Project co-financed by the European Regional Development Fund

COASTAL AREAS SUSTAINABLE TOURISM WATER MANAGEMENT IN THE MEDITERRANEAN

"ACTIVITY 3.2 SUSTAINABLE TOURISM WATER MANAGEMENT NEEDS ASSESSMENT IN THE PARTNERSHIP TOURISTIC AREAS"

Project acronym: CASTWATER

Project name: Coastal areas sustainable tourism water management in the Mediterranean

Project code: 1262

Document Information

Document Identification Name: 2017-07-17_CASTWATER_A32_D_Needs_Assesment

Document title: Sustainable tourism water management needs assessment in the partnership touristic areas

Type: Report

Date of Delivery: 17/07/2017

Activity: 3.2

Activity Leader: Water Board of Lemesos

Communication level: Restricted

Document History

Versions	Date	Changes	Type of change	Delivered by
E.g. Version 0.1	dd/mm/yyyy	Initial Document	E.g. update.	**Partner Name**
Version 0.1		17/07/2017		WBL
Version 0.2		07/08/2017		WBL

Disclaimer

The information in this document is subject to change without notice.

Table of Contents

1 Executive Summary

The Mediterranean is one of the most frequented tourist destinations in the world. However, the increasing number of tourists visiting Mediterranean coastal areas pose many serious environmental and development challenges. One of the most pressing challenges is the increased water consumption by tourists. In order to better manage the limited water resources in the Mediterranean and support sustainable tourism, water demand management and awareness raising measures aimed towards public authorities, the tourism sector's personnel and general public are critical.

This study identifies and analyses the needs of the tourism sector towards water demand management and awareness. In order to achieve this aim, two different research approaches are being proposed:

i. A structured questionnaire to collect data from SMEs in the tourist sector (accommodation, food and drinks, sports and leisure activities) and,
ii. Undertaking of "desk research" to gather information with regards to measures related mostly to regulations and activities by local authorities and at the EU level.

The data collected will be used for determining and addressing needs, or "*gaps*" between current conditions and desired conditions or "*needs*".

2 Introduction

The tourism sector is one of the largest business sectors in the world economy. The Tourism 2020 Vision forecasts that there will be 345 million tourist arrivals in the Mediterranean area, representing about 20% of all arrival worldwide. Even though overall the tourism sector is not considered to be a main water consumer worldwide, in some of the Mediterranean islands and coastal areas the effect of tourism water consumption is significant. Furthermore, due to increasing water demands across the tourism sector, Mediterranean countries are facing an enormous challenge in how to allocate, use and protect their limited water resources.

In this context, 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 sector. Inter-regional cooperation and transnational implementation of the project activities will support the participating coastal localities via the by sharing and exchange of knowledge, monitoring and benchmarking methods, tools and experience sharing in order to overcome the fragmentation which characterises this line of study in the Mediterranean basin.

Activity 3.2 of the CASTWATER project aims to gather data, identify gaps and improve knowledge on relevant thematic areas related to water-efficiency needs and challenges in the CASTWATER tourism localities and sectors. The report is outlined as follows:

- Section 3 provides an overall summary of the water demand management measures, and presents identified demand management and awareness measures.
- Section 4 describes the methodology for in-field data research (questionnaire survey) and for the desk research.

- Section 5 and 6 analyses the data collected from both questionnaire and desk research and presents the outcome and conclusions of this activity. The questionnaires and desk research documents are provided in the Annexes.

3 Water demand management (WDM)

Water Demand Management (WDM) is intended to result in maximum utilization and minimum waste of water, and to promote effective water use efficiency and water conservation, for social and economic development and environmental protection. The objective of WDM is to use water more efficiently, and many measures, as indicated below, can be used to promote the development and use of more efficient water use technologies and practices. WDM addresses the management of water demand across all economic sectors including municipalities, industry, tourism, agriculture and other activities of national importance. The Castwater project focuses specifically on the tourism sector.

3.1 Definition

In the literature, there are various definitions proposed for water demand management, including the following:

1. Water demand management refers to the implementation of policies or measures which serve to control or influence the amount of water used [1].
2. WDM seeks to maximise the usage of a given volume of water by curbing inessential or low-use values through price or non-price measures [2].
3. The adaptation and implementation of a strategy by a water institution or consumer to influence the water demand and usage of water to meet any of the following objectives: economic efficiency, social development, social equity, environmental protection, sustainability of water supply and services, and political acceptability [3].

4. Any socially beneficial action that reduces or reschedules average or peak water withdrawals or consumption from either surface or groundwater, consistent with the protection or enhancement of water quality' [4].

3.2 Water demand management measures

Any activity, law, practice, technology that can potentially reduce or optimise water use may be considered as a demand management (or conservation) measure. According to [4], there are several ways of grouping WDM solutions:

1. by the type of incentive – for example through legal obligations/regulations (usage quota), economic incentives (pricing plans and tariff systems), motivated through public information/education programmes (awareness programmes) or use of technology tools (smart meters, monitoring tools etc);

2. by the kind of tool used - structural, or non-structural. Examples of structural are network improvement (redesigning the water distribution network, replacing fixtures and appliances with devices that use water more efficiently), repair leaks, etc and examples of non-structural are pricing or education, which could lead to infrastructural improvements;

3. by time horizons – In this categorization, we have three different types of measures categories: emergency, medium and long-term measures;

4. by the location of the water supply system where measures are implemented - whether at the water treatment plant, storage tanks, conveyance and distribution network, or in the end-users' properties;

5. by the entity bound to carry out the measures - e.g. agencies, public or local authorities,

a service provider or end-users (households, industries, farmers); and

6. by sectors in which measures are applied, such as urban use (households, etc), industrial use (tourism, etc), or agricultural use.

A common used method is the categorisation by type of the incentive/measures which apply, namely:

- **Regulations/Legislations**: To enforce laws and regulations currently in use and to continue to update and develop laws and legislations to implement the best practices in water use. The government is responsible to apply this measure category.
- **Awareness (education):** To drive people to change their water-use practices, by increasing their knowledge of conversation issues and attempting to influence and change their attitude towards them. Awareness measures are designed and run by water utilities, schools and authorities.
- **Price (economic):** The price of water and the tariffs plans are key elements and an essential tools of water demand management, to control and raise the efficiency of water use in all sectors regardless of the water source. Economic measures are typically designed and run by the water authorities.
- **Adoption of technologies and demand programs:** This includes adopting new measures such as monitoring tools with smart meters, installation of low taps and showers, use of alternative water sources, use of leakage detection technologies.

Table *1* below summarizes the water demand management measures that potentially could be applied to achieve better management of the water demand [5] [6].

Table 1 Water Demand Management Measures

Regulations	1. National water management laws and policies 2. Water-rights and priorities-of-use statutes 3. Government-enforced performance-criteria and standards 4. Water-use restrictions and bans during emergencies 5. Recycling and reuse of water where it is feasible
Awareness	1. Primary and secondary school programs. Teaching materials for teachers to work through with pupils (Big Book of Water, Water Savings Book) 2. Promotional campaigns and events 3. Mass media advertising campaigns 4. Dissemination of information through personal contacts 5. Outreach programs to educate water users and help them install conservation hardware
Economic	1. Water pricing and rate-making policies 2. Tradable water rights 3. Subsidies and rebates to water users 4. Cross-subsidization of agricultural conservation 5. Tax credits and incentives 6. Penalties for excessive use (quotas)
Technologies and programs	1. Meter testing and replacement program Leak detection and repair program 2. Alternative water sources 3. Installation of rainwater collection and internal distribution system 4. Installation of separate grey water collection and internal or

	external distribution system 5. Monitoring of water consumption, including sub- metering of important water-using areas and benchmarking 6. Promote information and monitoring systems 7. Retrofit existing plumbing fittings with more efficient fittings 8. On-site water treatment 9. Distribution system audit program 10. Tax incentives, subsidies, and rebates for adoption of conservation measures 11. Social conservation incentives and disincentives program

3.3 Water Demand Management Constraints

The adoption and implementation of WDM is inhibited by some constraints [3] as shown below:

- **Financial constraints:** there is an initial investment cost that the involved parties (households, hotels, etc) may not have adequate financial resources to cover WDM investment. For example, a 2-stars hotel may invest in the cheapest fittings (taps, toilets, showers) and without concern about operating and running costs.
- **Capacity/Human resources constraints:** usually there is limited personnel available to help with the implementation and maintenance of WDM measures.
- **Policies/mandates constraints:** lack of laws, policies, mandates and regulations to make the implementation of WDM compulsory.
- **Social constraints:** lack of water conservation awareness. Customers are not aware of the benefits of water conservation and they have no understanding of the need and benefits of WDM.
- **Technology constraints:** water service providers do not have the correct management information systems and lack the required customers information to implement WDM.

- Water service providers currently focus mainly on the supply-side management and the infrastructure maintenance.
- Water is relatively cheap, therefore, there is not any economic incentive from the customers to use less water.

3.4 Costs and Benefits of WDM

There are three main categories in which costs and benefits may be classified:

- environmental,
- economic, and
- social

Table 2 shows examples of the costs and benefits of each category.

Table 2 Cost and Benefits of WDM

	Cost	Benefits
Environmental	1. Reduced wastewater flows affects specific members of the ecosystem. 2. Solutions such leakage management, pressure and flow monitoring may increase gas emissions.	1. Increase water availability 2. More water available to preserve the ecological resources of streams, wetlands and estuaries. 3. Reduction of emissions due to the reduction of water treating. 4. Recycling grey water and waste water decrease pollution.

Economic	New investment needed for: • Installation of water-efficient devices. • Maintenance and monitoring of the infrastructure, • Management of water leakages, • Education and information programmes, • Recycling costs	1. Reduction of energy cost 2. Reduction of maintenance and operation cost 3. Reduction of water bill for consumers 4. Reduction of pollution 5. New jobs for those working on WDM programs
Social	1. Increased water tariffs. 2. Money needed to invest to water savings devices. 3. In some cases, may needed to change your lifestyle in order to use less water	1. Creation of new jobs 2. Improved access and service to vulnerable groups – better tariff for these groups and better quality. 3. Sustainability of water service provision.

3.5 WDM EU-funded Projects

3.5.1 Sustainable Water Management Improves Tomorrow's Cities' Health' (SWITCH)

The EU-funded SWITCH project [7] was conceived out of a realization that continued application of the conventional urban water management (UWM) concept will not deliver the required results in the future. The main objective of the SWITCH project was "*the development, application and demonstration of a range of tested scientific, technological and socio-economic solutions and approaches that contribute to the achievement of the sustainable and effective*

UWM schemes in The City of the future (projected 30-50 years from now)". The SWITCH project was a multi-disciplinary integrated research project which aimed at creating a paradigm shift in urban water management, so as to address the challenges faced by water managers, planners and policy makers in the city of the future. The overall objective of the SWITCH Project Work Package on water demand management was to develop and test holistic demand management tools, which will assist water service operators to effectively manage water demand in their water supply systems.

3.5.2 Water analytics and Intelligent Sensing for Demand Optimised Management (WISDOM)

The WISDOM project [8] aims at achieving a step change in water and energy savings via the integration of innovative Information and Communication Technologies (ICT) frameworks to optimize water distribution networks and to enable change in consumer behaviour through innovative demand management and adaptive pricing schemes. WISDOM project aims at integrating and demonstrating innovative ICT systems and services for efficient water use and reuse in order to improve household, business and societal awareness and induce changes in consumers' behaviour and to enable innovative resource and demand management scheme and adaptive pricing incentives. WISDOM is a project funded under the EU 7th Framework Program which started in February 2014 and will run for 3 years.

3.5.3 TRansitions to the Urban Water Services of Tomorrow (TRUST)

TRUST [9] is an integrated research project funded by the European Union. TRUST outcomes incorporated into planning guidelines and decision support tools, subject to life-cycle assessment, and shaped by regulatory considerations as well as potential environmental, economic and social impacts. Outputs from the project catalyse transformatory change in both the form and management of urban water services and give utilities increased confidence to specify innovative solutions to a range of pressing challenges. TRUST has produced a guide for

water stakeholders working on WDM issues, 'Guidance on evaluation and selection of sustainable water demand management technologies', which offers direction on the evaluation and selection of WDM type technologies for the reduction of water consumption.

3.6 Water Demand Management in Tourism sector

Coastal areas, especially in the Mediterranean region, often present significant challenges for water management due to increasing number of tourists and the peak water consumption especially during summer periods. In fact tourist water consumption is higher than a residential water consumption, and according to the literature [10] [11], tourists consume twice the amount of water cat around 300 litres per day compared to residential water consumption of approximately 150 litres. This is mostly due to imbedded water use in accommodation enterprises, including maintenance of grounds (irrigation), daily room cleaning, daily laundry, maintenance of swimming pools, intensive kitchen activities, and a 'pleasure approach' to showers and baths [12].

Furthermore, water consumption varies significantly across different types of accommodation facilities (hotels of different categories, campsites, holiday lets, bed & breakfast guesthouses, resort hotels etc) and target tourist activities during the stay (yachting, golf, swimming etc). In addition, the existence of a swimming pool, for example, has been identified as one key differentiating factor of water use in hotels [13].

Water consumption in the tourism sector can also be classified as direct and indirect water consumption [14]. Direct water consumption is considered the direct water use in the premises (ex. when washing or using the toilet) and related service activities like swimming pools, spas etc. On the other hand, indirect water consumption is mostly related to the food service sector, transportation (fossil fuel production, biofuel production) and energy consumption at hotels. Figure 1 depicts the global averaged water footprint, L per guest night.

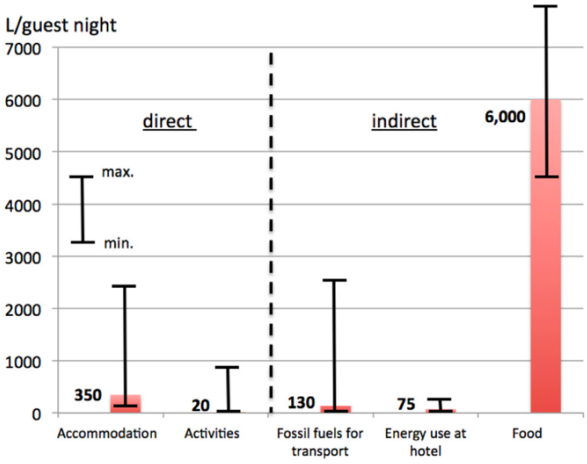

Figure 1 Water footprint per category [14]

There is huge potential for water efficiency within tourist's establishments. WDM measures, as depicted in Table 1 below, can be applied in order to achieve water consumption reduction and can help hotels reduce the amount of water consumed per guest per night by up to 50%. For example:

- Potential savings of up to 20% can be achieved through relatively simple and inexpensive installation of efficient water fittings which have a relatively high frequency of replacement [15].
- Dual water systems and the reuse of treated wastewater supplied from a hotel's own treatment plants can save about 35% [16].
- Water recycling can reduce water consumption by an additional 10 %, after a 40% reduction in water consumption achievable from implementation of water efficiency measures. [15]
- Setting up systems which economise on water – flow modulators (pressure relief valves on the network inside the home, small water cisterns for flushing toilets, flow-reducing aerators for taps and shower heads), and electrical appliances which use less water. These

systems can save water since it is possible to reduce consumption by 40% without inconveniencing the user [17].

