipment and the latest software for optimising irrigation activities.

### Conclusions

The key factors behind the successful adoption and implementation of water efficiency measures was a) the fact that sustainability is at the core of business strategy, as demonstrated by the high investment cost, b) the availability of staff with environmental culture and competent to perform maintenance and installation works (see above) and c) the application of water efficiency technologies to optimise water consumption based on environmental and terrestrial conditions. This practice has not yet replicated, even though it demonstrated high transferability potential, considering that it is associated with considerable environmental and economic benefits and addresses needs that are common among tourism enterprises across the MED area.

## 7.6 Aquila Porto Rethymno – Water efficient fixtures (Greece)



AQUILA Hotels & Resorts ([www.aquilahotels.com](http://www.aquilahotels.com)), located in Rethymno Crete Island, is a Greek-owned hotelier committed to customer satisfaction, genuine attention to detail and impeccable service, coupled with social and environmental sensibility and responsibility. AQUILA is a five-star luxury hotel with 200 tastefully-furnished rooms and suites spread across 6 floors. The bedrooms are housed in a modern, U-shaped building. Each room type is bespoke

– some have mauve colour schemes with stripy wallpaper, while others feature floral themes. AQUILA's mission is to provide the ideal environment and services for its distinguished guests, whether on holiday, business or romance vacation.

### Sustainability strategy

AQUILA is a company showcasing high levels of environmental consciousness and social awareness. The hotel seeks to minimise the impact of its activities on the environment by adopting efficient state-of-the-art technologies and resource management practices. In addition, it continuously invests in its human capital to effectively apply sustainable practices during day-to-day operations. To this end,

**Type of establishment:** Hotel

**Place:** Rethymno, Crete, Greece

**Strategy:** Water efficient fixtures

**Cost:** N/A

**Time of implementation:** 2016 - now

the hotel has adopted an integrated environmental policy to comply with key environmental legislation and sustainability principles by measuring and managing environmental performance against objectives and targets on a monthly basis, as well as regularly monitoring progress and identifying ways for improvements. AQUILA's environmental objectives are mainly focused on the following areas:

- Energy Management
- Water Management
- Solid Waste Management

- Air Quality Improvement
- Protection of Coastal and Marine Environment
- Protection of Landscape and Nature

### Water Management

The hotel has deployed a series of water management measures/solutions to promote sustainable water management and minimise water usage during periods with high demand. These include:

- Water efficient filters and mixing taps in bathrooms (flow control devices)
- Automatic irrigation systems for garden areas
- Watering gardens late in the evening to prevent water waste
- Using a bathroom card to switch off electricity and close water supply when guest rooms are vacated
- Regular maintenance of water and plumbing infrastructures to prevent leakages and malfunctions
- Training staff on how to make prudent use of water and how to maintain equipment for optimum energy-efficiency
- Raising guests' awareness about water issues and hotel's commitment to implement water efficiency practices
- Encouraging guests to reuse their towels and sheets with little signs within rooms

### Results

The adoption of water saving measures was driven by the need to reduce the costs associated with water consumption, comply with strict water efficiency regulations and improve water efficiency towards environmental protection. It was also seen as a good opportunity to increase market share by attracting a distinct group of visitors, who are particularly focused on sustainability and responsible tourism. Through its water sustainability strategy, the hotel achieved to reduce the average water consumption per guest night by 15% (from 0.57 m<sup>3</sup> in 2015 to 0.48 m<sup>3</sup> in 2016), setting at the same time ambitious targets for the next years. In addition, the hotel experienced significant economic savings stemming from the reduced water bills and the decreased maintenance costs for plumbing infrastructures. Finally, AQUILA has been awarded with the "Travelife", "Green Key" and "TUI UMWELT" certificates for its environmental friendly processes/technologies, sustainability practices and social responsibility.



## Conclusions

The hotel's management board did not experience any significant problem prior or during the implementation of water management solutions. The fact that sustainability was at the core of hotel's business strategy as well as the existence of employees with environmental culture and social consciousness, have been proven as key factors that guaranteed the effectiveness of the adopted measures. This practice demonstrates high transferability potential, considering that similar solutions have been applied in all AQUILA hotels across Greece.

## 7.7 Inspira Santa Maria Hotel – Multifaceted approach (Portugal)



Inspira Santa Marta is a 4 star hotel, with 89 rooms, a Mediterranean brasserie, bar, meeting rooms and spa facilities. Officially inaugurated on October 2010, it is located in one of Lisbon’s typical neighbourhood and its facade maintains its traditional characteristics from the 18th century. Designed to be more than a simple hotel, it offers its guests unique and different experiences by relying on “Feng Shui” principles and combining the

latest technologies and construction techniques with sustainable management. Due to its best practices, Inspira has become a case study and has been able to raise awareness of sustainability and its benefits on the local and international scene.

### Sustainability strategy

Sustainability is at the core of Inspira’s values and its presence is felt throughout the entire hotel. Reducing resource consumption is the only way to minimize the environmental impact of business activity and they are convinced that their actions can indeed make a difference in the quest for a more responsible tourism and, consequently, a more sustainable world. Thus, the policy to which the hotel

**Type of establishment:** Hotel

**Place:** Lisbon, Portugal

**Strategy:** Multifaceted approach

**Cost:** N/A

**Time of implementation:** 2012 - 2014

is committed is based on a series of criteria and fundamental norms to reduce the environmental impact of their activity while also contributing to guarantee high safety and health standards, for employees and guests alike. At an environmental level, the hotel undertakes actions to improve/promote: a) energy and water efficiency, b) waste management, c) reduction/control of greenhouse gas emissions and d) disclosure of pertinent corporate environmental information.

## Water management

One of the main focus of its sustainability strategy was to reduce water consumption across all hotel's facilities through a series of targeted interventions. Reducing water footprint entails a set of procedures that are aimed at an efficient management of this resource at an internal level, which requires both the participation of all employees and the contribution of all our guests. Several measures were taken in this sense, including:

- Raising awareness among all employees through training sessions on the goals pursued by Inspira in terms of environmental sustainability, promoting a change of habits when performing their duties;
- Implementing low flow aerators in every tap;
- Installing taps with sensors and dual flush toilets;
- Using eco-label and biodegradable cleaning and hygiene products;
- Using detergent dilution control systems;
- Adopting daily cleaning procedures (e.g. mop floor washing and dishwashing in the kitchen).

## Results

From 2012 to 2014, the hotel saved more than 100 cubic meters of water, resulting in a 17% total reduction in overall water consumption. The degree of impact may be even bigger, if we take into consideration that the number of visitors (incl. occupied nights) increased by 15.6% during this time period. Additionally, Inspira registered a 24% increase in revenues when compared to 2012, as the economic value rose 44% in comparison to 2013, and 276% regarding 2012. The hotel achieved a clients' satisfaction score equal to 85% that can be mainly attribute to better service quality and compliance with sustainability principles, and attained a score of 90% in review sites (e.g. Booking, TripAdvisor and hotels.com), obtaining a position between the 3 best scored hotels in Portugal. What is more, Inspira has been distinguished by a number of awards for its water sustainability performance such as the "Green Hotel of the Year at the European Hospitality Award", "TripAdvisor Green Leaders Platinum", "Green Hotel of the Year 2014", and "Best Sustainable Hotel in Portugal".

