Specifications for the CASTWATER online tool

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1 Introduction

Water demand strains supply capacity in the Mediterranean coastal areas, affecting negatively the maintenance of natural & cultural heritage. In the last fifty years, the aggregate water demand in the Mediterranean has doubled, due to the tourism's water consumption which, per capita, is double than this of a local resident's. Seasonal tourist demand places enormous pressures on local water supplies in Mediterranean coastal destinations where water resources are more likely to be scarce.

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.

This report is the final deliverable of CASTWATER Activity A3.7 entitled "Elaboration of an online tool to monitor and assess Sustainable Tourism Water Management". This document seeks to provide the functional and technical specifications that will guide the design of a monitoring and self-assessment online tool, primarily addressed to tourism sector SMEs.

The CASTWATER online tool will be designed to support tourism sector SMEs to understand, compare, assess and rate their performance regarding water efficiency and sustainable water management, enabling also public authorities to monitor tourism sector's overall performance in their territory.

The development of specifications will be based on the outputs of WP3 studying activities and more especially the list of performance indicators (CASWATER A3.6). The report will define the areas of self-assessment, the monitoring fields, the rating system and the main features of the tool.

The report is structured as follows: section 2 presents the main results drawn from WP3 studying activities; section 3 outlines the scope and structure of the CASTWATER online tool; section 4 elaborates on the tool's functional specifications specifying the areas of self-assessment and monitoring fields; section 5 presents the rating system to be employed for evaluating tourism SMEs' performance in water management; section 6 indicates how results will be presented; and section 7 provides technical guidelines on the deployment of the online tool.

2   Results from WP3 studying activities

2.1   Needs analysis (Activity 3.2)

The CASTWATER Activity A3.2 aims to map the needs and challenges faced by partnership areas' tourism SMEs regarding sustainable water management. This needs analysis focuses on: a) water demand management (e.g. promotion of water saving technologies, water monitoring infrastructure, and commissioning and management services) and b) awareness raising activities for public authorities, tourism sector personnel and the public.

Business needs analysis (BNA) refers to the process that helps a company identify the key drivers for changing business processes and determine the best possible ways to resolve issues or improve performance. BNA is usually carried out when a company (e.g. tourism SME) decides to implement a new strategy (e.g. water sustainability strategy), as it helps determine the current state, identify the key drivers for change, and provide insights on how this new strategy has to be implemented.

The collection of information on tourism SMEs' water efficiency needs was a combination of field and desk research. Field research was carried out through an online questionnaire addressed to accommodation enterprises (e.g. hotels, holiday apartments and hostels) and food and beverage companies (e.g. restaurants, bars, pubs), in an effort to identify tourism SMEs' needs in terms of measuring water consumption, adopting water efficiency measures, training staff, and raising customers' awareness about water scarcity issues. Desk research was conducted to gather complementary information on a) tourism industry's water consumption compared to other industries, b) the measures adopted by water utilities to promote sustainable water management in tourism SMEs, c) public authorities' actions to raise public awareness about water scarcity issues and d) available funding programmes for investments in sustainable water management.

Data analysis brought to the fore the following needs:

- New pricing schemes to work as a strong incentive for reduced water consumption
- Funding programmes to stimulate the adoption of new water efficiency technologies
- Integrated planning to create a favourable environment for water efficiency measures

- Sustainability certificates that will work as a sign of enhanced environmental performance in water sustainability

- Training staff on how to make prudent use of water and how to maintain equipment for optimum water efficiency

2.2 Water sustainability policies at regional level (Activity 3.3)

The CASTWATER Activity A3.3 aims to evaluate/analyse the policy framework for tourism water management in partnership territories. The main purpose is to a) identify the current state of development with regard to policies and measures that support the advancement of sustainable water management in the tourism industry, b) evaluate the efficiency of existing policies, c) identify the problems arise during their implementation at regional level, and d) explore their potential to be transferred in other MED regions. Policy making on promoting water efficiency in tourism SMEs revolves around the following thematic areas:

1. Cooperation improvement
2. Joint and integrated planning
3. Conflict management
4. Promotion of services and infrastructures
5. Provision of incentives and public awareness

Cooperation improvement includes facilitating the cooperation between stakeholders and policy makers, promoting dialogue, co-shaping initiatives / solutions, dealing with issues in a coordinated institutional and multilateral way. The lack of integration between sectoral water-related policies leads to fragmented programs and inefficient utilization of technical capacities and financial resources. Coordination between public authorities / departments with respect to data collection and management will result in the efficient utilisation of available technical and financial resources for the design of policy measures on sustainable water management. Raising public awareness (incl. hotel owners, employees, local communities, tourists) about local water issues and the importance for sustainable water management may lead to changing water consumption patterns that will decrease water demand especially during summer seasons. Finally, the provision of incentives (by public authorities) can essentially help establish an enabling environment for investments in infrastructures (e.g. rainwater harvesting systems, water

efficient fixtures) or services (e.g. water management/conservation plan, water monitoring system to regularly report consumption and progress).

2.3   Assessing territorial capacity for sustainable water management (Activity 3.4)

The CASTWATER Activity 3.4 includes analysing the Strengths, Weaknesses, Opportunities and Threats (SWOT) related to the adoption of water management and water efficiency solutions by the tourism sector in partners' coastal areas. The purpose of this activity was to carry out a detailed analysis on territorial features that act as determinants of successful water efficiency measures, and identify the environmental and socio-economic impact of water efficiency measures.