- Providing environmental information and raising awareness among tourists of the environmental consequences of their actions related to water consumption.

4 Methodology for the Needs Analysis

4.1 Scope

The scope of this survey is to gather data, identify gaps and improve knowledge on specific thematic areas with regards to water-efficiency needs and challenges in the CASTWATER areas' tourism regions. More specifically, the needs analysis will focus on the areas of:

a) water demand management (e.g. promotion of water saving technologies, water monitoring infrastructure and the related commission and management services in the tourism industry) and,

b) awareness raising for public authorities, tourism sector personnel and the public.

4.2 Targeted Group

The targeted group is enterprises that operate in the tourism sector. More specifically, we target accommodation and food enterprises. For the accommodation sector, the target audience was extended to hotels, holiday apartments and hostels; while for the food sector we included dine-in restaurants, bars, pubs and cafes. We included also waterpark and golf facilities for partners that have this type of facilities in their territories.

4.3 Type of survey

In order to collect data for the purposes of Activity 3.2, a mixture of online/offline questionnaires will be used. Specifically, the online questionnaire was selected as it facilitates faster, cheaper, quicker analysis of the data, as well as facilitating easier recruitment of participants. For that purpose, an online tool has been prepared to collect and analyse the results. Due to the synergies of Activity 3.2 with Activity 3.5, questions have been added that will be used by Activity 3.5. The questionnaire is comprised mainly of closed-ended questions.

Furthermore, desk research will be conducted to get information for specific aspects that are not possible be covered by the questionnaire.

Even though no sensitive personal data is collected, we have prepared an information sheet and consent (see Annex section) form to be signed by the survey participants.

4.4 Desk Research

In addition to the questionnaire, we conducted an external desk research which means that project partners must collect information outside of their organizations. The desk research for Activity 3.2 also covers specific aspects of water demand management and awareness across the tourism sector which are not possible to capture by the questionnaire. More specifically, the purpose of the desk research is to provide answers to the following:

- What is the water consumption percentage of the tourism sector in your country compared to the total water consumption? If possible, find the numbers for different types of enterprises, such as accommodation, restaurants, bars/pubs, waterparks, golf courses, etc.
- Does the water utility support any demand management measures to the tourism sector enterprises? Such examples are flexible pricing plans, penalties for excessive use (quotas), eco-innovative technological devices, legislation, relevant policies etc.
- Do the public authorities (or water utilities) run any water efficiency awareness actions? This may include education programs for students, mass media advertising campaigns, promotional campaigns and events.
- Does your government offer any benefits to the enterprises that are considered to be water sustainable? Such example are tax incentives, subsidies and rebates for adoption of conservation measures.
- Check if funding/loans are available from government or other sources, for investment in new technology or water consumption reduction schemes.
- Are there any local water efficiency regulations/directives that the tourism sector enterprises have to follow?

- Collect statistics such as number of tourist arrivals and nights, total number of the different types of facilities and number of total population to determine the pressure of tourists on the destination.

4.5 Period of execution

Surveys and desk research are to be conducted during the period of **26/04/2017-19/05/2017** in all the territories of the project partners.

4.6 Questionnaires Sampling method

Probability sampling methods can be classified into five categories: Simple random sampling, Stratified Sampling (proportionate and disproportionate), Cluster Sampling, Systematic Sampling and Multistage Sampling.

The size of a sample depends largely on how closely you want your results to be to the true results (of the entire population). The accurateness of the data is affected by two measures: the margin of error and the confidence level. Therefore, another way for the sample size to be calculated is based on three criteria: 1) the size of the population, 2) the desired confidence level and 3) the allowed margin of error. The confidence level indicates how sure you are about the correctness of your results and is usually set at the value of 95%. The margin error indicates the maximum expected difference between the true population parameter and the sample estimate of that parameter (usually 5%). It can be calculated as follows:

Margin of error = Critical value x Standard error of the statistic.

When the sampling distribution of the statistic is normal or nearly normal the critical value is expressed as a z or a t-statistic. The t statistic is used when the population standard deviation is unknown. If it's known we use the z statistic. The last one is also used when the sample size is relatively large (this is determined by the central limit theorem).

4.7 Questionnaire Sample size

Table 3 Questionnaire Sample size per partner

Organisation Name	Total sample size (minimum)	Total Sample size (base)	Total Sample size (maximum)
Water Board of Lemesos	**20**	**30**	**40**
Malta Regional Development and Dialogue Foundation	**25**	**30**	**50**
University of Patras	**25**	**30**	**50**
Emilia Romagna Region	**25**	**30**	**50**
Euromediterranean Water Institute Foundation	**25**	**30**	**50**
Municipality of Rethymnon	**20**	**30**	**40**
Institute of Agriculture and Tourism	**25**	**30**	**50**
Veneto Region	**25**	**30**	**50**
Las Naves	**25**	**30**	**50**
Department Council of Herault	**25**	**30**	**50**
Energy and Water Agency	**25**	**30**	**50**

4.8 Guidelines to collect data

All the data collected must be collected on-line or offline, and submitted via the CASTWATER online survey tool. Each partner will have a dedicated online link for collecting the data.

Sample selection methodology:

A mixed sampling strategy is proposed, to facilitate the different partner environments. In specific:

a) stratified sampling can be adopted to capture unbiased characteristics of different types of establishments, such as restaurants and hotels with different rating. For instance, if at least 10 hotels are to be sampled, and in general if 10% of the hotels have 5-stars, 30% have 4-star, 40% are 3-star and 20% are 2-star and below, then randomly[1], at least 1 hotel must be selected from the 5-star list, 3, from the 4-star list, 4 from the 3-star least and 2 from the 2-star (or less) list. This should guarantee an unbiased sample and a sufficient representation of the different classes of establishments.

b) purposive sampling will be adopted to allow project partners to identify and survey the opinion on specific stakeholders/business who have significant presence in the sector (e.g. a large hotel which promotes sustainable solutions). This is also applicable for the waterpark and golf facilities.

The proposed ways above can be combined.

Recruitment procedure:

Due to the different market specifics (size, relationship with the enterprises etc), data collection methods included:

1. Email sent to invite the potential participants with a link to follow for completing the questionnaire. Emails included an official signed letter from the partner explaining the purpose of the questionnaire and why they should fill it in. This was deemed more appropriate for partners which have access to a higher number of enterprises, so the collection of the requested questionnaire number (see section 3.6) would be easier and cheaper. In any case, a phone follow-up to the respondents was recommended for increased uptake.
2. Visits to the enterprises, in order to interview the managers and collect the data using a tablet or a laptop. This was deemed more appropriate in case of countries with a low

[1] For deciding randomly, the https://www.random.org/integers/ service can be utilized.

number of SME responses

General guidelines:

1. For the restaurants/bars/pubs/café: Partners were advised to select dine-in instead of take-away enterprises.
2. For the accommodation enterprises: i. Partners were advised to collect questionnaires from all the three categories (if available) and ii. to collect data from different star rating and hotel category.

Desk Research data collection

In order to perform the desk research, partners used the following type of sources:

1. Government reports and open data.
2. Water utilities websites.
3. Talked with water utilities.

5 Data Processing and Analysis

5.1 In-field Research

The following section displays the main results from the questionnaires survey.

The total number of questionnaires collected is 238. More specifically, 137 questionnaires were collected from the accommodation sector, 87 questionnaires from the food and drinks sector and 4 questionnaires from the sports and leisure sector. Table 4 depicts the total number of questionnaires collected per category per partner.

Table 4 Questionnaires per partner

Partner	Accommodation	Food & Drinks	Sport & Leisure
Water Board of Lemesos	10	22	1
Malta Regional Development and Dialogue Foundation	7	3	0
University of Patras	10	15	0
Emilia Romagna Region	18	5	0
Euromediterranean Water Institute Foundation -FIEA	4	1	1
Municipality of Rethymnon	17	8	0
Institute of Agriculture and Tourism - IPTPO	27	11	2
Veneto Region	22	6	0
Las Naves	0	0	0

Department Council of Herault	10	0	0
Energy and Water Agency	12	16	0
TOTAL	**137**	**87**	**4**

5.1.1 Accommodation

The distribution of the sample has been studied (Figure 2 - Figure 3) in relation to the type of accommodation (hotel, holiday apartments, camping, etc) and in function of the stars rating (Figure 4).

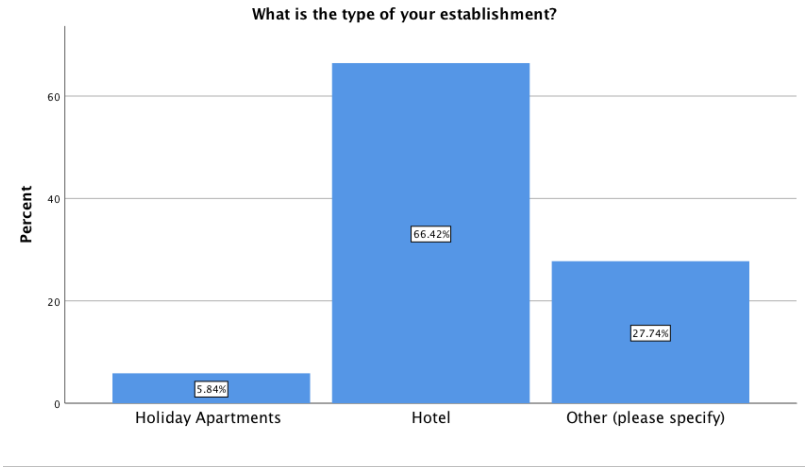

Figure 2 Type of establishment

The majority of the sample collected derive from the hotel category. More specifically, 66.42% of the questionnaires collected were from hotels, 27.75% from other facilities and 5.84% from hotel apartments. More than half of respondents form the other facilities questionnaires belong to the camping category.

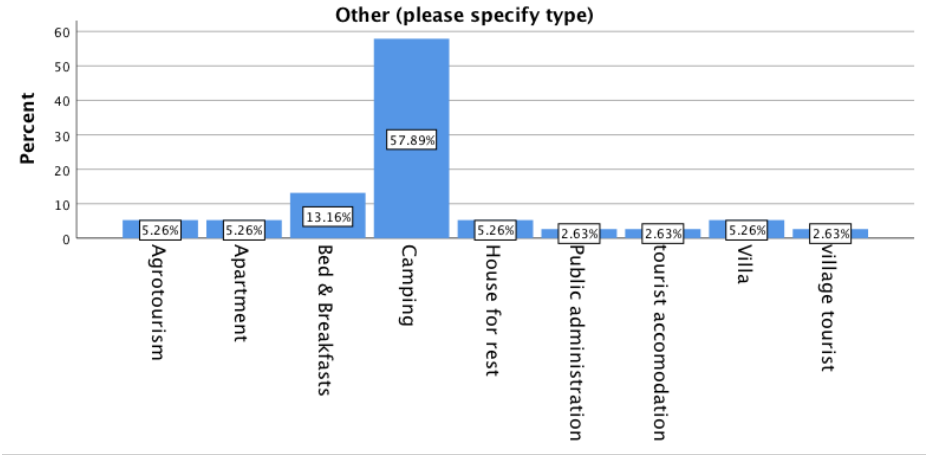

Figure 3 Other type of establishments

Figure 4 shows the distribution of the sample in function of the star rating. The 3-stars and 4-stars establishments represent more than 70% of the total sample. This distribution is similar to all partners' territories.

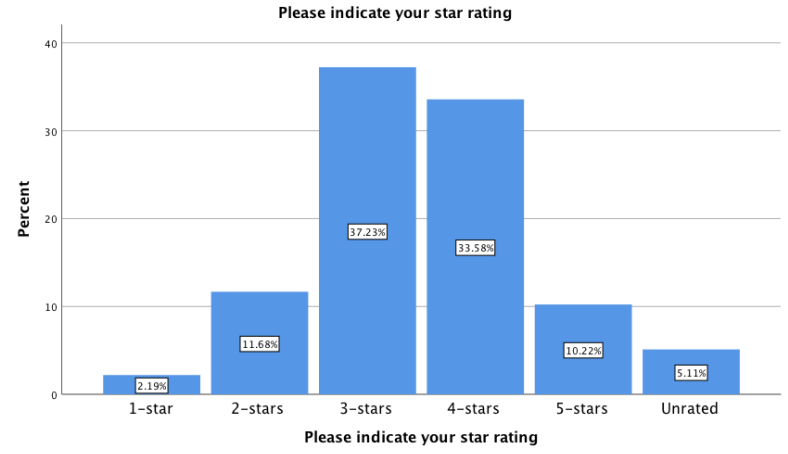

Figure 4 Star rating of the establishments

Accommodation – Adoption of WDM technologies

44.53% of the touristic enterprises record their water consumption every month where the 25.55% record their consumption in a daily base. The 17.52% of the enterprises replied that they do not record their consumption in any way. (Figure 5).

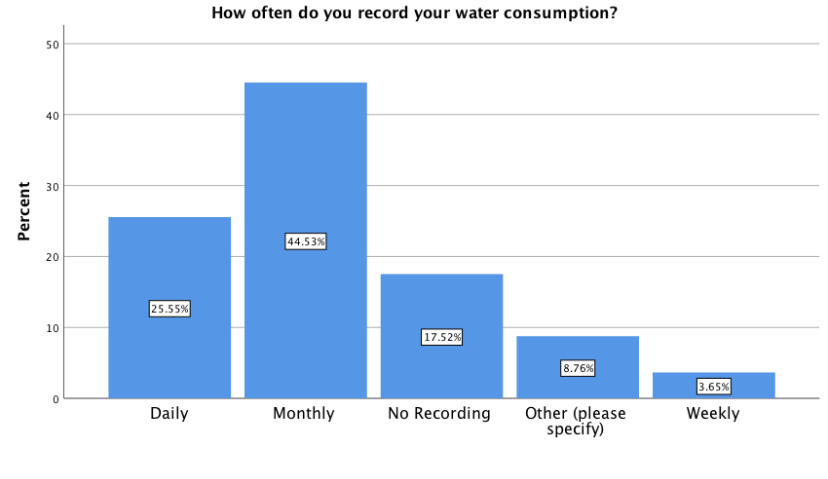

Figure 5 Water consumption recording frequency

From those that record their consumption, the 41.96% do that with physical observation of the meters, 34.82% use the water utility bill to record the consumption and 19.64% have some kind of monitoring system, for example smart meters. The aforementioned results are depicted in Figure 6.

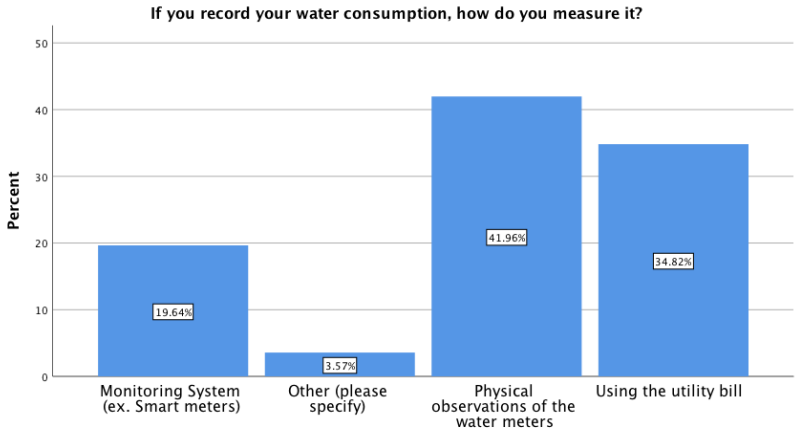

Figure 6 Water consumption measure type

Figure 7 illustrates the frequency of the water consumption monitoring per partner and how do they measure water consumption. Due to the low number of sample for some partners its difficult to extract certainly conclusions.