## Problems and challenges

The main challenges encountered during the implementation of water management solutions were associated with a) employees' lack of experience and skills to conduct regular maintenance of water

infrastructures and communicate the benefits of sustainable water use to guests and b) suppliers' low commitment to adopt more sustainable approaches and products (i.e. market maturity). The company managed to overcome the first mentioned challenge by recruiting colleagues that are competent and have the right attitude regarding environmental and social responsibility and by delivering training programs for existing employees. This was realised by employing a tough screening process, rigorous interviewing and assessment process and through "constant learning" initiatives. To engage suppliers to adopt more sustainable approaches, practices and products, the company organised annual forums to inform suppliers about the benefits that can be obtained from sustainable practices and through rigorous negotiations.

### Conclusions

The key driver behind Inspira's initiatives was the need to reduce the costs associated with water consumption and to improve resource efficiency, in an effort to preserve the environment and foster sustainable development. Once the sustainability strategy was elaborated, the adoption of water saving measures was easily justified. The analysis illustrated the significant cost savings that these measures will yield, while the investment costs did not pose any critical risk for company's financial sustainability. It should be noted that the company did not receive any type of support (e.g. funding, consulting) from public authorities. Finally, this practice shows high transferability potential as the needs addressed are common among hotels in MED area, the demonstrated benefits outweigh investment costs by far and it is associated with low implementation risks.

## 7.8 Grecootel Lakopetra Beach – Water management plan (Greece)



Grecootel Lakopetra Beach is a four star hotel and bungalow complex, which offers many social and recreational activities. The hotel provides all inclusive facilities, thus making it ideal for families, sports enthusiasts, and for those seeking rest and relaxation. Located only 35 minutes west of the seaport of Patras, the hotel is built in splendid gardens (80.000m<sup>2</sup>) and situated alongside a sandy beach facing the Ionian Sea. This holiday resort

blends into the unspoiled natural landscape and has a commanding view of the entire southern coast of the Greek mainland. The hotel offers a large selection of on-site facilities to suit everyone including sports, water sports entertainment and other recreational activities; most of them free of charge. To conclude, Grecootel takes pride in its continuing effort and commitment to creating sustainable environments of extraordinary beauty.

### Sustainability strategy

Grecootel is strongly committed to promote environmental protection and sustainability. Grecootel became the first Mediterranean hotel group to undertake eco-audits in its hotels according to EU standards (in 1992). To this end, the company has developed a long-term sustainability plan (applicable to all hotels) to

**Type of establishment:** Hotel

**Place:** Lakopetra, Greece

**Main strategy:** Water management plan

**Cost:** N/A

**Time of implementation:** 2012 - now

reduce hotels' environmental footprint and improve the quality of the surrounding area, which is considered the company's main asset and competitive advantage. Grecootel environmental policy includes:

- Setting realistic environmental targets based on local conditions and development priorities
- Promoting the sustainable consumption of natural resources
- Employing sustainable waste management practices

- Prioritising the use of recycled and biodegradable materials
- Using resource efficient products such as low energy light bulbs and water efficient irrigation systems
- Conserving the natural landscape, biodiversity and cultural heritage
- Raising public awareness on environmental issues (incl. staff, hotel guests, business partner, and local community)
- Integrating environmental considerations in all new building and renovation plans

### Water management

This good practice concentrates on the development of a comprehensive water conservation plan to promote resource efficiency at Greotel Lakopetra Beach ([www.lakopetrabeach.com](http://www.lakopetrabeach.com)). The company's main purpose has been to decrease water consumption during the summer months, when the demand for water reaches its peak. The conservation plan prescribes an array of measures to be adopted for optimising water consumption across all hotel's facilities. Up to now, the hotel has implemented the following water efficient measures, as described in the plan.

- Audit for reporting the current water uses and flows across all facilities
- Water efficient fixtures in all guestrooms and common space. These include low flow showerheads (10 litres per minute maximum flow), faucet aerators (max. 6 litres per minute), flow restrictors, and low flow toilets (6 litres per flush).
- Regular inspection of plumbing infrastructures and water appliances to identify leaks and proceed with the necessary repairing.
- Automatic irrigation system to deliver water when and where it is needed. The gardening takes place either early in the morning or late in the evening to avoid water loss due to evaporation.
- Covering swimming pools when not in use to prevent evaporation and backwashing every two or three days rather than a daily basis.

### Results

The adoption of the measures prescribed in the conservation plan has led to a significant reduction in water consumption. The hotel managed to cut down the average water consumption per guest night by 15%. According to guests' feedback and comments, the quality of services has been improved

considerably while the hotel attains a clients' satisfaction score equal to 80%. In addition, Grecotel Lakopetra Beach has expanded its customer base by attracting a distinct group of visitors that are particularly focused on sustainable tourism. The hotel is currently rated with 4 out of 5 in TripAdvisor, and with 4.7 in Expedia. Finally, Grecotel Lakopetra Beach has been awarded with a number of certificates for its sustainability performance and quality of services, such as the "Gold Award 2014" and the "Certificate of Excellence" by TripAdvisor.

### Conclusions

The main problem encountered during the implementation of measures was related to the lack of experience among employees in terms of identifying current water uses and measuring water consumption. This problem was resolved by contracting a field expert to carry out a water audit and assist with the development of the conservation plan. The factors recognised as key enablers for sustainable water management are a) the company's commitment to sustainability and environmental protection, b) the availability of staff with environmental culture, and c) customers' involvement in sustainability practices. This approach (i.e. water management plan) has been successfully replicated in almost all Grecotel hotels across Greece. Each water management plan focuses on hotels' individual needs and priorities, as drawn from water audits' findings.

## 7.9 Hotel de Paris – Action plan (France)



The hotel is part of facility that comprises two accommodation sites (hotel and campsite), both located in the Narbonnaise Regional Nature Park. Stretching over the Corbières and a wide lagoon network bordering the Mediterranean, the 80,000 hectares of the Parc Régional de la Narbonnaise are one of the last preserved natural sites of such size and diversity. The three-star hotel is located in the historic centre of Sète, ten minutes away from the train

station, close to St-Just-et-St-Pasteur cathedral, in a quiet street facing the Tourist Office and the Robine Canal. It has 36 rooms and suites, a beauty salon and spa, sauna, steam room and Jacuzzi. The area is much visited by tourists, representing a high volume of water consumption. Investment is not easy since the hotel is leased. However, the hotel management has recently engaged in a win-win contract with a service provider, due to their concern about environmental protection and being motivated by potential substantial savings to be made in water and energy costs.

### Sustainability strategy

During the first year of implementation, the hotel implemented a win-win methodology, which means that the service provider is only paid for savings generated. Thus, the latter takes the risk of not being paid at all. Percentage of payment due includes a maximum limit and will be based on a computation method defined at the start of the contract. The service-provider's role is to organise

**Type of establishment:** Hotel / Campsite

**Place:** Narbonne, France

**Main strategy:** Action plan

**Cost:** N/A

**Time of implementation:** 2013 - 2015

an initial audit, assist with installation of material and make adjustments provided for in the audit, as well as to organise a second consumption report a year later. The business action plan aimed to reduce water and energy consumption in both facilities. The plan included: water-saving equipment for showers, wash-



basins and WCs. An information sheet was provided for regular and passing users, as well as a check-sheet to monitor consumption and use.