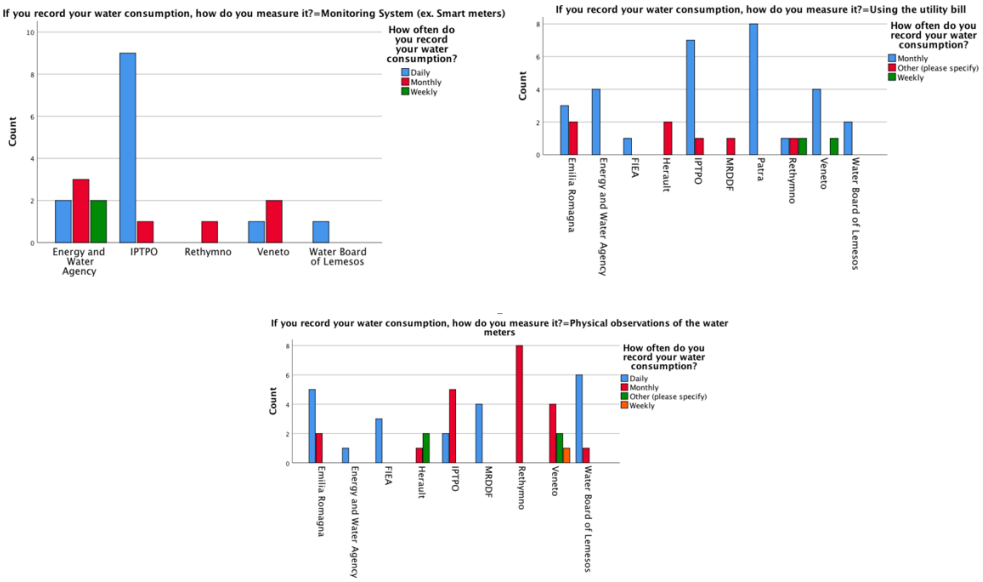

Figure 7 Water consumption measure type per partner

The enterprises that they do not record their consumption, they mentioned as the main reason the high monitoring cost (Figure 8) and the fact that they lack the proper tools (Figure 9 - monitoring system) to help them with this task.

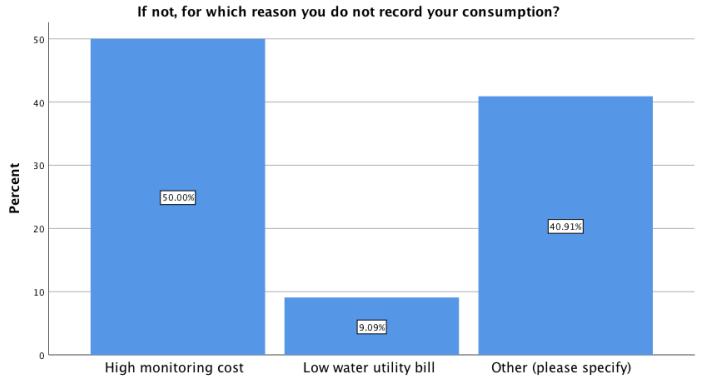

Figure 8 Reasons not monitoring water consumption

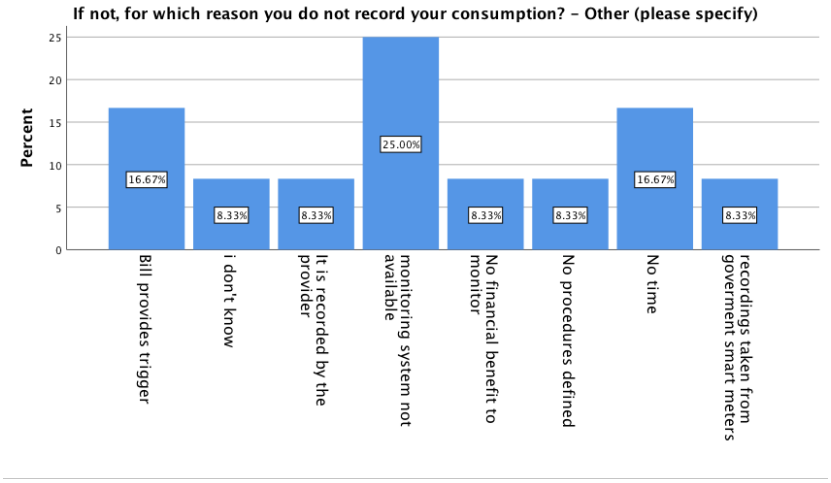

Figure 9 Other reasons not monitoring water consumption

Leaks from pipes, plumbing fixtures and fittings are a significant source of water waste. As shown in Figure 10 and in Figure 11, 32.85% of the enterprises check for leaks every day, 27% check for

leaks on demand and 18.25% check for leaks every month. The great majority has responsible stuff to detect the leaks with physical observations. The use of a more advanced solution, like a real-time monitoring system, is not common.

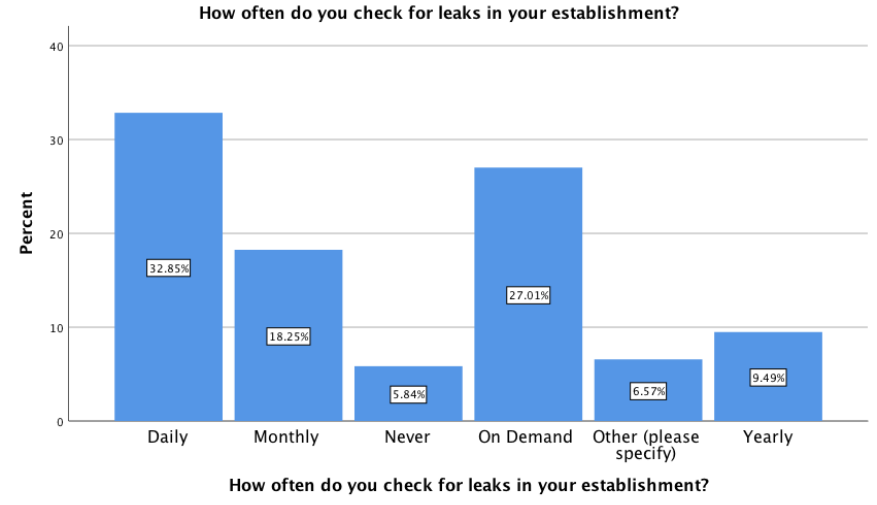

Figure 10 Water Leakage

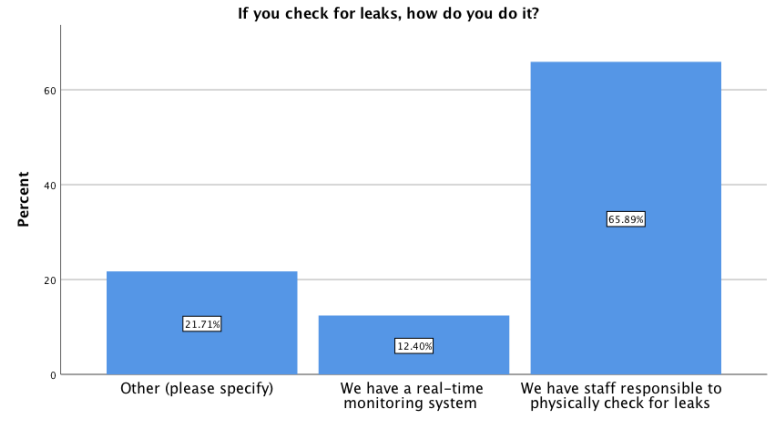

Figure 11 Leakage detection

Accommodation –Water pricing

59.85% of the enterprises have a fixed-charge plus a water use charge as part of their water tariff while 30.66% have volumetric tariff (Figure 12). Based on the utility bills data collected from accommodation enterprises, Figure 13 compares the cost of the water utility bill with the cost of the electricity bill. The cost of water varies from 18%-49% of the total utility cost. It is remarkable that in the case of Istria (IPTPO) the utility cost of water is the same as the electricity cost. High water utility cost is also observed in the case of the two partners from Italy (Emilia Romagna and Veneto region).

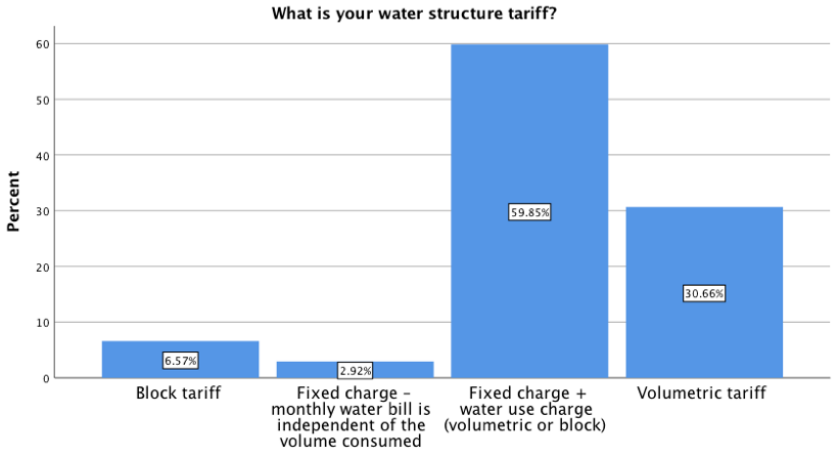

Figure 12 Tariff structure

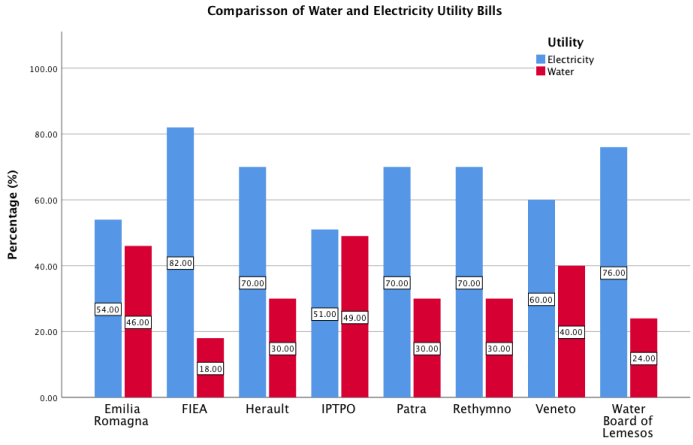

Figure 13 Water vs Electricity bill

The participants in the survey express a high interest towards investing the savings from the reduction of water consumption to introduce new water efficiency measures. More specifically, 26.28% of the participants reply that they are very interested, 64.96% that they are interested and only 8.76% that they are not interested.

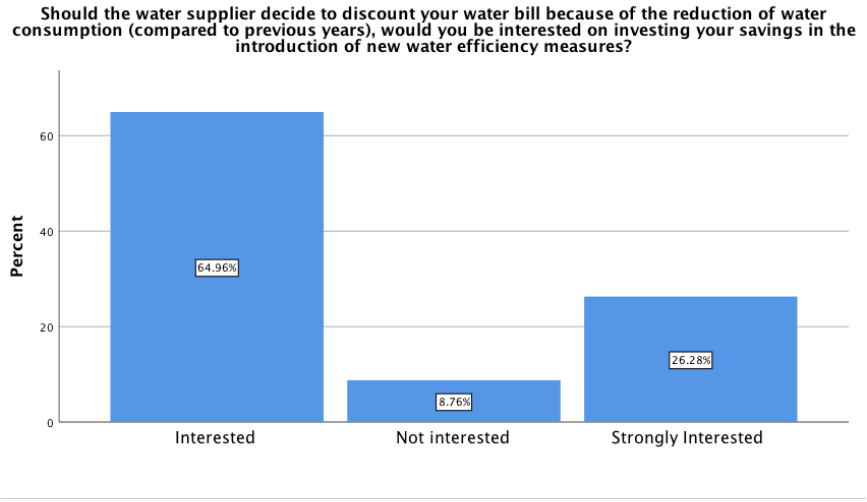

Figure 14 Interest to invest to new water efficiency measures

Figure 15 shows the interest of the participants to invest the savings from a new tariff to water savings devices or measures or to invest in other priorities. 58.9% of the participants declared that they will invest the money from the discounted bill in more water savings devices or measures whereas 36.5% declared that they will invest in other priorities.

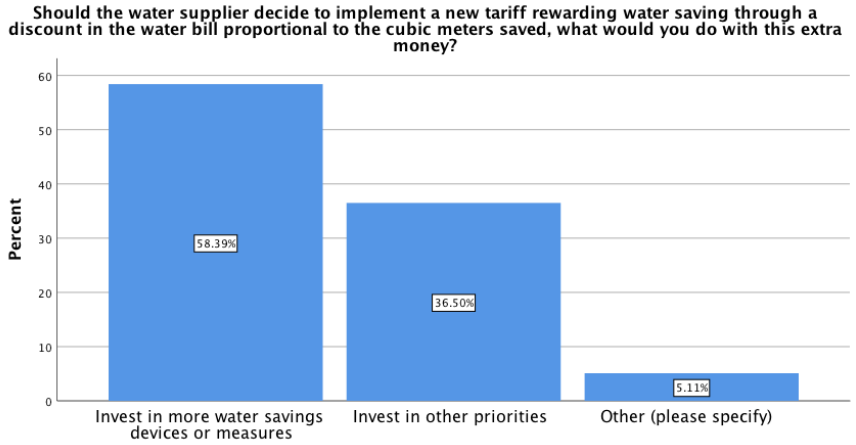

Figure 15 New tariff invest the savings

Accommodation – Green Image achievement

Some accommodation companies seem to promote their establishment through "green certification". In our survey, 78.3% of the participants express a willingness to invest in receiving an environmental friendly certificate (Figure 16) and therefore to secure greener customers through the travel agents.

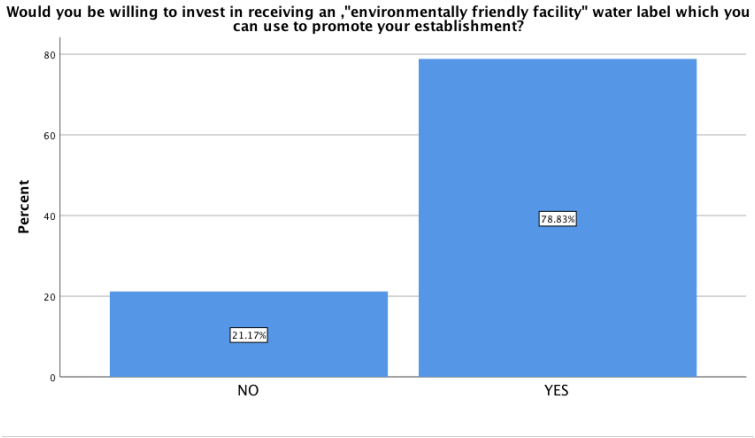

Figure 16 Environmental friendly certificate

Structural/technical changes influence the efficiency of water use in the fixtures and appliances. The survey participants were asked if they have installed low flow tap fittings and showers and/or low/dual flush toilets. In both cases, around 85% of the answered that they have installed either all or some. Detailed results are shown in Figure 17 and Figure 18.