### Water management

The aim of the water management planning was not just to be measured via savings generated but rather via originality of the chosen method. The manager of the facility was very aware that having sound support is vital. For this reason, the action plan was promoted by the Regional Nature Park (funding for the initial consumption audit) but the collaborative model between service-provider (advice and installation) and the facility itself does not necessarily require a public contracting authority to participate. The method includes a number of phases, which have as follows:

- A. An audit, which is 30% co-funded by the Regional Nature Park
- B. Water and energy saving activities without financial aid
- C. An initial one-year report (calculation of payment due for the service-provider)
- D. A PRN report after two tourist seasons
- E. Communicating the results to key tourism stakeholders via different media, including the drafting of a technical report and the production of a video to be disseminated in social media.

For the first year, the accommodation facility benefited only partially from savings made, since part of them are going directly to due to the service-provider. From the second year onwards, the manager benefited fully from the savings made.

### Results

The hotel considered the project very successful, reducing costs and improving water efficiency by 30%. No serious difficulties were encountered in the implementation of measures. The hotel has received financial support from the local authorities in the form of a subsidy of 30% for the purposes of the audit, provided to the establishment for adopting a more sustainable approach. The environmental culture of the staff, as well as their competence in water management planning, has been determinant of the success of the project. Additionally, there has been a trusting relationship between stakeholders and high commitment by the facility in general. This enables the operations, when there is no profit for the service-provider at first, taking into consideration that the service-provider takes a risk in this type of project.

## Conclusions

The water management plan already had an impact on water efficiency and resource saving, and has subsequently increased profitability for the hotel. For the time being, a considerable energy saving of up to 30% has been evidenced in the establishment. Another feature of this case is that is highly transferable. This initiative can be taken upon by accommodation facilities with no experience in water efficiency. Risks taken by the facility manager are low since the project begins with a full audit and thus he/she can make informed choices, when investing in work listed in the audit. Thus, there is no risk of investing in a non-profitable service. It is even highly recommendable to transfer this practice in other enterprises, it addressed common needs among tourism SMEs and MED regions. Experience shows that public support is key to the success of the operation and that win-win methodology is a momentum builder, as it satisfies all stakeholders.

## 7.10 Paradise Bay Resort Hotel – Greywater reuse system (Malta)



The Paradise Bay Resort Hotel ([www.paradise-bay.com](http://www.paradise-bay.com)) is an extremely spacious and comfortable resort in Malta. The establishment is situated in a unique location overlooking the picturesque sister islands of Gozo and Comino, surrounded by the clear seas of the Mediterranean. With 276 rooms, all with sea views and balconies, the resort's amenities also boast various dining outlets, bars, conference halls, a

tennis court, three outdoor pools with extensive terraces and sun loungers, a large indoor pool that is heated during the winter months, a children's playground with safety flooring, a games room for all ages and a private beach with water sports (during summer). The hotel has also a fully equipped tennis court and a multi-purpose court, mainly used for basketball, football and volleyball. Furthermore, a number of halls, suites and outdoor venues, including halls with sea-views and natural daylight, can host both small and large functions, conferences and events.

### Sustainability strategy

The company has adopted a sustainability policy with the long term goal of improving the energy and water efficiency in hotel's facilities. One of the core components of the sustainability plan is the procurement of up-to-date equipment and fixtures to replace the older model devices/appliances with more efficient ones. The hotel is also undertaking the following actions to lessen its environmental impact and promote sustainability:

- Protecting coastal and marine environment
- Training staff to carry out more sustainable business practices in everyday operations
- Communicating to guests the hotel's commitment to promote resource efficiency and environmental protection
- Recycling materials and products (e.g. sheets, towels, wood, paper, glass, batteries and cartridges) to be used as secondary raw materials in various production processes
- Reducing the use of cleaning chemicals and replacing them with eco-friendly products

- Using sea water in swimming pools
- Using sustainable sources of energy such as bio diesel
- Demanding from suppliers to deliver products and services that comply with environmental regulations

### Water management

The company has built a successful water conservation program to reduce water consumption through a series of intervention at the hotel. The first step was to elaborate on a water management plan that will document current water uses and outline a course for water efficiency improvement and water saving objectives. The case

**Type of establishment:** Hotel

**Place:** Malta

**Main strategy:** Greywater reuse system

**Cost:** 40,000€

**Time of implementation:** 2008 - now

study will centre on the aspects of the water conservation program that includes a greywater reuse system. This technology allows to capture the water used in swimming pools and for showering/washing, and after appropriate treatment (employing a chemical cleansing process) the recycled water is fed back to the hotel for non-potable purposes such as irrigation, laundry and flushing toilets. In addition to the greywater system, the hotel has taken action to raise users' awareness (incl. employees and guests) on how to sustain the savings of water-efficient technologies and practices. This was realised by placing signs near new equipment to provide instructions on how to use water efficient fixtures to save water resource and by keeping employees informed about company's environmental commitment and current water conservation activities.

### Results

The company, though its water conservation program, has earned considerable environmental and financial achievements. The deployment of the grey water recycling system has helped to decrease the average water consumption per bed night by 51%. Indicatively, the average consumption per bed night for four star hotels in Malta is approximately 450 litres, while the Paradise Bay Resort has brought the usage down to 170 litres. In addition, the company managed to increase profitability at an annual rate equal to 5%, which mostly stems from a 2% increase in guests' arrivals and the decreased costs for

maintenance and water bills. The hotel has also achieved a high clients' satisfaction score (above 70%) while the rating across the different review sites (e.g. Booking, TripAdvisor) has increased by approximately 10%. The hotel is currently rated by guests with 7 for its services and amenities. For its environmental activities, the hotel has been awarded by the Malta Tourism Authority with the ECO certification.

### Conclusions

The company did not encounter any significant problem that hindered the successful implementation of water efficiency measures in the hotel (especially as regards the deployment of greywater reuse system). All investments were funded by own capitals while the company did not receive any type of support by local or regional public authorities. Furthermore, the greywater reuse system can be easily transferred and retrofitted in existing hotel premises provided that the right conditions are in place and the correct procedures are adopted. This practice demonstrates high transferability potential considering that the payback period for the installation of a greywater recycling system can be of around 2.5 years while the achieved benefits (in terms of financial savings and resource efficiency) outweigh investment costs by far.

## 7.11 Camping Marina Di Venezia – Pool water reuse (Italy)



Marina di Venezia ([www.marinadivenezia.it](http://www.marinadivenezia.it)), situated near Venice, is one of Europe's largest campsites offering a comprehensive selection of high quality amenities. The campsite, set amongst pine trees, enjoys a fantastic location alongside golden sands and the Adriatic Sea. It is a bustling and lively holiday park, which offers plenty of fun-packed entertainment to visitors of all ages. Mobile homes and tents are

situated close to the beach and are grouped together, to provide a comfortable stay in the lap of nature. Furthermore, Marina di Venezia features a veritable water complex with 7 swimming pools, including a wave pool, two kiddies pools with slides, a paddling pool, a few big slides, and also a couple of Jacuzzis for total relaxation.