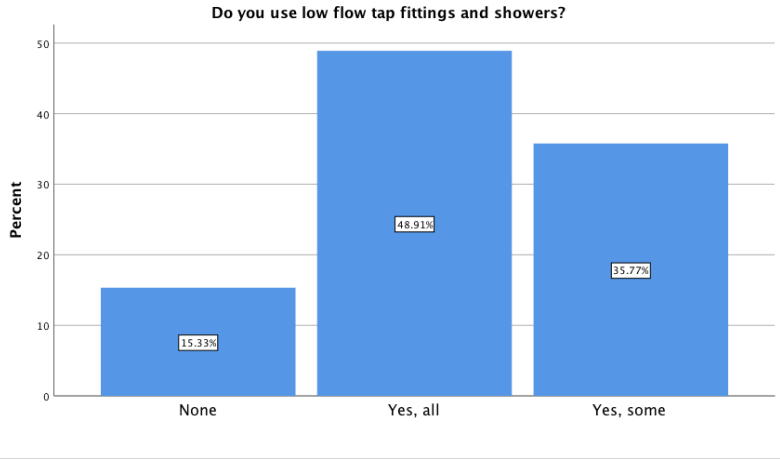

Figure 17 Low flow tap fittings and showers

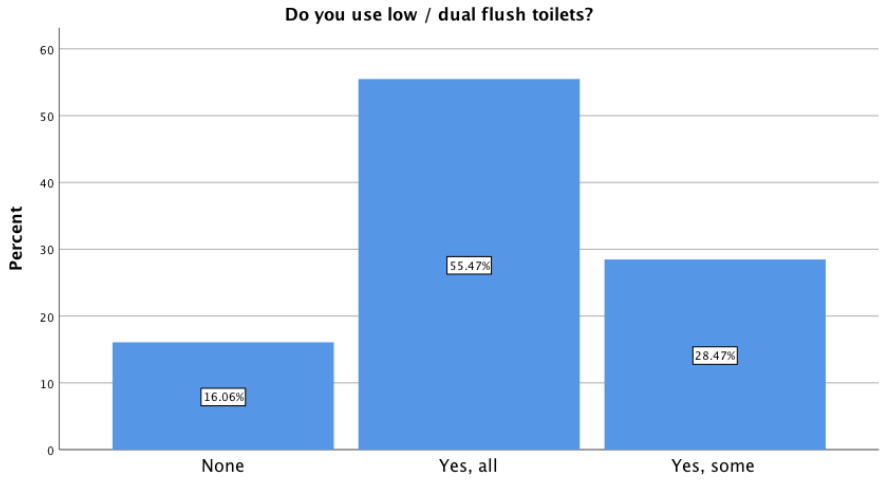

Figure 18 Low/dual flush toilets

Respondents were asked which factor/parameter would most likely influence their decision to implement a water management tool. Users could select more than one option. 59.9% of the sample state that public co-financed support will influence them, 32.1% state the discount provided by the supplier, 19% state the more knowledge on technical information and 20.4% the green image achievement (Table 5).

Table 5 Factor influence water management tool

	N	Percent
Public co-financed support	82	59.9%
Discount Provided by Supplier	44	32.1%
More knowledge on technical information	26	19%
Green image achievement	28	20.4%
(Other)	10	5.2%

The interviewed users were also asked about the source of their water. Users could select again more than one option. The great majority of the users (96.4%) state that they receive water from the public water utility. Few of them have in-house desalination and groundwater facilities (Table 6).

Table 6 Conventional water sources

	N	Percent
Public Water Utility	132	96.4%
Non-Public Water Utility	12	8.8%
In House Desalination	16	11.7%
In House Groundwater	15	10.9%
Other	12	8.8%

Further to the above mentioned conventional water sources, users where asked about the existence of non-conventional water sources. 78.8% state that non-conventional water sources are not available and only 13.1% support rainwater harvesting (Table 7).

Table 7 Non-conventional water sources

	N	Percent
Rainwater Harvesting	18	13.1%
In House Greywater	4	2.9%
In House Blackwater	2	1.5%
Not Available	108	78.8%
Other	6	4.4%

Accommodation – Awareness

Accommodation operators need to actively support water saving procedures to minimise overall water consumption. This involves raising tourist's awareness of the most appropriate ways to save water. By raising tourist's awareness of sustainable water management, it is possible to create a culture of water conservation and demand management in tourism sector. The survey participants were asked how do they inform their guests about water savings. Users could select again more than one option. We observe that the great majority of enterprises inform their guest with stickers and/or flyers and posters. It is remarkable that 19.5% of the enterprises do not inform the guests about water saving. Istria (37% - 10 enterprises) and Patra (80% - 8 enterprises) are the regions with the most enterprises that they do not inform guests about water saving.

Table 8 Inform guests about water saving

	N	Percent
Stickers	72	42.6%
Flyers/Posters	48	28.4%

Hotel website	16	9.5%
We do not inform guests	33	19.5%
Total	169	100%

Table 9 Encourage customer to save water

	N	**Percent**
Reuse towels and bed linen	77	41.6%
Taking a shower instead of a bath	38	20.5%
Taking shorter showers	32	17.3%
Turning off taps when brushing teeth and shaving	38	20.5%

Although 81.75%enterprises state that they remind their employees to save water during their work day (Figure 19) ,most of them (51.09%) do not provide any training programme to the employees in order to help them optimise the water use (figure 20).

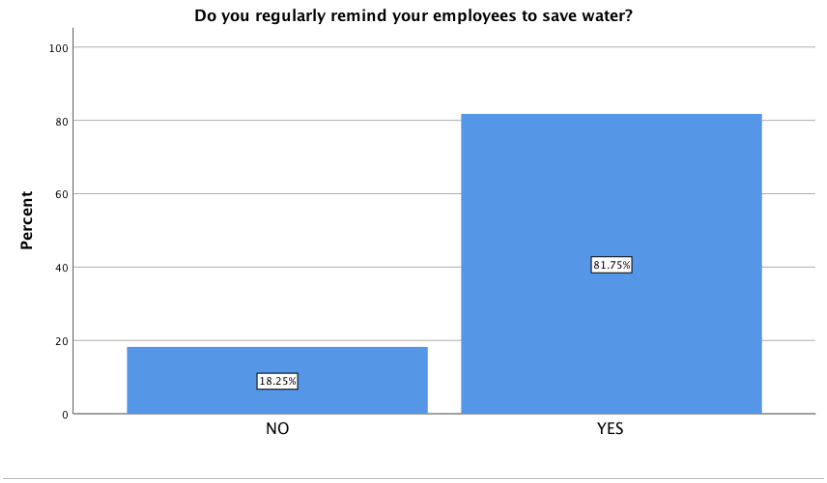

Figure 19 Remind employees to save water

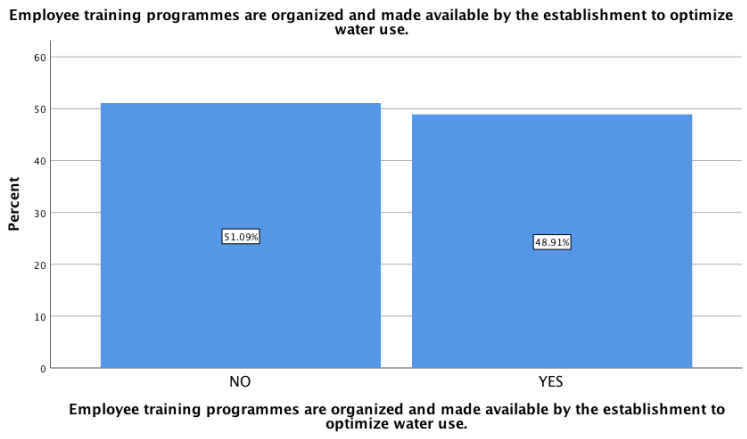

Figure 20 Employees training programs

5.1.2 Food and Drinks sector

In this survey, we collected questionnaires from the Food and Drinks sector. We have initially considered two main categories: the enterprises that offer food and drink, and the enterprises that offer only drinks. The majority of the sample collected derives from the Food and Drinks category (Figure 21). More specifically, 85.06% of the questionnaires collected were from Food and Drinks, 13.79% from Drinks only facilities and 1.15% from other facilities (Cafe Pub).

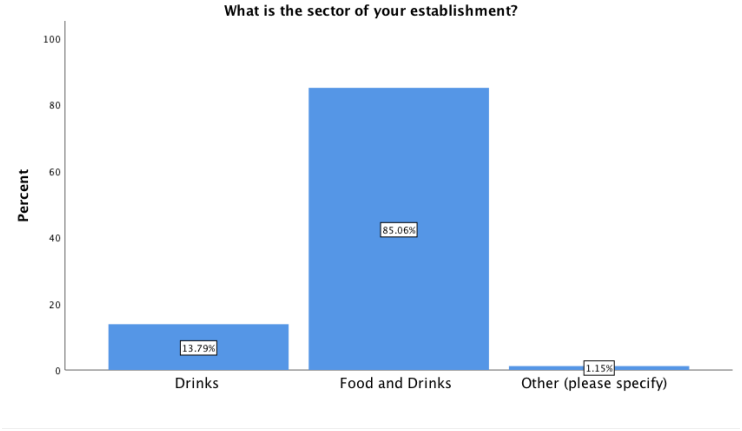

Figure 21 Food and Drink type of establishments

Food and Drinks – Adoption of WDM technologies

41.38% of the Food and/or Drinks enterprises record their water consumption every month while the 40.23% do not record their consumption in any way. The 10.34% of the enterprises replied that they record their consumption on other base (Upon receipt of utility bill or every 3-4 months). The results are depicted in Figure 22.

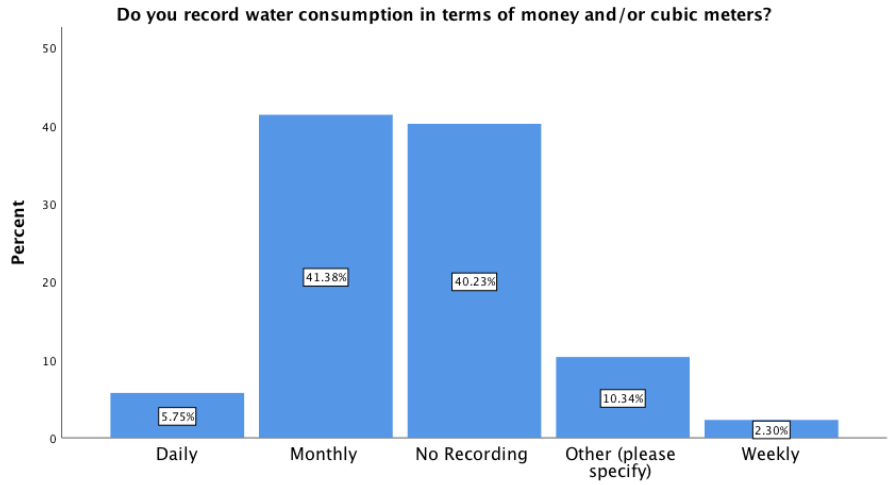

Figure 22 Water consumption recording frequency

From those who measure their water consumption (Figure 23), 71.15% is using the Utility bill to do that and the other 28,85% is doing it by physical observation of the meters.

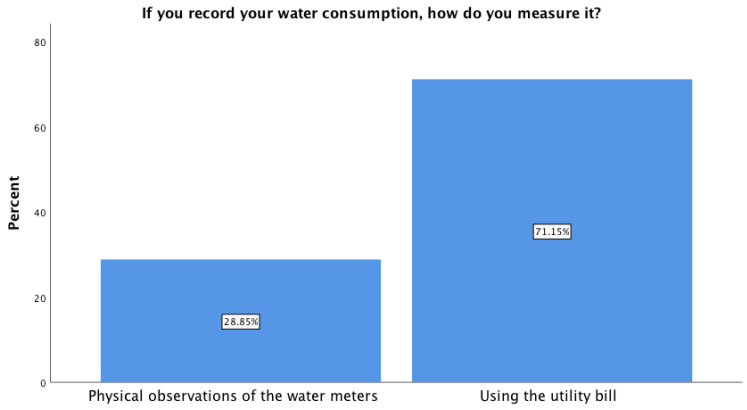

Figure 23 Water consumption measure type

Figure 24 shows how often the enterprises check for water leaks. The majority, 47,13% check for leaks on demand, 28.75% check for leaks every day and 10,34% every month. A very small percentage, only 3.45%, of the sample never check for water leaks.

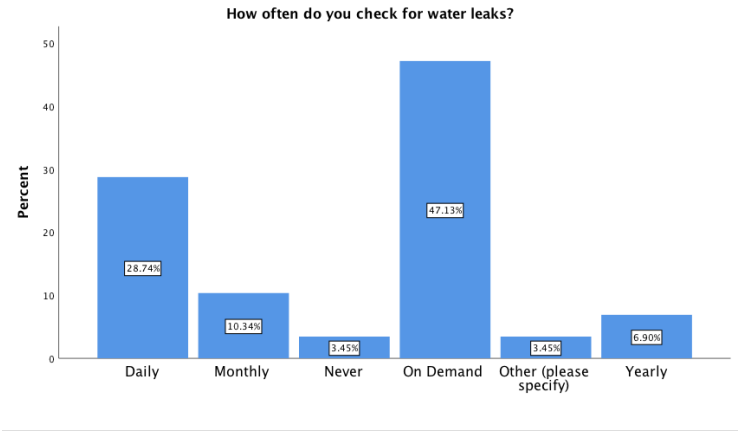

Figure 24 Water Leakage monitoring frequency

From those that check for water leaks, the majority (88.10%), have responsible staff to detect the leaks with physical observations. The existence of a more advanced solution, like the real-time monitoring system, is very rare, only 1.19%. The remaining 10.71% uses other ways to check

for leaks. Some of the answers were: “check for leaks when establishment is not operating”, “a plumber”, “from the utility bill”, etc. The aforementioned results are shown in Figure 25.

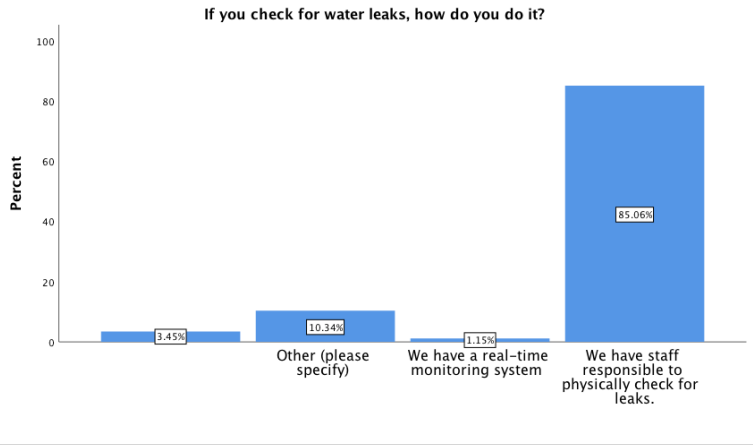

Figure 25 Water leakage tool

Participants were asked if they use other water sources apart from the water supply provided by the public utility (Figure 26). A great majority of 93.1% answered No and only 6.9% answered Yes. From those that answered ‘Yes’, three of them (all in Lemesos) answered that they have in-house recycling infrastructure, two that they use recycled water for irrigation and one that has in-house rainwater harvesting infrastructure.