### Sustainability strategy

The campsite makes explicit mention on the value to promote environmental protection and sustainable development. To this end, it has developed a comprehensive sustainability strategy to facilitate the shift from resource consuming tourism activities towards a sustainable pathway focused on reducing tourism environmental footprints and contributing to resource efficiency. This includes energy saving measures to decrease greenhouse gas emissions and stimulate the use of renewable energy sources, water resource conservation, sustainable waste management and territorial valorisation. Marina di Venezia places equal importance on the quality of the surrounding area as it does on its facilities, calling the guests to respect and protect the natural environment.

### Water management

The company employed a successful water conservation program to reduce water consumption through a number of interventions/measures at the campsite. For bathrooms, the company proceeded with the installation of low-flush and dual-flush toilets, the retrofitting of pressure regulators and aerators, whilst prioritising the valorisation of rainwater and pool water for toilet flushing and showering. As far as the pool water reuse is concerned, the company has deployed a system that allows processing the water

provided by swimming pools to be used for toilet flushing, car washing and fountains. It must be mentioned that the initial plans foresaw that pool grey water reuse project was to provide recycled water for irrigation; however this was abandoned as the installation costs were excessive and the project was deemed too risky. Another measure was to increase visitors' awareness about water scarcity and sustainable water management (through brochures, signs, and welcome discussions), in an effort to bring a behavioural change towards reducing water consumption, especially for periods with high water demand (i.e. summer months).

### Results

The total water savings amount to 19500 m<sup>3</sup>, most of which results from the reuse of pool water for toilet flushing and washing. Notwithstanding this, the campsite achieved significant reductions in water consumption also through the installation of low-flow and dual-flush toilets and the retrofitting of pressure regulators. In addition, the company managed to create substantial financial savings by

**Type of establishment:** Campsite  
**Place:** Venice, Italy  
**Main strategy:** Pool water reuse  
**Cost:** N/A  
**Time of implementation:** 2012 - now

reducing the expenses for water supply and maintenance works, increase customers' satisfaction and improve company's public image by demonstrating compliance with sustainability principles and environmental regulations. Marina di Venezia' s efforts to promote sustainable water management have been recognised at the national and international level, as the company has been distinguished with the "Excellence Aqua park 2016" "Radical Green 2017" awards.

### Problems and challenges

The deployment of water management solutions did not go without problems. The installation of a greywater reuse system entails high upfront investment costs, making this type of investments particularly risky for every company. Even though the campsite had local public authorities' initial commitment for financial and technical support, finally the entire cost was funded by own capitals and personal contributions.

## Conclusions

The campsite acts as an example for other tourism establishments in the country, leading by example. The system for reusing pool water for toilet flushing has been replicated in two similar structures in Veneto region. The reason why this practice demonstrates high transferability potential is that campsites across MED regions face similar challenges related to water management; and even more the demonstrated achieved benefits outweigh investment costs by far. The payback period for this type of investments is usually very short while the company can yield several benefits in terms of financial savings, environmental performance and public image.



## 7.12 Atlantica Miramare Beach Hotel – Multifaceted approach (Cyprus)



Atlantica Hotels & Resorts is the biggest owned hotel chain company in Cyprus, with 15 hotels and more than 150,000 customers yearly. Its philosophy is to deliver an opulent variety of differentiated products, offering holiday experiences that are unique, exclusive and specially designed for individual customers. Atlantica Miramare Beach is situated in the heart of the tourist area of Limassol, overlooking the blue waters of the Mediterranean Sea.

Surrounded by freedom of relaxation, Atlantica Miramare Beach is the perfect destination for those who seek excellent standards of accommodation. Just 3 km away from the old town to Limassol and the castle, the hotel offers a great variety of rooms, from standard doubles and deluxe rooms to honeymoon terrace and junior suites, and first-class dining. It features an indoor swimming pool for guests seeking relaxation and calmness, as well as fully-equipped fitness facilities, a spa & health club, and several tennis courts.

### Sustainability strategy

The Atlantica Miramare Beach Hotel ([www.atlantichotels.com/hotels-in-limassol/atlantica-miramare-beach-hotel](http://www.atlantichotels.com/hotels-in-limassol/atlantica-miramare-beach-hotel)) is committed to employ and promote sustainable and environmentally friendly practices across all hotel's activities, from accommodation and food services to maintenance and purchasing. To this end, the hotel has developed a comprehensive environmental policy, seeking to achieve the following:

- Comprehend the environmental issues associated with hotel's activities and affect the surrounding area (e.g. water scarcity).
- Set and review environmental objectives on waste reduction, energy and natural resources conservation, including the protection of marine and coastal environment.
- Minimize waste disposal volumes, seeking to recover through re-use or recycling as much as it is economically practicable and ensure that the remainder is disposed as appropriate.
- Decrease energy and water consumption by monitoring usage and purchasing environmentally friendly and efficient products, whilst upholding the quality of services.

- Ensure that all employees/staff are aware of hotel’s sustainability practices and act accordingly.
- Communicate to guests and suppliers the hotel’s efforts and achievements in promoting environmental sustainability.

### Water management

This good practice centres on hotel’s activities not only to minimise water consumption but also to maintain water quality standards. In 2012, the hotel decided to implement a series of water saving measures to promote water efficiency especially during summer months, when the demand for water reaches its peak. These include the following water management initiatives:

**Type of establishment:** Hotel  
**Place:** Limassol, Cyprus  
**Main strategy:** Multifaceted approach  
**Cost:** N/A  
**Time of implementation:** 2012 - now

- Water efficient fixtures.** The hotel has employed a number of affordable and easy-to-use devices/appliances to reduce water consumption in a passive way (i.e. without requiring a behavioural change from staff and visitors). These include low-flow showerheads, dual-flush toilets, timers in showers, and aerator valves across all water circuits. Furthermore, the hotel installed an automatic drip irrigation system that allows to save water and nutrients by allowing water to drip slowly to the roots of plants, either from above the soil surface or buried below the surface.
- Regular maintenance.** The hotel has established a regular inspection and maintenance programme for identifying and reporting leakages from plumbing infrastructures and water appliances, and acting immediately to rectify failures.
- Engaging customers.** The hotel has taken simple steps to raise customers’ awareness on water issues and hotel’s sustainability practices such as informing about the measures adopted by the enterprise to decrease water consumption, providing all guest rooms with linen and towels reuse placards and signs with clear instructions, and encouraging visitors to participate in towel and sheet reuse programs.
- Water quality.** Water sampling and chemical analyses are performed on a monthly basis to facilitate the identification of PH and other parameters (e.g. macrobiotics, legionella) that are necessary to maintain high water quality standards, whilst ensuring health and safety. What is more, hotel’s

swimming pools incorporate a salt water system, which allows through electrolysis to produce sanitizing substitutes (i.e. hypochlorous acid sodium hypochlorite) that minimise chemical chlorine.

### Results

The adoption of a multifaceted approach in water management has proven to be a success in reducing water consumption across all hotel's facilities. The hotel managed to reduce the average water usage per guest night by 15%. Through its sustainability practices, the company improved its branding and enhanced its public image across the entire community. Furthermore, the number of visitors (incl. occupied nights) has increased by 16% while the hotel experienced a significant increase in revenues and financial savings when compared to pre 2012 period. This can be mainly attributed to new arrivals, less maintenance and repairing costs as well as the decreased water bills. In addition, the hotel has achieved a high satisfaction score (from guest) which is equal to 85%. Finally, Atlantica Miramare Beach Hotel is currently rated with 4.5 in TripAdvisor, with 8.3 in [travelpuclic.co.uk](http://travelpuclic.co.uk) and 8.2 in [en.directrooms.com](http://en.directrooms.com).

### Conclusions

The hotel did not encounter any significant problem that hindered the adoption and implementation of water efficiency measures, even though the company did not receive any type of support by public authorities. The total investment cost was covered by internal capitals. The fact that sustainability was at the core of hotel's business strategy as well as the existence of employees with environmental culture and social consciousness have been recognised as success factors. To conclude, this case study demonstrates high transferability potential considering that the needs/objectives addressed are common among tourism enterprises across MED regions and it is associated with low implementation risks in terms of financial sustainability and organisation resistance.

### 7.13 Hotel Panoramic – Home automation (Italy)



The Hotel Panoramic ([www.hotelpanoramic.it](http://www.hotelpanoramic.it)) is situated in front of the Adriatic Sea, on a wonderful long sandy beach in Caorle, Venezia. Privileged by its seaside location, the hotel provides a unique opportunity to combine tranquillity, relaxation and culture. The Hotel Panoramic offers a wide choice of rooms, from standard doubles and superior rooms to junior and luxury suites. All rooms are designed for

total comfort and are complemented by chic furniture and spacious balconies providing spectacular views across the Mediterranean Sea and the swimming pool. The restaurant, surrounded by a pine forest, offers local dishes as well as international food to accommodate for different tastes and cultures. The hotel also features a modern conference room on the ground floor. The room has capacity for a maximum of 40 people in theatre seating, and is ideal for business and social meetings.

#### Sustainability strategy

The hotel strives to minimise its environmental footprint by applying modern technologies and green management practices. The main purpose is to integrate environmental considerations into strategic planning. Hotel's environmental activities revolve around the following areas:

- A. **Resource efficiency:** This includes the installation of energy saving bulbs (e.g. LED) and light sensors in all rooms and common spaces, the deployment of innovative windows frames, ventilated wall and heat pumps, and the use of water efficient fixtures.
- B. **Recycling and waste management:** The main goal is to apply the waste hierarchy principles with a particular focus on prevention, reuse and recycling. Hotel's efforts include recycling batteries and electrical appliances, paper, aluminium, glass and plastic, and the disposal of liquid waste in the city's biological purification plant.
- C. **Natural environment:** Hotel's main advantage is its proximity to the beach and the surrounding environment. To this end, it has taken measures for the protection of the coastal and marine environment, as well as the preservation of the natural landscape.

## Water management

This good practice demonstrates the ability to diminish water consumption by deploying a home automation system that allows to monitor water usage by room, device and activity. In 2016, the Hotel Panoramic decided to install home automation systems in each floor (by 2017), seeking to increase its operational efficiency, ease maintenance and optimise energy & water consumption. The system has been designed to act as a leak-detection, prevention and alert system, as well as a water-conservation solution. It monitors the actual water consumption with sensors placed throughout the plumbing infrastructures, whilst providing the possibility to supply water only upon request by a water device. Furthermore, the system allows to measure water use per appliance and activity (e.g. bathing, laundry, and gardening), compare them to common practices and industry standards, and identify leaks and malfunctions when excessive consumptions are reported. Systematic monitoring and long-term data analysis can also help to identify consumption patterns, support the adoption of appropriate water efficient solutions and prioritise investments. In addition to the home automation system, the hotel made a decision to replace the old water appliances in guestrooms with more efficient ones to further promote water efficiency. This comprised the use of low flow showerheads, faucet aerators, flow restrictors, and dual-flush toilets.

**Type of establishment:** Hotel

**Place:** Caorle, Italy

**Main strategy:** Home automation

**Cost:** N/A

**Time of implementation:** 2016

## Results

The home automation system has helped to optimise water consumption, yielding substantial financial savings and improving hotel's bottom line. The hotel achieved to cut down water consumption by 10% during the first year of application, while more ambitious targets have been set for the next season when the service will be available in all rooms. Besides, the system has the potential to create savings up to 30%. Additionally, the system increased clients' satisfaction, comfort and security and provide different security levels. Hotel Panoramic is currently rated with 8.4 by guests in Booking and with 4.6 with TripAdvisor, having received a series of positive acclaims for its water management practices.

## Conclusions

The hotel did not encounter any significant problem prior and during the installation/operation of the home automation system. The investment was funded by own capitals while the hotel did not receive any type of support by public authorities. This particular practice shows high transferability potential as the benefits associated with the deployment of a home automation system for water efficiency outweigh investment costs by far, considering the short payback period and the extent of financial and environmental impact.

## 7.14 Louis Ledra Beach Hotel – Multifaceted approach (Cyprus)



The Louis Ledra Beach Hotel is situated on the beachfront overlooking the Paphos coast and the clear Mediterranean waters. The hotel is equally valued by both couples and families, offering high quality service and amenities for relaxation and entertainment. It combines quiet, relaxing and cosy environment with a very friendly atmosphere. The hotel features spacious rooms and suites; leisure

facilities, including four swimming pools; namely a heated indoor pool, an outdoor pool, a children's pool and an adult-only outdoor pool. Facilities also include a kid's club, a daily animation program, a spa with jetted tubs, and a sauna, as well as massage facilities. The hotel is only a 5-minute drive from the town centre and 11km from Paphos International Airport. The Louis Ledra Beach Hotel is member of the Louis Group, which is one of the leading travel, cruising and hotel groups in the Mediterranean with over 75 years of experience.

### Sustainability strategy

The Louis Ledra Beach Hotel is committed to implementing proactive measures to help protect and sustain the natural environment. The hotel, acknowledging the impact of its activities on the environment, strives to minimise negative environmental footprints by employing green technologies and sustainable management practices. Overall, the hotel has developed a comprehensive environmental strategy to make a cleaner and safer environment for its visitors, whilst ensuring environmental issues will remain a focal point for the entire community in Cyprus. To deliver its commitment, the company will:

**Type of establishment:** Hotel  
**Place:** Paphos, Cyprus  
**Main strategy:** Multifaceted approach  
**Cost:** N/A  
**Time of implementation:** 2010 - now

- Comply with the relevant environmental legislation & take a proactive approach to future requirements & obligation

- Conserve natural resources through the responsible use of energy, water and materials but also maintaining the quality of service expected by guests.
- Monitor environmental performance for continued improvement by reducing, re-using and recycling in areas such as energy consumption, reduction of waste materials and water usage.
- Work with suppliers that have adopted environmentally friendly policies, delivering sustainable products and services.
- Engage all staff into sustainability and conservation activities but also communicating to guests the efforts made by the hotel so as to bring a behavioural change towards greener practices.