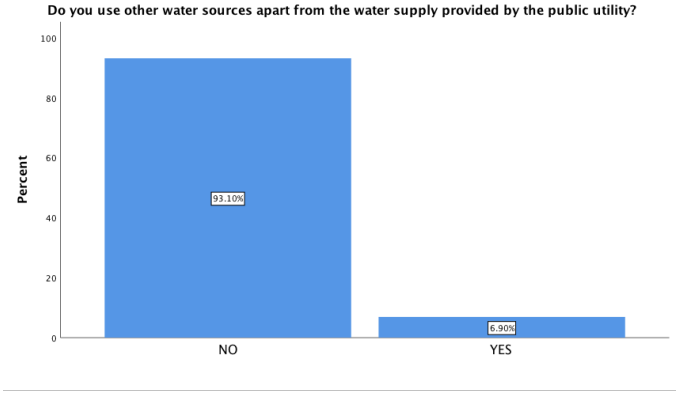

Figure 26 Water other sources

Food and Drinks –Price incentives

In the Food and Drinks survey, 56.32% have a fixed-charge plus water use charge for their water tariff where the 37.93% have volumetric tariff water structure tariff. The 4.60% have block tariff and only the 1.15% have fixed charge (monthly water bill is independent of the volume consumed). Results are shown in Figure 27.

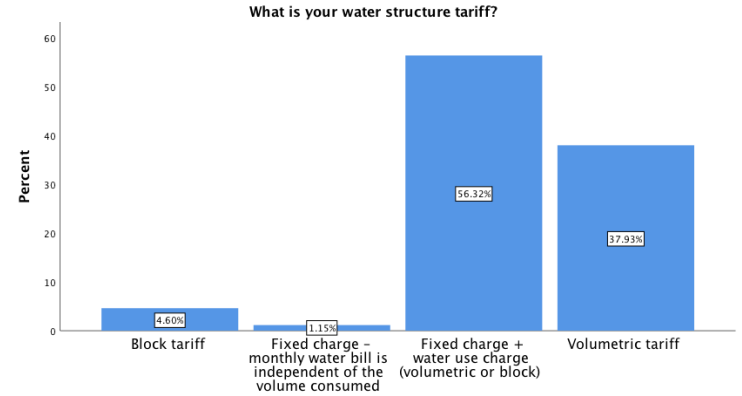

Figure 27 Water tariff

From regions that provided utilities cost information, the total average cost of the water utility bill is 18% of the total utilities cost were the total average cost for electricity bill is 82%. More specifically (see Figure 28), the water utility cost ranges from a minimum of 10% (in case of Malta and Patra) to a maximum of 26% in case of Istria (compared to the 49% of the) whereas the electricity ranges from 74% to 90%. It is obvious that water cost is not significant for this type of touristic enterprises.

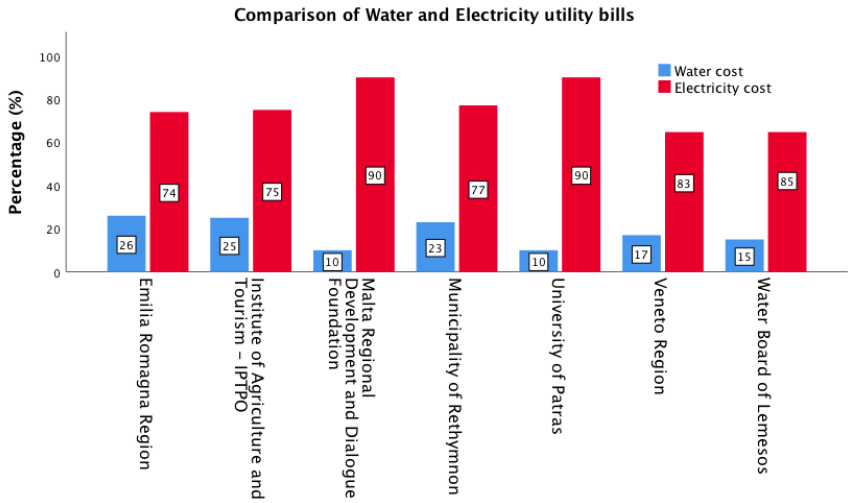

Figure 28 Water vs Electricity utility cost

The food and drinks sector participants express a high interest in the question if they are interested to invest the savings from the reduction of water consumption to introduce new water efficiency measures. More specifically, 19.54% of the participants reply that they are very interested, 73.56% that they are interested and only 6.9% that they are not interested.

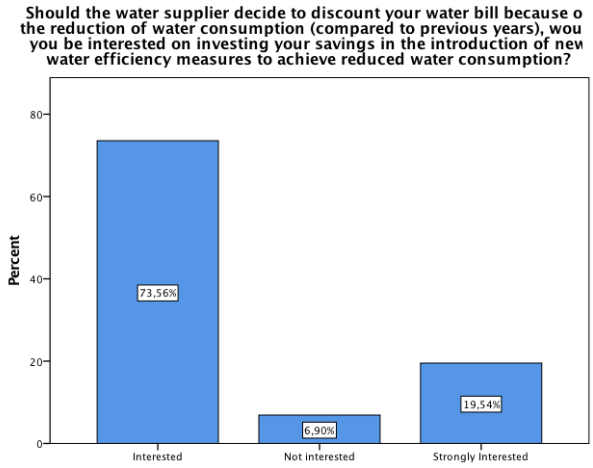

Figure 29 Invest on new water efficiency measures

Figure 30 shows the interest of the participants to invest the savings from a new tariff to water savings devices/measures or to invest in other priorities. Only 40.23% of the participants declared

that they will invest the money from the discounted bill towards more water savings devices or measures where the 59.77% declared that they will invest in other priorities.

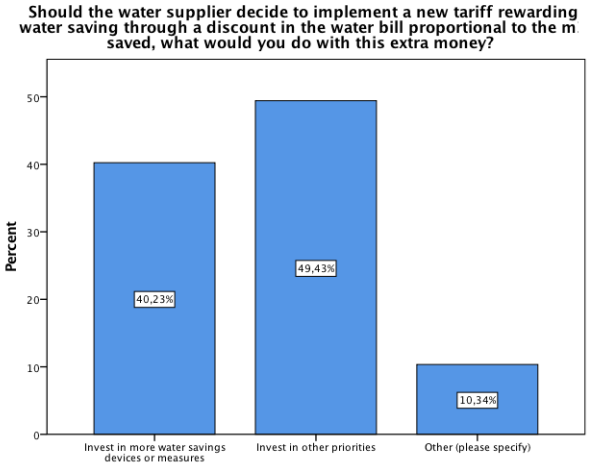

Figure 30 New tariff invest

Food and Drinks – Green Image achievement

In our survey, 63.22% of the participants express the willingness to invest in receiving an environmental friendly certificate (Figure 31). The percentage is lower if you compare it with the accommodation sector where 78.3% of the participants were interested to receive such a certificate.

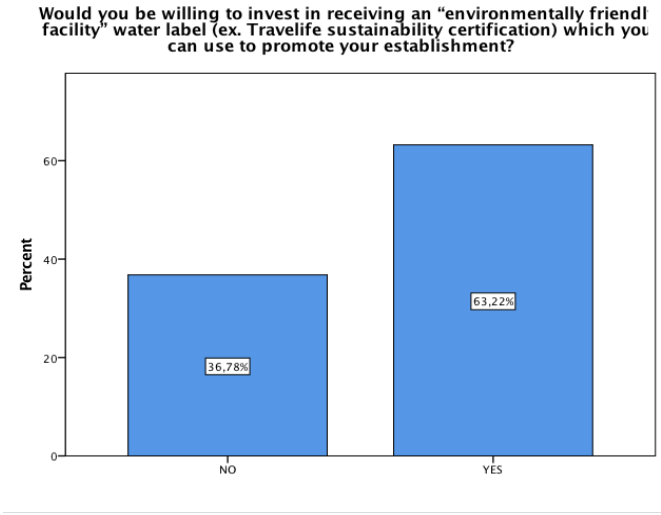

Figure 31 Green image achievement

The participants were asked to indicate the approximate water consumption percentage per category. The results shown that 56.32% do not have this information. The remaining 43.67% provided the percentages for each category as shown below in Table 10. We observe that the main use of water is for cleaning and then for the kitchen (cooking).

Table 10 Water consumption breakdown

	Percent
Kitchen	32.6%
Cleaning	40.5%
Toilets	19.5%
Irrigation	7.4%

Food and Drinks – Structural/technical changes

Furthermore, we have asked the survey participants to tell us if they have upgraded their dishwashers, ice machines and steam cookers to models that operate in a water efficient way. From the replies, we observed that only 32.18% they have upgraded to water efficient models.

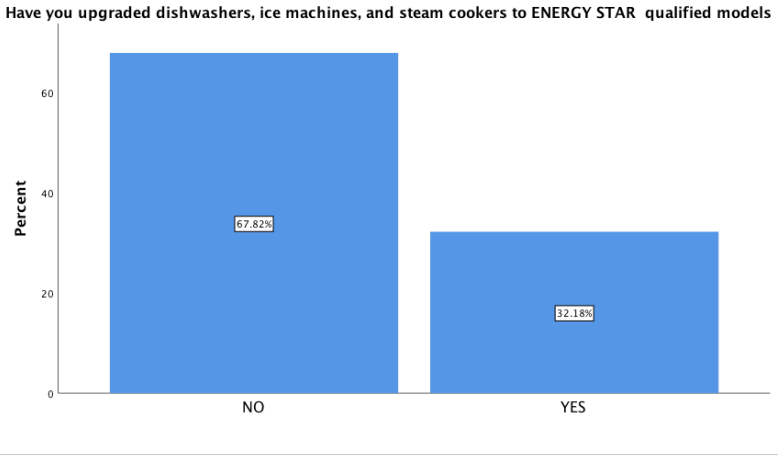

Figure 32 Water efficient appliances

Food and Drinks– Awareness

As we did for the accommodation sector, we asked the participants how do they inform their guests about water savings (Table 11). We observe that the great majority (62.1%) of enterprises they do not inform their clients about water savings and only 33.3% inform their guest with stickers and/or flyers.

Table 11 Inform clients about water savings

	N	Percent
Stickers	29	33.3%
Flyers	1	1.1%
We do not inform clients	54	62.1%
Other	3	3.4%

Although that the enterprises state with 81.61% that they remind their employees to save water during their day work, most of them (59.77%) do not provide any training programme to the employees in order to help them to optimise the water use.

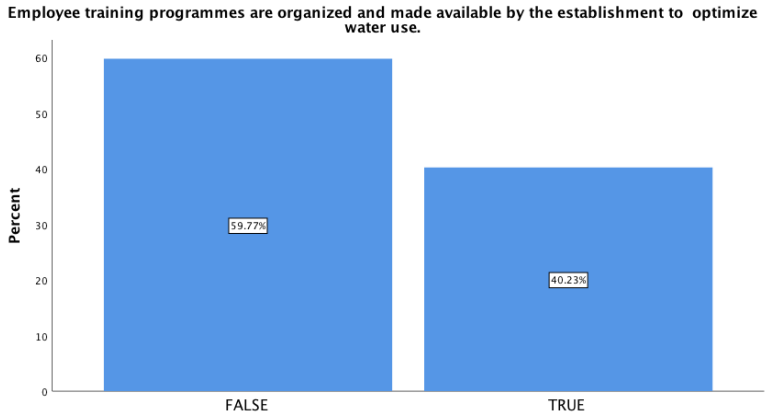

Figure 33 Employees training programs

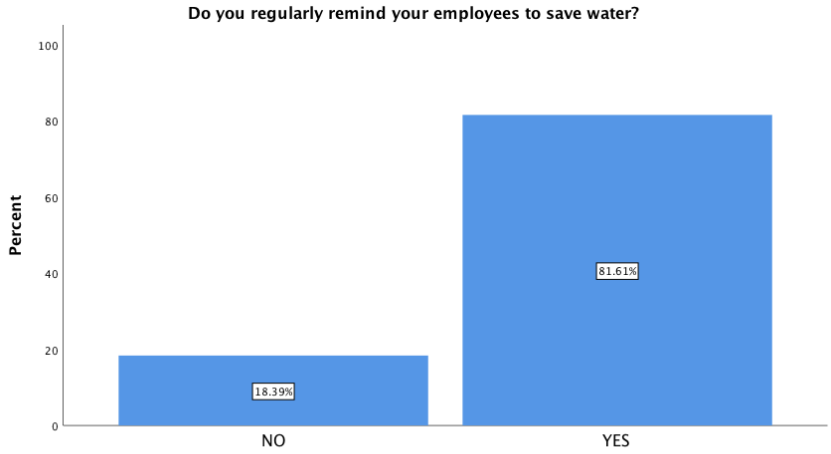

Figure 34 Remind employees to save water

Furthermore, the food and drinks enterprises would not consider investing any savings from their employee's water savings to buy water efficient devices. Figure 35 shows that only 25.29% of the participants are willing to invest the saved money in order to buy new water efficient devices.

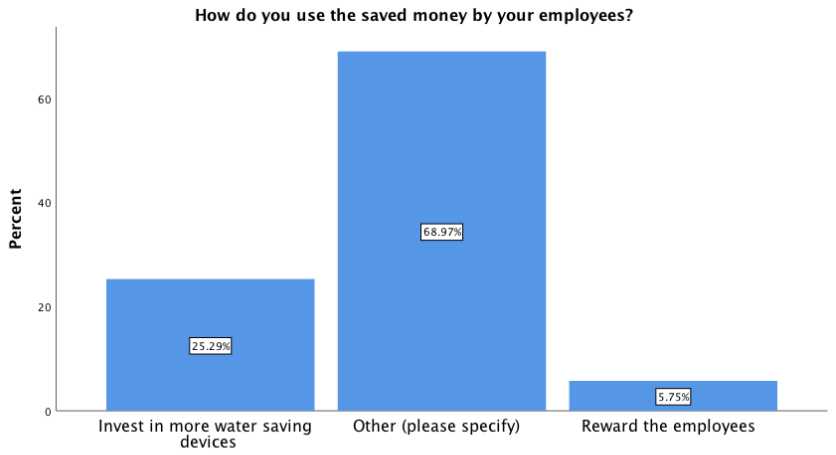

Figure 35 Use of employees saved money

5.1.3 Sports and Leisure sector

Further to the accommodation and food and drinks sectors, we tried to collect data also from the sport and leisure sector. These types of facilities include enterprises like golf, waterparks etc. Unfortunately, the number of such facilities in the partners' regions are limited and this is the reason why we managed to collect only 4 questionnaires. These questionnaires were collected from 3 regions: Lemesos, Istria and Murcia. Analysing these questionnaires, we observed that there are lot of similarities with the accommodation sector. However, we observed two main differences:

1. Most of the golf and waterpark facilities invest towards other sources of water like in-house greywater recycling, rainwater harvesting and in-house groundwater abstraction. They use this water mainly for irrigation purposes.
2. The utility cost of water in case of golf facilities is greater than the electricity cost and the water utility cost in case of waterparks is similar to the electricity cost.

5.2 Desk Research

A desk research was conducted by the CASTWATER partners in order to investigate the needs with regards to WDM and awareness raising for public authorities, tourism sector personnel and the public.

Q1. What is the water consumption percentage of the tourism sector in your country compared to the total water consumption? If possible, find the numbers for different types of enterprises, such as accommodation, restaurants, bars/pubs, waterparks, golf courses, etc.