### Water management

The Louis Ledra Beach Hotel (<https://louisledrabeach.com>) does not care only for guests' comfort and safety but also incorporates water saving procedures and water efficient devices to minimise overall water consumption, especially during summer months. Up to now, the hotel has undertaken the following water saving initiatives:

- Toilets equipped with low flush buttons.
- Hot water is constantly circulated to have instant hot water at the sinks.
- Public swimming pool showers are equipped with push buttons to control the duration of water flow.
- Beach towels are changed every 3 days to save laundry water (flexible if needing earlier replacement).
- Guests are encouraged to reuse their bath towels and save water.
- Public area showers work with push buttons for up to 15 seconds.
- Gardens around the hotel's public areas are moderately watered, as per hotel's 'Weekly Irrigation Plan', so as to avoid unnecessary water wastage. The plan is strictly followed by the hotel's gardeners' team and exceptions may apply during rainy periods.

### Results

Hotel's water conservation initiatives were driven by the need to improve resource efficiency, increase its market share and preserve the environment. Evidence shows that the hotel reached most of its objectives, producing tangible and measurable benefits for the company. More particularly, the adoption of water efficiency measures reduced the overall water consumption by 7%. The water consumption in 2014 was



269 litres per guest night while the water consumption in 2015 was decreased to 252 litres. In 2016, the average consumption was slightly increased (to 268 litres), however this can be attributed to the increased number of visitors and occupied nights. Overall, the hotel managed to expand its customer base, attracting a new group of tourism that are particularly concerned about environmental protection and resource efficiency. Actually, the number of visitors has been increased by 8%, following the implementation of sustainability measures. Furthermore, the hotel achieved a clients' satisfaction score equal to 90%, stemming from better service quality and compliance with sustainability principles. The Louis Ledra Beach Hotel is currently rated with 4.5 in TripAdvisor and with 7.3 in Booking. What is more, the hotel has been honoured with the "TravelLife Gold Award" for its sustainability policy and green practices.

### Conclusions

The implementation of water efficiency measures did not go without problems. The hotel faced difficulties in funding the purchase of water efficient fixtures and technologies. There was an initial doubt about the financial viability of such an investments. Finally, the company managed to cover all the costs by own capitals considering that the benefits will be manifold in the long term. What helped to overcome these shortcomings was staff competence to perform water management procedures and use water efficiency technologies and the fact that sustainability is at the core of business strategy. This practice demonstrates high transferability potential as the needs addressed are common among tourism SMEs across MED area, and the aforementioned measures do not entail significant implementation risks nor organisational resistance.

## 7.15 Bio-Suites Hotel – Automatic watering system (Greece)



Bio Suites ([www.biohotel.gr](http://www.biohotel.gr)) is a hotel establishment located in Rethymno, Crete. The hotel name “BIO” was chosen because the hotel was built on the location of one of the biggest olive oil extracting factories in Rethymno, operating from 1920 until 1940. Apart from its rooms and suites, the hotel offers plenty amenities and facilities such as a conference hall and a fully equipped fitness centre.

The restaurant offers breakfast, lunch and dinner and the bar offers customers and visitors a selection of drinks, coffee and snacks all day. Finally, the hotel offers a variety of activities to its customers such as swimming pools, beach, gym, spa service, playground and other social events. Further to its environmental profile, the hotel offers high quality dining services.

### Sustainability strategy

In 2009, the hotel decided to comply with rules and practices that protect the environment. Its sustainability strategy includes various environmental aspects, including the saving and management of water without waste through the installation of sensors in all public areas. Additionally, in the outdoor areas an automatic watering system was installed to help save

**Type of establishment:** Hotel

**Place:** Crete, Greece

**Main strategy:** Automatic watering system

**Cost:** N/A

**Time of implementation:** 2009 - now

water. In order to save and conserve energy, LED technology lamps were installed in all public areas as well as lighting photocells, where necessary. Moreover, solar water heaters are used to provide hot water without wasting energy. In the kitchen of the restaurant they use gas. Recycling bins are placed in public areas: for batteries, plastic, glass and paper as well as special bins in the kitchen for recycling oil. The use of ecological cleaning products is supported: used in the hotel for both the environment and for personal health, as the use of non-green products could be harmful to anyone suffering from a disease.

## Water management

Within this framework, the hotel has decided to enter into force a water management system which included the installation of soil moisture sensors in all green areas, seeking to optimise water usage for irrigation. These fixtures allow to bypass the watering system when necessary. For example, once rainwater or moisture is detected, the sensors shut down or postpone automatically any scheduled irrigation. Soil moisture sensors are more accurate than rain sensors because they are able to detect moisture at the level of the root system. What is more, they can measure more accurately how much water the plants need and receive, and thus offer greater water savings. Additionally, the company has established a solar water heating system with storage tanks and solar panels, which can heat over 200 m<sup>2</sup> of water per day, to prevent energy and water waste. Finally, ecological cleaning products are used at the hotel for both the environment and for personal health, as the use of non-green products could also be harmful to anyone suffering from a disease.

## Results

The hotel managed to decrease water consumption by 30% and create substantial financial savings resulting from lower water bills and decreased maintenance costs. The hotel is currently rated with 8.7 in Booking, with 4 in TripAdvisor, and with 4.4 in hotels.com. The hotel's environmental efforts have been recognised, as a result of the environmentally-friendly and quality services offered to its clientele, and it has received the Green Key Award, an international standard for environmental responsibility and sustainable operation within the tourism industry, originally launched in Denmark in 1994 by HORESTA (Association of the hotel, restaurant and tourism industry in Denmark). Green Key is eligible for hotels, hostels, small accommodations, campsites, restaurants and attractions. The Green Key Award Eco label represents the commitment of the hotel to adhere to the strict criteria set by the Foundation of Environmental Education. Additionally, due to the developments in business procedures, compliance to the rules and international standards requirements, the hotel has achieved the "ISO 9001" certification for its Management System of its Operation of Quality. Quality control on the implementation of the operating procedures in all sections of the hotel shows that in case there are any deviations the necessary adjustments are made, in the customer's interest, without any delay.

## Conclusions

Overall, the transition into an environmentally-friendly management for the hotel was quite successful. The most problematic aspects of this transition were related to the lack of expertise and relevant skills of the employees involved, as well as the time required for deploying the watering system. Ongoing efforts over a long period of time with careful planning in an organised manner, led to changes that were gradual and steady. The hotel achieved better water efficiency and resource savings, increased service quality and clients' satisfaction, compliance to water efficiency regulations and an improved public image and placing sustainability in the core of its business led to the recognition by the tourism industry through the Green Key Award. What is more, this practice has high transferability potential, especially among tourism SMEs across Mediterranean, not only to increase sustainability indicators but also to decrease costs deriving from the their day-to-day operations.

## 7.16 Camping Lucciole Nella Nebbia – Multifaceted approach (Italy)



Lucciole Nella Nebbia is a campsite located near the River Po in Sellata, 12 miles away from Ferrara Emilia-Romagna Region). On the river’s shores, Lucciole Nella Nebbia is the perfect destination not only for fishing enthusiasts and naturalists, but also for those who seek relaxation or recreation. The campsite, surrounded by a beautiful valley,

rivers, canals and artificial lakes, is open in all seasons providing high quality services/amenities to all visitors. The natural environment is ideal for a paddle, picnic, canoe trip, jogging, cycling and horse riding. The establishment provides fully-equipped apartments and cottage, as well as spacious camping areas to settle tents and caravans along the river shoreline. Lucciole Nella Nebbia features a salted water pool, gardens and play areas that are perfectly safe for kids. It also provides organised cycle routes that follow the course of the river, cross Emilia Romagna’s country side and reach the historic centre of Ferrara. Finally, the campsite offers free private parking for all visitors while Wi-Fi is available in all facilities.

### Sustainability strategy

The company is fully committed to promote environmental protection and resource efficiency while demonstrating all the key elements that make a tourist offering to stand out for its “green” and “sustainable” practices. Lucciole Nella Nebbia strives to ensure continuous balance between financial performance and nature conservation, by applying the “sustainability principles” in all company’s activities. The campsite has taken actions in three (3) key areas: a) energy and water efficiency, b) waste management, and c) greenhouse gas emissions.

**Type of establishment:** Campsite  
**Place:** Emilia Romagna, Italy  
**Main strategy:** Multifaceted approach  
**Cost:** N/A  
**Time of implementation:** 2012 - now

- All the materials used in the buildings (e.g. windows) are energy efficient.
- The roads inside the campsite have been constructed using recycled materials.

- No gas for heating is used. The only source of electric power comes from a 20 KW photovoltaic system (installed on the cottage roofs) that provides the amount of energy required for heating and cooling air conditions.
- All windows have thermal insulation to minimise the dispersion of air conditioning and decrease energy consumption accordingly.
- Waste management is carried out according to national and local laws. The company employs a separate collection scheme for waste and recyclables while it produces the minimum amount of food required to accommodate visitors' needs.
- The company purchases products such as plates and cutlery, only if they have been manufactured with renewable raw materials, or they are biodegradable and compostable.
- Automated (outdoor) lighting system with energy efficient bulbs that turn on when the sun goes down thanks to the twilight sensors.
- Training programmes for staff on how to save water, energy, cleaning products and on waste management.

### Water management

The campsite has employed a robust water conservation program with targeted interventions and measures to minimise water consumption across all campsite's facilities (especially during summer months). These measures can be arranged in three categories.

- A. Water efficient fixtures and infrastructures.** The campsite has adopted a series of water efficient devices and fixtures to minimise water consumption. These devices include aerators on taps, flow control and timer mechanisms for showers. Furthermore, all toilets are equipped with low or dual flush, while aerator valves have been placed across all water circuits. Lucciole Nella Nebbia has also installed an efficient irrigation system that allows to diminish water consumption in green areas. This can be realised via smart control systems that optimise the operation of the irrigation system, based on environmental conditions.
- B. Water availability.** Water recycling is a key component of the campsite's plan to conserve water and promote resources. Actually, the campsite seeks to increase water availability (especially during summer months) using multiple water sources. In particular, Lucciole Nella Nebbia has deployed a rainwater harvesting system to collect the rainwater from rooftops and surfaces and store it into tanks

for further reuse (toilet flushing and irrigation). Complementary to the above, the campsite is equipped with a groundwater abstraction system with valves and pipelines that allow to extract water from underground aquifers to be used for irrigation and toilet flushing. In some cases, after appropriate treatment, the water from ground sources can be used for bathing or drinking.

- C. Awareness raising & management services.** The campsite delivers training programmes for staff, to demonstrate techniques and ways to optimise water use in different functions/departments (e.g. accommodation, kitchen, and swimming pool) and how to perform sustainable water management processes (e.g. maintaining water devices for optimum water efficiency). In addition, the campsite's water conservation program foresees regular inspections in plumbing infrastructures for leaks and malfunctions. Finally, Lucciole Nella Nebbia runs a communication strategy to raise customers' awareness on water scarcity issues and best water management practices. Customers are strongly encouraged to contribute in campsite's efforts to promote water sustainability by trying to abolish their wasteful practices or/and participating in linen and towel reuse programs.

## Results

The campsite's water conservation program was driven by the need to improve resource efficiency, decrease operational costs and preserve the environment. Overall, Lucciole Nella Nebbia managed to achieve most of its objectives. As all campsite's facilities were constructed (from the beginning) with sustainable materials and processes that are environmentally responsible and resource efficient, there is no a "previous situation" to compare with and measure the degree of impact. Nevertheless, the campsite experiences a growing increase in the number of visitors and occupied nights (calculated at an annual basis) while it has lowered the risk of running out of water during peak touristic seasons (through supply-side measures such as rainwater harvesting). In addition, the campsite achieved a clients' satisfaction score equal to 90%, which results from better service quality and compliance with sustainability and environmental principles. Lucciole Nella Nebbia is currently rated with 9.3 in Booking and 4.5 in TripAdvisor. Finally, the campsite has been distinguished with the "Legambiente Turism" certificate.

## Conclusions

Lucciole Nella Nebbia did not experience any significant problem prior and during the implementation of the aforementioned water management measures. What can be considered a barrier/challenge to campsite's efforts was a local regulation that did not allow the construction of underground tanks.

However, it was an issue of limited concern. Overall, this case can be distinguished as particularly successful. The major factors are: a) business' determination to build a "green" camping village with respects to all sustainability principles, b) the low economic risks associated with the adoption of the aforementioned water efficiency measures, and c) local community's environmental awareness. This practice has not yet replicated, even though it demonstrates high transferability potential. All the "demand-side" water efficiency measures can be easily applied in any tourism establishment as the needs addressed are common and the costs are quite affordable.



## 8 Guidelines to improve water management in tourism SMEs

This section summarises the key conclusions drawn from the implementation of successful sustainable water management solutions by tourism SMEs across the Mediterranean, providing recommendations on how to utilise the main lessons learnt to improve water management in the tourism industry. The following table provides best practice guidelines for water conservation and resource efficiency.