REGION	WATER CONSUMPTION OF TOURISM SECTOR
WATER BOARD OF LEMESOS	Tourism sector water consumption in Cyprus is around 4.9% of the total consumption. The average water consumption per tourist is 465 litres/day whereas the domestic water consumption is 200 litres/day.
MALTA REGIONAL DEVELOPMENT AND DIALOGUE FOUNDATION & ENERGY AND WATER AGENCY	The annual total water consumption of the tourist sector of Malta is estimated to range between 5% and 8%. According to research, the average amount of water consumed by tourists amounts up to 312 litres/day whereas the domestic users amount up to 136 litres/day.
UNIVERSITY OF PATRAS	Exact percentage is not available for the region. Tourists consume double amounts of water than domestic users. The water

	consumption per tourist is 300-488 litres/day whereas domestic usage is 150-250 litres/day
EMILIA ROMAGNA REGION	There are no data regarding the water consumption percentage of the tourism sector. The water consumption per overnight stay is 285 litres. The daily water consumption per person resident in the region is 226 litres.
EUROMEDITERRANEAN WATER INSTITUTE FOUNDATION - MURCIA	The total percentage of water destined to the tourism sector in the territorial area of the Region of Murcia is less than 2% of total consumption. With regard to the city of Murcia, there is available segmented information provided by the water supply company by the tourism sector and can be summarized as follows: the percentage of water consumption by the tourism sector is 1.54% (0.48% for hotels, 0.73% restaurants and cafes, 0.31% waterparks and 0.02% tourist residential resorts) of the total water supplied in 2016.
MUNICIPALITY OF RETHYMNON	In Crete, the tourism sector water consumption is around 2.4% of the total consumption. The average tourist water consumption is 440 litres/day whereas the domestic consumption is 220 litres/day.
INSTITUTE OF AGRICULTURE AND TOURISM - ISTRIA	The water consumption percentage of tourism sector compared to the total water consumption of business entities for Istria County is 29%. The 48% of total water consumption in Istria is consumed by industry. The share of tourism in industry sector is 60%. The average estimation of water consumption per tourist is 130 litres/day whereas the domestic water consumption is 80 litres/day.

VENETO REGION	There are no data regarding the water consumption percentage of the tourism sector.
DEPARTMENT COUNCIL OF HERAULT	The total tourist sector water consumption percentage is not available for this region. Tourists consume around 300 litres/day whereas domestic usage is 140 litres/day.

Q2. Does the water utility support any demand management measures to the tourism sector enterprises? Such examples are flexible pricing plans, penalties for excessive use (quotas), eco-innovative technological devices, legislation, relevant policies etc.

REGION	WDM MEASURES
WATER BOARD OF LEMESOS	The measures supported in the area of Lemesos are the following: 1. Increasing block tariff structure 2. For the hotels, there is recycled water availability for irrigation
MALTA REGIONAL DEVELOPMENT AND DIALOGUE FOUNDATION & ENERGY AND WATER AGENCY	The water utility does not offer any demand management measures specific to the tourism industry besides fiscal disincentives applied via consumption bands. The only tool which may be deemed to be of slight relevance is the Water Services Corporation's remote reading facility and live consumption data for consumers. This allows consumers to control their water consumption and to optimise the efficiency of its town supply, while monitoring water leaks via remote notification and in real time.

	National Legislation requires the water utility to adopt a rising block tariff system whereby non-residential users (which also includes all types of tourist establishments) are encouraged to use water more efficiently. An exception is made for non-residential consumers with an annual consumption greater than 40,000m^3 per year.
UNIVERSITY OF PATRAS	Water utility agencies in Greece are either controlled by the respective municipality or by the state. Though they do not adopt specific measures for the tourism sector, they enforce general pricing plans that penalise large water consumption. Excessive water consumption is overcharged as a penalty measure to avoid it. Most of them also adopt discounts for business (especially agriculture), public entities etc. In 2016, a plan was put in consultation by the government that is expected to change the way water consumption is billed, it will adhere to Directive 2000/60/EC of the European Parliament and of the Council on protection of water and provide incentives for reducing water consumption (i.e. through greywater).
EMILIA ROMAGNA REGION	The water utilities in Emilia Romagna offer the following measures to support water demand management: water saving campaigns, technological devices free distribution, information and awareness local events.

EUROMEDITERRANEAN WATER INSTITUTE FOUNDATION - MURCIA	The price of urban water supply in the Region of Murcia is 3.0 Euros/m^3, which is the highest price of water in Spain. This price is already a sufficient incentive to adopt measures of savings by large consumers, especially hotels, golf courses, water parks and other industries in the tourism sector. However, in the Region of Murcia the implementation of penalties and bonuses in the tariffs for the consumption of urban water supply depends on each municipality. The general rule is that tariffs are segmented with excessive consumption penalties as each consumption block is exceeded. A bonus is also established when it is justified that the high consumption of water is due to a high number of members in the family unit, and there are even exemptions for families that are in a state of need. The water tariff in the municipalities has a double structure, with a fixed component that is paid regardless of consumption and another variable that depends on the actual water consumption measured in the meter of each user. The fixed component materializes in the form of a minimum billing or a fixed fee to be paid. The variable part depends on the consumption made and a price per block of increasing consumption is applied, i.e. the price of the first cubic meters consumed is more economic than the successive ones, which contributes to encourage rational consumption. In addition to the progressive tariffs in many municipalities of Alicante and Murcia, the rules establish that in case of waste or leakage, the company in charge of the distribution of drinking water with municipal agreement can force the temporary

	suspension of supply. Supplies that are managed through private public collaboration models include provisions related to the modernization of infrastructure, installation of more efficient metering methodologies, remote controls and other technologies for saving and efficiency in urban water distribution.
MUNICIPALITY OF RETHYMNON	In Crete, tourism sector enterprises play a vital role in water demand management since they constitute a large part of the local economic activity, particularly in the summer months. The demand management measures for the efficient use of water in Crete are mainly imposed through pricing according to consumption levels (m^3), the municipality and the category the consumer belongs to. The legal basis for the determination of the pricing per cubic metre is in reference to law N. 1069/80 and the price of which incorporates both the financial and the environmental cost of the resource.
INSTITUTE OF AGRICULTURE AND TOURISM - ISTRIA	No demand management measures are supported by the water providers.
VENETO REGION	The suppliers do not apply specific tariffs for tourism sector enterprises. They distinguish between domestic and not domestic usage. For example, a specific supplier applies a tariff system which penalizes the excessive water usage. More precisely, it applies 4 different tariffs according to the range of water usage in which the enterprises fall.
DEPARTMENT COUNCIL OF HERAULT	Water utilities have an interest in reducing leakage on drinking water systems or reducing lost or unbilled volumes. However, the

	water utility has a lesser interest in reducing consumption of its users because of revenues decrease, though the cost of infrastructure remains unchanged. Often, the Municipalities have water and sanitation services. In order to preserve resources, it can strengthen wastewater treatment plants to recycle water for watering its green spaces or for washing the streets. A Littoral municipality is required to size its drinking water and sanitation infrastructure in proportion with the number of users. The peak demand for water during the summer period linked to the tourist arrivals implies an over-dimensioning of the infrastructures. Tourists don't participate proportionally to this extra cost related to their presence. In order to indirectly involve tourists, some water utilities have opted for seasonal pricing.

Q3. Do the public authorities (or water utilities) run any water efficiency awareness action? This may include education programs for students, mass media advertising campaigns, promotional campaigns and events.

REGION	WDM AWARENESS
WATER BOARD OF LEMESOS	Awareness actions in the area of Lemesos: 1. Educational programmes for pupils and students 2. Mass media advertising campaigns 3. Promotional campaigns regarding water saving 4. Organising water-related events
MALTA REGIONAL DEVELOPMENT	Public authorities are not conducting any water efficiency

AND DIALOGUE FOUNDATION & ENERGY AND WATER AGENCY	awareness actions across the tourism industry that we are aware of. Despite that, a nationwide water awareness campaign is planned to be launched by Government towards the end of this year. The awareness campaign shall target different water users, including tourist establishments. Furthermore, the Energy and Water Agency has recently concluded the development of a National Water Conservation Awareness Centre, which centre is currently undertaking a number of water conservation and awareness activities specifically designed for school children. It is also worth mentioning that in recent years a LIFE Project was undertaken by the Malta Business Bureau which targeted the water consumption of accommodation facilities in the tourism sector.
UNIVERSITY OF PATRAS	Several awareness campaigns are launched by the public sector, the educational community, large organizations and companies, municipalities and regions, media, etc. In public mass media (television, websites, etc.) there are informing advertising campaigns about the need for reducing water consumption and about the dangers included in the already augmented water consumption in domestic, private, business sector in Greece.
EMILIA ROMAGNA REGION	Awareness actions in Emilia Romagna: 1. Regional Water Protection Plan. 2. Regional water saving plan. 3. Regional water saving campaigns - “Acqua, risparmio vitale”. 4. Water saving pilot projects, as “Bagnacavallo”, “Non c’è acqua da perdere” - Castel San Pietro Terme”, “Acqua

	preziosa" – Bologna, Provincia di Rimini, "Bagnino sostenibile", etc. 5. World Water Day. 6. Regional water saving week. 7. Regional participation to thematic fairs, exhibitions and public conferences.
EUROMEDITERRANEAN WATER INSTITUTE FOUNDATION	In the Region of Murcia, the awareness about the need for saving and efficiency in the use of water is a constant policy in all urban, industrial and agricultural sectors. The supply companies carry out numerous campaigns and events throughout the year to raise awareness among consumers, and with a special focus on schools, also communication campaigns and events, paying attention in all of them to the need to save Water. Public authorities, local and regional entities, also maintain educational actions in this sector. With a special focus on saving water for the tourism sector, several campaigns have been developed to implement savings and efficiency technologies in showers, faucets, swimming pools and other sources of consumption. Also with regard to the training of staff in the tourism sector, the Tourism Training School of the Region maintains training programs that include the need for environmental, energy and water-friendly management.

MUNICIPALITY OF RETHYMNON	1. The initiative "Green Heraklion 2008 -2013" aims to upgrade the city in terms of sustainable economic and environmental development. The initiative includes five major actions including water and waste management. 2. Collaborating with other public authorities, the Technological Educational Institute of Crete, takes part in the organization of events and the educational awareness of environmental concerns for the community as well as for its members.
INSTITUTE OF AGRICULTURE AND TOURISM	Water supplier (Istarski vodovod d.o.o.) organizes an open info day every 22nd March (World Water Day). The visitors of all age groups are welcome to visit them and get some information about water.
VENETO REGION	Actions run by Veneto Region: 1. Two projects financed consisted in campaigns made in the schools with laboratories for sensitizing the youngsters for the sustainable usage of water; 2. Financed initiatives of the Unione Veneta Bonifiche aimed at the conservation of groundwater and sensitization of the water saving and the aware water usage. 3. The water supplier Veritas has been carrying out for years an environmental education program. In 2016 the company carried out trainings in schools involving around 3.000 students. 4. In December 2016 Viveracqua, the consortium of public water suppliers of Veneto, launched a communication

	campaign aimed at showing to the venetian citizens how money of the bills is spent. 5. In Veneto, the "Centro Internazionale Civiltà dell'Acqua ONLUS" carries out, since 1998, projects aiming at increasing the sensibility about the environment and the resource water.
DEPARTMENT COUNCIL OF HERAULT	Awareness campaigns are regularly conducted in France. They can be carried out by different entities by the government and the water agencies, the local and regional authorities: Regional, Departments, Group of communes or municipalities (within the framework of a sustainable development approach) via the media they have (magazine, web-tv, municipal bulletins, etc.) and water services via water bills.

Q4. Does your government offer any benefits to the enterprises that are considered to be water sustainable? Such example are tax incentives, subsidies and rebates for adoption of conservation measures.

REGION	BENEFITS TO ENTERPRISES
WATER BOARD OF LEMESOS	No specific benefits to enterprises were found
MALTA REGIONAL DEVELOPMENT AND DIALOGUE FOUNDATION & ENERGY AND WATER AGENCY	Monetary benefits related to the sustainable use of water by tourist enterprises mainly arise from the adoption of the rising block tariff system which puts into place a water tariff mechanism favours the efficient use of water. The only grant schemes available to local enterprise are those offered by the Business Enhance Grants Schemes, part-financed by the

	European Regional Development Fund 2014-2020 (OPI - Fostering a competitive and sustainable economy to meet our challenges – 2014-2020). These grants seek to support enterprises when undertaking investment projects aimed at securing sustainable business growth, by becoming more competitive, innovative and become more resilient to market challenges.
UNIVERSITY OF PATRAS	Our research did not find any benefits provided by the government currently to promote water sustainability beyond the pricing policies we mentioned earlier, which connect the large consumption with an increased price. In addition, a plan which is under consultation by the government is expected to include additional incentives for water sustainability (i.e. usage of greywater). However, these have not been defined completely yet.
EMILIA ROMAGNA REGION	"Eco-incentives for enterprises" - water saving task included (2004). Life Plus "AQUA - Adoption of Quality Water Use in Agro-industry sector" - water saving kit.
EUROMEDITERRANEAN WATER INSTITUTE FOUNDATION	In Spain and in particular in the Region of Murcia, there are various measures for the efficient use of water in the tourism sector. Among these fiscal measures are tax deduction for installation of domestic water saving devices. This deduction is provided in the Personal Income Tax Law. The deduction applies when it comes to the main residence. In the Region of Murcia to obtain this deduction it is required a certification or verification issued by an Authorized Installer by the Ministry

	of Industry in accordance with the regulatory standards of authorized water installers.
MUNICIPALITY OF RETHYMNON	Each local E.D.E.Y.A decides its own price levels and as a result the government does not offer any benefits to the enterprises considered to be water sustainable.
INSTITUTE OF AGRICULTURE AND TOURISM	No benefits were identified.
VENETO REGION	There is no benefit for enterprises considered water sustainable. However, there is ECOBONUS 2017 which consists in a deduction of the income tax in case of the purchase of solar panels used for the production of hot water for domestic and industrial purpose and for covering the hot water need in pools, sport facilities, schools and universities.
DEPARTMENT COUNCIL OF HERAULT	In France, the construction of buildings takes advantage of labelling schemes such as High Environmental Quality (HQE) or more adapted to the Mediterranean climate, the Mediterranean Building Benchmark (BDM). These labels set construction requirements according to different targets including the rational management of water. In return for its "environmental" efforts, the structure has a financial aid or a tax reduction. The Water Agencies also assists the Diagnostic Studies of the communities to carry out audits of consumption on its own heritage (e.g. green spaces, buildings). Tax credits exist for individuals or professionals to encourage certain equipment. Recovery of rainwater has benefited for a

	few years from a tax credit but this has had little effect on the success of this device. French water agencies or large local authorities or ADEME regularly launch calls for projects to support a dynamic favourable to water savings. Thus, following the example of the Rhone-Mediterranean and Corsica water agency, the Calls for projects dedicated to different targets and different themes are multiplying: public water savings, public awareness campaigns, water supply for Water savings for agricultural use, water savings in the field of tourism, and so on. The reduced VAT rate (Tax on Added Values) and 5.5% for eco-responsible purchases or investments allow any user who pays VAT (both individuals and professionals) to reduce the cost of his eco-responsible investment and thus, to dampen its investments more quickly.

Q5. Check if funding/loans are available from government or other sources, for investment in new technology or water consumption reduction schemes.

REGION	WDM FUNDING
WATER BOARD OF LEMESOS	No funding schemes are available, except funding opportunities from competitive national or EU programmes.
MALTA REGIONAL DEVELOPMENT AND DIALOGUE FOUNDATION &	Loan schemes are indeed available for investment in new technology, but these are mostly generic funding

ENERGY AND WATER AGENCY	programmes and not specific to water efficiency. It is unclear whether such schemes are available to tourist operators currently. The package includes schemes to: Improve the performance of your operations through capital investment and related working capital; Invest in R&D&I which will contribute towards the launching of new products and services. Therefore, funding for investment in new technologies/upgrading of existing technology is made available from government (through Malta Enterprise) but this is not specifically related to water reductions schemes. It is up to the tourist establishment to decide whether the funds made available should be used for water reduction schemes or not.
UNIVERSITY OF PATRAS	Our research did not find any funding, loaning mechanisms or investments from the government towards water consumption reduction.
EMILIA ROMAGNA REGION	"Eco-incentives for enterprises" - water saving task included (2004 – Emilia Romagna Region). Life Plus "AQUA - Adoption of Quality water Use in Agro-industry sector" - water saving kit. Emilia Romagna Region Interreg IV-C "Water CoRe: Water scarcity and droughts; coordinated actions in European regions" – good practices handbook. Emilia Romagna Region. Other measures that could have a positive impact on water saving: Italian tax credit for the renovation of tourism accommodation buildings including bathroom facilities (2016), Regional funds for building renovation and equipment

	purchasing by tourism accommodations and tourism food and drink establishments (only SMEs) that, among the requirements, can contribute in improving the environmental impact.
EUROMEDITERRANEAN WATER INSTITUTE FOUNDATION	Among the official loans for the purpose of implementing new technologies of water saving in the tourist industry we can mention the loans of the Official Credit Institute to support the tourism sector in saving water and energy. It is the line of investment called Sustainable Plan Future-2011, which has contributed to the improvement of water management facilities in the tourist industries of the Region of Murcia, although only in the years in which the plan has been operational. This line of aid benefits energy efficiency, responsible and sustainable management of water and implementation of new technologies. The loan is aimed at hotels, apartments and campsites, rural accommodation, restaurants, travel agencies and establishments of other touristic industries. The amount financed is 100% of the investment, for the reimbursement of this aid is fixed in 12 years and the maximum amount cannot exceed 200,000 euros.
MUNICIPALITY OF RETHYMNON	The majority of the funds come from EU or national competitive programs. Example are the LIFE Programme, the Operational Programme for the «Transport Traffic, Environment and Sustainable Development», the Regional Operational Programme (ROP) Crete and the Green Fund.

INSTITUTE OF AGRICULTURE AND TOURISM	There are two funds available from Croatian ministries that offer funding for using renewable energy sources. The Ministry of environmental protection and energy efficiency funds three activities: recycling yard construction and equipment, Energy restructuring of Buildings and Use of Renewable Energy Sources in Public Institutions, the Ministry of Agriculture, funds Rural development in general and part of the funding is available for the use of renewable energy sources.
VENETO REGION	No funding/loans at national level. At regional level: - D.G.R. n. 2222 of the 23rd December 2016: call for the supply of contributions to enterprises for innovative investments in the accommodation sector. The call admits interventions of environment impact reduction and/or consumption of resources (energy/water) of the structure.
DEPARTMENT COUNCIL OF HERAULT	Support schemes for the control of energy and water coexist. They encourage users to invest in high-performance equipment, which is more expensive but ultimately allows them to limit their energy and water bills.

Q6. Are there any local water efficiency regulations/directives that the tourism sector enterprises have to follow?

REGION	WDM REGULATIONS/DIRECTIVES
WATER BOARD OF LEMESOS	There are not any specifically regulations or directives for the enterprises in the tourism sector

MALTA REGIONAL DEVELOPMENT AND DIALOGUE FOUNDATION & ENERGY AND WATER AGENCY	Not specifically to water. There is a rudimentary ECO certification effort as part of the national scheme for ensuring the environmental, socioeconomic, and cultural sustainability of hotels and farmhouses on the Maltese Islands and compliant to the Global Sustainable Tourism Council criteria (www.gstcouncil.org). The scheme was launched by the Malta Tourism Authority in 2002 and represents approximately 16% of hotel accommodation or 22 hotels, and 7 farmhouses in Gozo.
UNIVERSITY OF PATRAS	Our research did not find any water efficiency regulations/directives that was put by local authorities for the tourism sector enterprises.
EMILIA ROMAGNA REGION	Regional Water Protection Plan.
EUROMEDITERRANEAN WATER INSTITUTE FOUNDATION	The Region of Murcia is the first Spanish Autonomous Community that has passed a Law of Parliament for the policy of saving and efficiency in the use of water. In the region of Murcia, Law 6/2006, of July 21, on the increase of the measures of Saving and conservation in the consumption of water. For the tourism industry, this law contains the following obligations: (1) The faucets of sanitary appliances for individual consumption shall have jet economizers and a flow reducing mechanism, (2) The shower mechanism shall include jet economizers or flow reduction mechanism to give a maximum of 8 litres/min, (3) The flushing device of the toilet tanks will limit the discharge volume to a maximum of 7 litres and will have the possibility to stop the discharge or a double discharge system for small volumes, (4)

	Faucets for sanitary appliances of public use shall have timers or any other automatic closing mechanism which meter the consumption of water, limiting discharges to 1 litter of water, (5) In all points of water consumption in public places, it will be obligatory to warn, by means of a poster in a perfectly visible area, about water scarcity and the need for responsible use of water, (6) Properly maintained swimming pools can remain without emptying throughout the year. The total emptying of public and private swimming pools is totally forbidden. Water from these partial drains will be used for other uses, such as cleaning, irrigation or any other permitted use depending on their physical-chemical and microbiological quality. (7) In the case of ornamental fountains that form an integral part of the parks and gardens, a closed circuit must be installed and make the necessary treatments to comply with the sanitary regulations. The parks and gardens will have a sign indicating the origin of the water and the use of closed circuit. (8) The design of new green areas in all types of public and private facilities should include effective water saving systems including: irrigation programmers, short range sprinklers in meadows areas, drip irrigation in shrub and tree areas, and soil moisture detectors. It is important to point out that these eight concrete measures are not recommendations or a simple code of good practices, but rather they are obligatory rules in all types of establishments open to the public, including all tourist establishments. The professional association of hotels and tourist industries of the

	Region of Murcia has collaborated to implement this law, in force since 2007. For its part, the City of Murcia, has approved a Water Consumption Ordinance, which incorporates the measures of the Regional Law and also adds, for large consumers (more than 10,000 m3 a year) the need to have a Plan of Sustainable Water Management, four years duration, that must include projections of use and saving, rainwater use and harvesting, and measures to adopt with a follow-up schedule. In addition, these consumers are subject to a Water Use Audit every two years, which will report on the degree of compliance with the aforementioned sustainable water management plan. Finally, the City of Murcia is studying the implementation of an "Efficient Water Use Label" for products, services and establishments that exceed efficient management audits. With respect to the golf courses there are other obligatory rules. In accordance with the provisions of the Water Law, the Hydrological Plan of the Segura Basin (2015-2021) establishes the maximum amount of water for golf courses and green areas associated with residential tourism facilities: a maximum of 8000 m^3 / Ha / year.
MUNICIPALITY OF RETHYMNON	The regulations that the tourism sector enterprises must follow in Rethymno and more generally in Crete are not defined on a local basis. The European Directive 2000/60/EC of the European Parliament and Council, establishes the framework of water policy in the EU. Based on this Directive Greece has implemented the law N. 3199/2003 «Institutional Framework and Principles of Management Plans». In Crete, the «River Basin Management

	Plan of the Water Department» based on the European Directive 2000/60/EC was approved on 31/3/2015.
INSTITUTE OF AGRICULTURE AND TOURISM	There are no local water efficiency regulations/directives that the tourism sector enterprises must comply to. However, every local authority provides certain directions regarding sustainability in their local strategies.
VENETO REGION	There is no specific regulation/directive that the tourism sector enterprises must follow regarding water efficiency. Enterprises can voluntarily ask for the EU ECOLABEL or EMAS recognition. EU ECOLABEL and EMAS are European brands used to certify the reduced environmental impact of products and services offered by the enterprises. The Veneto Region approved the "Regional Plan of sustainable and competitive tourism development", which aimed at actively involving local entities and through them accommodation structures, to foster the environmental sustainability of the Venetian tourism throughout concrete actions for starting the EMAS registration and ECOLABEL certification processes.
DEPARTMENT COUNCIL OF HERAULT	No related data provided

6 Needs Analysis Findings

This section concludes this report by addressing the findings of the survey report.

6.1 Need Analysis key findings

1. Based on the available data, in most of the regions the tourism industry water consumption is between 2-8% (Cyprus, Malta, Murcia, Crete) with respect to the total water consumption. Istria has the highest water consumption for the tourist industry (around 29%) in comparison to the other areas, which may relate to the high percentage of the industry sector.
2. In general, the average water consumption per tourist is at least twice in comparison to the domestic water consumption. In general, the domestic water consumption is between 130-250 litres/day and tourist consumption between 300-500 litres/day (Cyprus, Malta, Patras, Emilia Romagna, Herault). Istria has the lowest domestic and tourist water consumption, at 80 litres/day and 140 litres/day respectively.
3. Most of the partners use water tariffs to support water demand management.
4. All the public authorities or water providers in the partners' territories run awareness campaigns to inform people about water saving and efficiency. School students are most common target category for awareness campaigns. Even though, it seems that the employees working in the tourism sector are not trained enough to optimise the water consumption.
5. Some governments offer limited benefits to the enterprises to motivate them to be water sustainable. The majority of the partners stated that there are not any such benefits. In the Region of Murcia such benefits exist only for the domestic sector. Example of benefit is the tax deduction for installation of domestic water saving devices. This deduction is provided in the Personal Income Tax Law. In France, the construction of buildings takes

advantage of labelling schemes. These labels set construction requirements according to different targets including the rational management of water. In return for its "environmental" efforts, the structure has a financial aid or a tax reduction.

6. The most frequently reported funding scheme to support water management is through European projects. The region of Murcia specified a specific loan to support the tourism sector in saving water and energy. The loan is aimed at hotels, apartments and campsites, rural accommodation, restaurants, travel agencies and establishments of other touristic industries.
7. There is a lack of strong local regulations to support the water efficiency especially in the tourism sector. The only exception to that is the region of Murcia where they have implemented eight concrete measures that go beyond recommendations or a simple code of good practices, and are obligatory rules in all types of establishments open to the public, including all tourist establishments.
8. The interest of the accommodation sector to introduce new water efficiency measures it is not related to the financial cost of the water but mostly to the green image achievement.
9. The participants identified that the major factor/parameter that would most likely influence their decision to implement a water management tool is the public co-financed support. Taking into account the outcomes of the desk research it is obvious that the absence of funds from the government is one reason the enterprises did not implement water demand management tools.
10. The accommodation sector started to commit to green policies and the implementation of proactive measures to help protect & sustain the environment.
11. The number of touristic enterprises that invest to new water sources, like on-site water recycling and rainwater harvesting facilities is very limited.

12. The food and drinks sector has the less pain concerning the water cost. This touristic sector seems to be less motivated in regard to water management measure compare to the accommodation sector.

6.2 Water Demand Management and Awareness Needs Recommendations

Based on the above, we can conclude that there is a need for:

1. **New pricing scheme:** The economic cost of the water for the majority of the touristic enterprises is not important. Therefore, a different type of pricing/tariffs (ex. Rewarding plans) is required to strength the need for touristic enterprises to achieve water efficiency.
2. **Financial support for new technologies adoption:** The cost of installation and maintenance of water demand management devices (smart meter, leakage detection systems, intelligent monitor and controlling systems) is high and not financial viable (due to the low cost of water). There is a need for co-funding by the water providers or the government.
3. **Policies and regulations:** Except from region of Murcia there is not any other region that implemented specific policies and regulations to help water efficiency in the touristic sector. It is critical the governments to develop such policies that will boost the water efficiency of the touristic sector.
4. **Sustainability certificates:** the majority of the enterprises express their high interest to invest in achieving a sustainability certificate. There is a need for specific sustainability certificates available for each type of touristic enterprise.
5. **Awareness/training:** Employees training program and rewards are limited. There is a need for advanced training courses and workshops by the tourism sector in order to train the employees to save water.

6. **Alternative water sources:** the existence of in-house alternative water sources is rear in the tourism establishments. There is a need to support the enterprises to implement such alternative water sources. This could be achieved by co-financing or tax releases or any other financial incentive by the governments.

7 Annex A: Questionnaire Accommodation

○ **Select only one option**

☐ **You can select more than one options**

*1. What is the type of your establishment?

○ Hotel

○ Holiday Apartments

○ Other (please specify) ……..

2. Please provide the name of your establishment. **(Optional)**
Name: …….

*3. Please indicate your star rating:

○ 5-stars

○ 4-stars

○ 3-stars

○ 2-stars

○ 1-star

○ Unrated

*4. Please indicate the number of operational days:
In 2015: ……..
In 2016: ……..

*5. What is the total number of guest nights?
In 2015: ……..
In 2016: ……..

*6. How many guest beds are in your premises
Beds: ……..

*7. Please indicate your yearly water consumption in cubic meters for the last 2 years?
In 2015 (m^3): ……
In 2016 (m^3): ……..

*8. Do you record water consumption in terms of money and/or cubic meters?

- ○ Daily
- ○ Weekly
- ○ Monthly
- ○ No Recording
- ○ Other (please specify) …….

9. If you record your water consumption, how do you measure it?

- ○ Physical observations of the water meters.
- ○ Monitoring System (ex. Smart meters).
- ○ Using the utility bill.
- ○ Other (please specify) …….

10. If not, for which reason you do not record your consumption?

- ○ Low water utility bill
- ○ High monitoring cost
- ○ Other (please specify) …….

* 11. How often do you check for leaks in your establishment?

- ○ Daily
- ○ Monthly
- ○ Yearly
- ○ On Demand
- ○ Never
- ○ Other (please specify) ……

12. If you check for leaks, how do you do it?

- ○ We have a real-time monitoring system
- ○ We have staff responsible to physically check for leaks
- ○ Other (please specify) ……

*13. Which factor/parameter would most likely influence your decision to implement a water management tool (water consumption monitoring, leakage detection, planning etc)?

- ☐ Public co-financed support
- ☐ Discount system provided by the water supplier
- ☐ More knowledge on technical information
- ☐ Green image achievement
- ☐ Other (Please specify) ……

*14. Please indicate the approximate water consumption percentage per category. In case you do not have a definite indication, please answer "Do not have this information". (Sum should be 100%)

Pools (%): ……
Landscaping Irrigation (%): ……..
Baths (%): ……..
Toilets (%): ……
Cleaning (%): ……..
Kitchen (%): ……
Do not have this information (%): ……

*15. Do you use low flow tap fittings and showers?

- ○ Yes, all
- ○ Yes, some
- ○ None

*16. Do you use low / dual flush toilets?