Area	Actions to be taken
<p><i>Creating a water conservation program</i></p>	<ul style="list-style-type: none"> <li>- Conduct a water audit to measure water consumption, identify the major water costs and determine where savings can be achieved.</li> <li>- Compare consumption figures with tourism industry benchmarks (if available) to determine the potential for savings.</li> <li>- Evaluate company’s financial performance or status, to check the feasibility/viability of the project.</li> <li>- Search for funding opportunities (e.g. grants, preferential loans) from EU financial schemes, governmental sources, foundations, professional associations, and financial institutions.</li> <li>- Monitor calls for projects on new water technologies or/and water reduction schemes.</li> <li>- Establish realistic water reduction targets for each department (e.g. kitchen, guest rooms, gardens, etc.) and the entire establishment.</li> <li>- Prescribe a series of potential water management measures to minimise consumption, based on company’s needs and priorities, as well as facilities’ technical specifications.</li> <li>- Carry out a cost-benefit analysis to make informed decisions about the actions to be taken. This will enable to determine if a measure is viable and feasible, and to compare it with other solutions so as to determine which is the more feasible and effective. What is more, tourism SMEs should calculate the payback period (or else the return on investment for all suggested measures.</li> </ul>

Area	Actions to be taken
<i>Accommodation</i>	<ul style="list-style-type: none"> <li>- Install or retrofit flow/pressures regulators and aerators on showerheads to decrease consumption by approximately 40%.</li> <li>- Install sensors or timers to control faucets so that they do not keep running for a long time if left open.</li> <li>- Select low flush or dual flush toilets to achieve substantial water savings (approximately 30%).</li> <li>- Use rainwater or pool water for toilet flushing. This requires the installation of a rainwater harvesting system.</li> <li>- Carry out regular inspections and routine maintenance to prevent leaks and malfunctions in plumbing infrastructure and water appliances.</li> </ul>
<i>Laundry</i>	<ul style="list-style-type: none"> <li>- Sort the laundry according to the degree of soiling.</li> <li>- Use washing machines on full load to reduce the number of rinse cycles, without reducing quality.</li> <li>- Reuse the water from previous rinse cycles for the first wash of the next cycle. This can be realised by installing temporary holding tanks.</li> <li>- Avoid to pre-wash clothes and use water saving programmes. This can result in a 25% reduction in water consumption.</li> <li>- Avoid to use high polluting detergents and cleaning products to allow water reuse for toilet flushing and irrigation.</li> <li>- Check regularly for leaks in laundry equipment (e.g. dump valves, inlet valves, tanks) to avoid excessive water usage.</li> </ul>
<i>Kitchen</i>	<ul style="list-style-type: none"> <li>- Use low-flow pressure spray valves for pre-washing.</li> <li>- Soak dishes in a basin of water before placing them into the dishwasher in order to minimise pre-washing time.</li> <li>- Use dishwashers on full load and turn off the devices when not in use.</li> <li>- Avoid the excessive use of detergent and cleaning products, allowing to re-use water from washing machines for removing food residues on dishes (during the pre-washing stage).</li> </ul>

Area	Actions to be taken
	<ul style="list-style-type: none"> <li>- Purchase water efficient washing and cooking appliances such as dishwashers, ice machines and steam cookers. This will enable to decrease water and energy consumption by at least 10%.</li> <li>- Avoid to defrost food using water and minimise the use of ice machines.</li> </ul>
<i>Swimming pool</i>	<ul style="list-style-type: none"> <li>- Determine the appropriate sizing before installing a swimming pool, taking into account the envisioned use(s), facilities' capacity and maintenance costs.</li> <li>- Use pool covers during closing hours to minimise evaporation and reduce the need to empty and refill.</li> <li>- Use level sensors to prevent overflow.</li> <li>- Install sensors or timers to control showers by the pool.</li> <li>- Conduct routine inspections/reviews on filtration plant's effectiveness, including regular maintenance to prevent leaks and malfunctions.</li> <li>- Consider to reuse pool water for toilet flushing and other washing purposes.</li> </ul>
<i>Irrigation</i>	<ul style="list-style-type: none"> <li>- Install an efficient irrigation system to optimise water usage for gardening based on environmental conditions. This may include fitting timers on sprinklers to control water use and moisture sensors to avoid over-watering.</li> <li>- Plant green areas with species that minimise irrigation requirements and are adjusted to areas' humidity level.</li> <li>- Schedule gardening either early in the morning or late in the evening to prevent water loss due to evaporation.</li> <li>- Select soil with high water holding capacity for landscaping works to reduce infiltration loss.</li> <li>- Check regularly for leaks and malfunctions in irrigation equipment.</li> <li>- Consider to use greywater from baths and sinks or waste water (after appropriate treatment) for irrigation.</li> </ul>
<i>Training staff</i>	<ul style="list-style-type: none"> <li>- Communicate company's commitment to promote water conservation, including water reduction targets to all employees.</li> </ul>

Area	Actions to be taken
	<ul style="list-style-type: none"> <li>- Train staff on how to perform water management procedures, make prudent use of water and use new technologies and water devices for optimum resource efficiency.</li> <li>- Encourage staff to suggest new ways and measures to decrease water consumption.</li> <li>- Establish a reward system for employees that show a strong commitment to promote water conservation and achieve the targets set by the enterprise.</li> </ul>
<i>Engaging customers</i>	<ul style="list-style-type: none"> <li>- Communicate the problem of water scarcity and its impact on the environment, economy and local community.</li> <li>- Inform customers about the measures adopted by the enterprise for diminishing water consumption during peak touristic seasons.</li> <li>- Invite customers to reuse towels and linens.</li> <li>- Display water saving notices to raise customers' awareness on water conservation.</li> <li>- Encourage guests to abolish wasteful practices (e.g. long-time showers, letting the tap run when brushing teeth).</li> <li>- Invite customers to report malfunctions and leakages in water appliances and infrastructures.</li> <li>- Suggest ways to diminish water consumption in all areas/departments of the establishment.</li> </ul>

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## 10 Annex A: Evaluation criteria, scoring grid and thresholds

CRITERIA	SCORE					THRESHOLD
	1	2	3	4	5	
<b>Number / type of achieved objectives and produced results</b>	The practice has not produced tangible results or measurable benefits for the establishment (e.g. cost reduction)	The practice has reached some objectives but not produced measurable results	The practice has reached some objectives, producing measurable benefits for the establishment	The practice has reached most of the objectives producing measurable benefits for the establishment	The practice has resulted in significant and measurable results for both the establishment and community. All planned objectives were met and tangible results were produced	<b>3</b>
<b>Extent of problems encountered in implementation</b>	Significant problems were encountered prior to the adoption and during the implementation of measure	The measure had some problems that hindered its implementation	The measure had only occasional problems that have not hindered its implementation	The establishment faced minor difficulties considering the implementation of the adopted water efficiency solution	The implementation of the solution had no problems or difficulties whatsoever.	<b>3</b>
<b>Level of political support</b>	No support provided by public authorities	Delivery of business support services (e.g. training, advisory services, technology transfer)	Creation of an enabling environment for investments (e.g. tax incentives, flexible pricing policy)	Direct funding to tourism SMEs	Public authorities heavily supported the adoption of water management measures by tourism SMEs through a mix of public policy actions, including all previous.	<b>2</b>

CRITERIA	SCORE					THRESHOLD
	1	2	3	4	5	
<b>Level of recognition</b>	The establishment has not been awarded any certificate/award for its environmental performance	The establishment has received limited recognition for its environmental practices (e.g. through media announcements)	The establishment has been awarded a regional or national certificate for its environmental performance	The establishment has been awarded more than one certificates/awards for its environmental practices	The establishment has been awarded international certificates/awards for its environmental practices	<b>2</b>
<b>Level of transferability</b>	Practice has not shown any indications of transferability to different settings/sectors	Practice has shown indications of possible replication in a limited number of establishments / geographical contexts	Practice can be easily adopted by other establishments, seeking to improve water management	Practice has been transferred to other similar establishments	Practice has been transferred to more than one type of establishments and geographical contexts	<b>3</b>