- ○ Yes, all
- ○ Yes, some
- ○ None

*17. What water supply sources are used in your establishment? Please also write the type of water usage (potable, irrigation, pools, cleaning, kitchen, baths/toilets)

- ☐ Public Water utility…..……
- ☐ Non Public managed water utility ……..…….
- ☐ In-house desalination supplier ……
- ☐ In-house groundwater abstraction (not for desalination) ……
- ☐ Other (please specify) ……..

*18. What non-conventional water resources are used in your establishment? Please also write the type of water usage (potable, irrigation, pools, cleaning, kitchen, baths/toilets)

- ☐ Rainwater harvesting……
- ☐ In-house greywater recycling ……..
- ☐ In-house blackwater recycling……..……..
- ☐ Not available
- ☐ Other (please specify)

.....

*19. What are the annual costs for:

Water (€): ……

Electricity (€): ……..

*20. What is your water structure tariff?

- ○ Fixed charge – monthly water bill is independent of the volume consumed
- ○ Volumetric tariff
- ○ Block tariff
- ○ Fixed charge + water use charge (volumetric or block)

*21. Have you upgraded dishwashers, ice machines and steam cookers to ENERGY STAR qualified models?

- ○ Yes
- ○ No

*22. Employee training programmes are organized and made available by the establishment to optimize water use.

- ○ True
- ○ False

*23. Do you regularly remind your employees to save water?

- ○ Yes
- ○ No

*24. How do you use the saved money by your employees?

- ○ Reward the employees
- ○ Invest in more water saving devices

○ Other ……

*25. Please indicate how you encourage guests to save water:

☐ Reuse towels and bed linen
☐ Taking a shower instead of a bath
☐ Taking shorter showers
☐ Turning off taps when brushing teeth and shaving
☐ Other (please specify) ……

*26. How do you inform your guests about water saving?

☐ Stickers
☐ Flyers/Posters
☐ Hotel website
☐ We do not inform quests
☐ Other (please specify) ……

*27. Should the water supplier decide to discount your water bill because of the reduction of water consumption (compared to previous years), would you be interested on investing your savings in the introduction of new water efficiency measures to achieve reduced water consumption?

1 (Not interested)	2 (Interested)	3 (Strongly Interested)
○	○	○

*28. Should the water supplier decide to implement a new tariff rewarding water saving through a discount in the water bill proportional to the m^3 saved, what would you do with this extra money?

○ Invest in more water savings devices or measures
○ Invest in other priorities
○ Other ……

*29. Would you be willing to invest in receiving an "environmentally friendly facility" water label (ex. Travelife sustainability certification) which you can use to promote your establishment?

○ Yes

○ No

*30. Could you recommend one water management measures that you implemented as a best practice? If yes, could you please describe it below?

……

……

……

……

……

……

*31. Do you know any other water management measure that you would like to implemented in the future? If yes, could you please describe it below? (Indicate where it has been implemented if you know it).

……
……
……
……
……

*32. What would you need to implement such water management measures?

☐ More time
☐ More money or funding support
☐ More knowledge on technical information
☐ Other (please specify) ……

*33. Would you like to receive further information from the CASTWATER project?

○ Yes

○ No

34. If Yes, write your email ……

8 Annex B: Questionnaire Food and Drink

○ **Select only one option**

□ **You can select more than one option**

*1. What is the sector of your establishment?

○ Food and Drinks

○ Drinks

○ Other (Please specify) ……

2. Please give the name of your establishment (**Optional**)
Name: ……

*3. What is your total customer's capacity?
Capacity: ……

*4. Please indicate your total yearly water consumption in cubic meters for the last 2 years
In 2016 (m^3): ……
In 2015 (m^3): ……

* 5. What are the annual costs for:

Water (€): ……

Electricity (€): ……

*6. What is your water structure tariff?

○ Fixed charge – monthly water bill is independent of the volume consumed.

○ Volumetric tariff.

○ Block tariff.

○ Fixed charge + water use charge (volumetric or block).

*7. Do you record water consumption in terms of money and/or cubic meters?

- ○ Daily
- ○ Weekly
- ○ Monthly
- ○ No Recording
- ○ Other (please specify) …….

8. If you record your water consumption, how do you measure it?

- ○ Physical observations of the water meters.
- ○ Monitoring System (ex. Smart meters).
- ○ Using the utility bill.
- ○ Other (please specify) …….

* 9. How often do you check for water leaks?

- ○ Daily
- ○ Monthly
- ○ Yearly
- ○ On Demand
- ○ Never
- ○ Other (please specify) …….

10. If you check for water leaks, how do you do it?

- ○ We have a real-time monitoring system
- ○ We have staff responsible to physically check for leaks

○ Other (please specify) ……

* 11. Please indicate the approximate water consumption percentage per category. In case you do not have a definite indication, please answer "We do not have this information". (Sum should be 100%)
Kitchen (including bar) (%): …….
Toilets (%): …….
Cleaning (including diches and kitchen) (%): …….
Irrigation (%): …….
We do not have this information (%): …….

* 12. Do you use other water sources apart from the water supply provided by the public utility?

○ Yes

○ No

13. If so, please mark the additional water sources:

☐ Non public managed water utility
☐ Rainwater harvesting
☐ In-house water recycling
☐ Other (please specify)

* 14. Have you upgraded dishwashers, ice machines, and steam cookers to ENERGY STAR qualified models

○ Yes

○ No

*15. Employee training programmes are organized and made available by the establishment to optimize water use.

○ True

○ False

*16. Do you regularly remind your employees to save water?

○ Yes

○ No

*17. How do you use the saved money by your employees?

○ Reward the employees.

○ Invest in more water saving devices.

○ Other …….

*18. How do you inform your customers about water savings?

☐ Stickers in restrooms
☐ Flyers on tables
☐ We do not inform customers
☐ Other (please specify) ……

*19. Should the water supplier decide to discount your water bill because of the reduction of water consumption (compared to previous years), would you be interested on investing your savings in the introduction of new water efficiency measures to achieve reduced water consumption?

1 (Not interested) ○ 2 (Interested) ○ 3 (Strongly Interested) ○

*20. Should the water supplier decide to implement a new tariff rewarding water saving through a discount in the water bill proportional to the m^3 saved, what would you do with this extra money?

○ Invest in more water savings devices or measures

○ Invest in other priorities

○ Other …….

*21. Would you be willing to invest in receiving an "environmentally friendly facility" water label (ex. Travelife sustainability certification) which you can use to promote your establishment?

○ Yes

○ No

*22. Could you recommend one water management measures that you implemented as a best practice? If yes, could you please describe it below?

……

……

……

……

……

……

*23. Do you know any other water management measure that you would like to implemented in the future? If yes, could you please describe it below? (Indicate where it has been implemented if you know it).

……

……

……

……

……

……

*24. What would you need to implement such a water management measures?

- ☐ More time
- ☐ More money or funding support
- ☐ More knowledge on technical information
- ☐ Other (please specify) ……

*25. Would you like to receive further information from the CASTWATER project?

- ○ Yes
- ○ No

26. If Yes, write your email ……

9 Annex C: Questionnaire Leisure and Sports

○ **Select only one option**
☐ **You can select more than one option**

*1. What is the sector of your establishment?

○ Waterpark

○ Golf

○ Other (please specify) ……..

2. Please provide the name of your establishment. **(Optional)**
Name: ……

*3. Please indicate the number of operational days:
In 2015: ……..
In 2016: ……..

*4. What is the total number of customer served?
In 2015: ……..
In 2016: ……..

*5. Please indicate your yearly water consumption in cubic meters for the last 2 years?
In 2015 (m^3): ……
In 2016 (m^3): ……..

*6. Do you record water consumption in terms of money and/or cubic meters?

○ Daily

○ Weekly

○ Monthly

○ No Recording

○ Other (please specify) ……

7. If you record your water consumption, how do you measure it?

- ○ Physical observations of the water meters.
- ○ Monitoring System (ex. Smart meters).
- ○ Using the utility bill.
- ○ Other (please specify) …….

8. If not, for which reason you do not record your consumption?

- ○ Low water utility bill.
- ○ High monitoring cost.
- ○ Other (please specify) ……

* 9. How often do you check for leaks in your establishment?

- ○ Daily
- ○ Monthly
- ○ Yearly
- ○ On Demand
- ○ Never
- ○ Other (please specify) …….

10. If you check for leaks, how do you do it?

- ○ We have a real-time monitoring system.
- ○ We have staff responsible to physically check for leaks.
- ○ Other (please specify) …….

*11. Which factor/parameter would most likely influence your decision to implement a water management tool?

- ☐ Public co-financed support
- ☐ Discount system provided by the water supplier

- ☐ More knowledge on technical information
- ☐ Green image achievement
- ☐ Other (Please specify) ……

* 12. Please indicate the approximate water consumption percentage per category. In case you do not have a definite indication, please answer "Do not have this information". (Sum should be 100%)

Pools (%): ……
Landscaping Irrigation (%): ……..
Baths (%): ……..
Toilets (%): ……
Cleaning (%): ……..
Kitchen (%): ……..
Do not have this information (%): ……..

*13. What are the annual costs for:

Water (€): ……

Electricity (€): ……..

*14. What is your water structure tariff?

- ○ Fixed charge – monthly water bill is independent of the volume consumed
- ○ Volumetric tariff
- ○ Block tariff
- ○ Fixed charge + water use charge (volumetric or block)

15. Do you use low flow tap fittings and showers?

- ○ Yes, all
- ○ Yes, some
- ○ None

16. Do you use low / dual flush toilets?

- ○ Yes, all
- ○ Yes, some

○ None

*17. What water supply sources are used in your establishment? Please also write the type of water usage (potable, irrigation, pools, cleaning, kitchen, baths/toilets)

☐ Public Water utility
……
☐ Non Public managed water utility ……..…….
☐ In-house desalination supplier ……
☐ In-house groundwater abstraction (not for desalination) ……
☐ Other (please specify) …..……..

* 18. What non-conventional water resources are used in your establishment? Please also write the type of water usage (potable, irrigation, pools, cleaning, kitchen, baths/toilets)

☐ Rainwater harvesting
…….……
☐ In-house greywater recycling
……..
☐ In-house blackwater recycling
……..
☐ Not available
☐ Other (please specify)
……

*19. Employee training programmes are organized and made available by the establishment to optimize water use.

○ True

○ False

*20. Do you regularly remind your employees to save water?

○ Yes

○ No

21. How do you use the saved money by your employees?

○ Reward the employees.

- ○ Invest in more water saving devices.
- ○ Other ……

*22. How do you inform your customers about water saving?

- ☐ Stickers
- ☐ Flyers/Posters
- ☐ Website
- ☐ We do not inform customers
- ☐ Other (please specify) ……

23. Please indicate how you encourage guests to save water.

……

……

……

……

*24. Should the water supplier decide to discount your water bill because of the reduction of water consumption (compared to previous years), would you be interested on investing your savings in the introduction of new water efficiency measures to achieve reduced water consumption?

1 (Not interested)	2 (Interested)	3 (Strongly Interested)
○	○	○

*25. Should the water supplier decide to implement a new tariff rewarding water saving through a discount in the water bill proportional to the m^3 saved, what would you do with this extra money?

- ○ Invest in more water savings devices or measures
- ○ Invest in other priorities
- ○ Other ……

*26. Would you be willing to invest in receiving an "environmentally friendly facility" water label (ex. Travelife sustainability certification) which you can use to promote your establishment?

- ○ Yes

○ No

*27. Could you recommend one water management measures that you implemented as a best practice? If yes, could you please describe it below?

……

……

……

……

……

*28. Do you know any other water management measure that you would like to implemented in the future? If yes, could you please describe it below? (Indicate where it has been implemented if you know it).

……

……

……

……

……

*29. What would you need to implement such a water management measures?

☐ More time
☐ More money or funding support
☐ More knowledge on technical information
☐ Other (please specify) ……

*30. Would you like to receive further information from the CASTWATER project?

○ Yes
○ No

31. If Yes, please write your email ……

10 Annex D: Desk Research Template

Sources	Government (ministry) reports and open data, references in internet
Question	What is the water consumption percentage of tourism sector in your country compared to the total water consumption? If possible, find the numbers for different type of enterprises like accommodation, restaurants, bars/pubs, waterparks, golfs, etc.
Answer	

Sources	Water utility phone call, Water utility website
Question	Does the water utility support any demand management measures to the tourism sector enterprises? Example are flexible pricing plans, penalties for excessive use (quotas), technological device, law, or policy etc.
Answer	

Sources	Water utility phone call, Water utility website, Government reports and open data
Question	Do the public authorities (or water utilities) run any water efficiency awareness action? This may include education programs for students, mass media advertising campaigns, promotional campaigns and events.
Answer	

Sources	Government reports and open data, Government portals, Press releases
Question	Does your government offer any benefits to water sustainable enterprises? Example are tax incentives, subsidies, and rebates for adoption of conservation measures.
Answer	

Sources	Government reports and open data, Government portals, Press releases
Question	Check if funding/loans are available from government or other sources for investment in new technology or water reduction schemes.
Answer	

Sources	Water utility phone call, Water utility website, Government reports and open data
Question	Are there any local water efficiency regulations/directives that the tourism sector enterprises have to comply?
Answer	

11 Bibliography

[1] Economics of demand management - Main report and practical guidelines,
UK Water Industry Research Limited, UKWIR/EA, 1996, London

[2]SADC 2003. Regional Indicative Strategic Development Plan, Southern African Development Community, Water Sector Co-ordinating Unit

[3] Water Conservation and Water Demand Management Strategy, Ministry of Water Affairs and Forestry, South Africa 2004

[4] Louw, D.B. and Kassier, W.E. (2002) The costs and bene ts of water demand management, Centre for International Agricultural Marketing and Development (CIAMD), Paarl, South Africa.

[5] Dziegielewski, B. and D. Baumann. 1992. Benefits of Managing Urban Water Demands. Environment 34(9): 6-11.

[6] Dziegielewski, B., E. M. Opitz, J. C. Kiefer, and D. D. Baumann. 1993a. Evaluating Urban Water Conservation Programs: A Procedures Manual. American Water Works Association. Denver, Colorado

[7] http://www.switchurbanwater.eu/

[8] http://www.wisdom-project.eu/

[9] http://www.trust-i.net

[10] Gössling, S., Peeters, P., Hall., M., Ceron, J.P., Dubois, G., Lehmann, L.V., Scott, D. (2011). Tourism and water use: supply, demand and security. An international review. Tourism Management, 33, 1–15.

[11] Annual report, European Environmental Agency (EEA), 2009

[12] EUROSTAT (2009) Water and Tourism Pilot Study.

[13] B. Deyà Tortella, D. Tirado, Hotel water consumption at a seasonal mass tourist destination: the case of the island of Mallorca, J. Environemntal Management. 92 (2011) 2568–2579.

[14] Stefan Gössling, New performance indicators for water management in tourism, Tourism Management, Volume 46, February 2015, Pages 233-244, ISSN 0261-5177

[15] EC, Study on water performance of buildings, DG ENV, 2009, Brussels.

[16] Kotios, Angelos, et al. "The impact of tourism on water demand and wetlands: searching for a sustainable coexistence." Department of Planning and Regional Development, School of Engineering, University of Thessaly, Volos, Greece (2009): p8.

[17] Thivet, G., Fernandez, S., Water Demand Management: The Mediterranean Experience, Global Water Partnership, Global Water Partnership (GWP), Plan Bleu, 2012