SWOT is a basic, analytical framework that evaluates what an organisation / measure / solution can and cannot do, as well as potential opportunities and threats. The "strengths" section examines the intrinsic assets of a region, including the areas where the region performs particularly well, as well as the availability of resources (e.g. healthy financial state, specialized staff and operational efficiency) to support the adoption and implementation of water efficiency measures. Weaknesses comprise regional attributes and resources that work against a successful outcome. These elements put up additional barriers for regional authorities. The "opportunities" section is used to identify areas in which a region could expand its activities based on its strengths. In our case, opportunities include the external factors that a region can capitalise on to promote the adoption of water efficiency technologies and water management measures for the tourism sector. Finally, threats refer to the unfavourable conditions that may jeopardize regional authorities' endeavours to foster sustainable tourism water management. External threats may include adverse national legislation, economic recession, shifts in consumers' preferences, trade barriers and different policy prioritisation dictated by the central government.

The partnership employed the so-called PESTEL framework (Political, Economic, Socio-cultural, Technological, Environmental, and Legal) to analyse the macro-environmental factors (both external and internal) that may have an impact on the effectiveness of policy measures related to sustainable water management.

— Political factors include regional development policies in the field of sustainable development or tourism, as well as water governance or other specific policies.

- Economic factors are related to budget issues, market constraints and trends in the tourism industry.

- Socio-cultural factors include conflicts of interests, civil society's commitment to promote sustainable water management and the availability of training programmes for tourism SMEs' staff.

- Technological factors refer to the availability of new technologies and up-to-date infrastructures to support sustainable water management.

- Environmental factors focus on water scarcity issues, climate change effects and other spatial considerations.

- Legal factors refer to existing regulations on water management issues such as water reuse, sewage treatment and land planning.

2.4 Best practices on sustainable water management (Activity 3.5)

The CASTWATER Activity 3.5 includes the collection and analysis of good practices and case studies from high volume tourism areas, which have successfully implemented water efficiency measures to increase the sustainability of tourism activities.

The Good Practice Guide (GPG) presents a number of cases to illustrate how tourism SMEs in Mediterranean have successfully implemented sustainable water management measures. The guide serves a twofold purpose: first, to provide guidance for similar establishments on how to promote water efficiency and accommodate the large (short-term) water demand during high touristic seasons and second, to inform policy makers about possible ways to support the implementation of relevant initiatives and policies in their regions.

The collection of cases and empirical evidence from across the Mediterranean has indeed provided valuable insights on:

- The most cost-effective water management solutions adopted by tourism SMEs to improve water efficiency and achieve enhanced economic performance.

- The major benefits derived from the deployment of sustainable water management solutions.

- The role of local administrations, the conditions and prerequisites, and the main challenges associated with the adoption/implementation of water management solutions by tourism SMEs

- The potential transferability and uptake of such practices by similar establishments in Mediterranean.

The analysis resulted in a number of sustainable water management practices that can be adopted by tourism SMEs (e.g. hotels, campsites, restaurants, bars, leisure and spa centres) to improve water efficiency. Generally, water consumption can be managed through demand-side and supply-side strategies. Demand-side strategies refer to measures/solutions seeking to adjust water demand and reduce water consumption while supply-side strategies focus on increasing the availability of water through water recycling/reuse infrastructures.

To conclude, the guide has distinguished the following approaches to water management as best practices[1].

Demand-side management practices	Demand-side management practices
- Creating a water management plan - Using water efficient fixtures - Regular maintenance of plumbing infrastructures and water appliances - Educational programmes for staff - Raising customers' awareness	- Greywater reuse - Rainwater harvesting

2.5   Tourism water sustainability indicators (Activity 3.6)

The CASTWATER Activity 3.6 involves the selection, validation, and consolidation of comprehensive evaluation criteria / sustainability indicators for a) tourism SMEs to assess their water management performance, and b) public authorities to comparatively assess the MED touristic areas in regards to sustainable tourism water management.

The rationale is that indicators, by quantifying phenomena and simplifying complex realities, can essentially provide key information on substantial factors/dimensions to support decision-making and

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[1] The criteria used to evaluate the collected cases on a "good practice" basis were: a) achieved objectives and produced results, b) problems encountered, c) political support provided by local authorities, d) recognition, and e) transferability.

promote public awareness regarding the issues with which they relate. As regards water sustainability, the tourism industry currently lacks a comprehensive and organised system of indicators that can serve as a warning to prevent water scarcity issues, which may result from the excessive waste of water during peak touristic seasons.

Data collection resulted in the following indicators. These indicators will be utilised for measuring the tourism SMEs' rate of adoption of water efficiency measures, infrastructure, skills & awareness, and corporate social responsibility initiatives

Indicators for SMEs (S1-S12)	Indicators for public authorities (PA1-PA9)
S1. Annual budget for investments in sustainable water management	PA1. Effectiveness of water management policies
S2. Adoption of water saving devices and fixtures	PA2. Frequency of water quality controls
S3. Installation of water recycling systems	PA3. Potential for sustainable water management at territorial level
S4. Deployment of water efficient irrigation technologies	PA4. Percentage of tourism SMEs connected to wastewater treatment facilities
S5. Implementing environmental management systems (EMS)	PA5. Percentage of tourism SMEs providing sustainable tourism services (e.g. ecotourism)
S6. Fostering strategic planning for sustainable water management	PA6. Tourism industry's consumption compared to residential consumption
S7. Performing water management services	PA7. Percentage of water supplied from sources other than public utility
S8. Monitoring water consumption	
S9. Training staff	PA8. Quality of water resources utilised in the tourism industry
S10. Engaging customers on water sustainability	
S11. Actual water consumption	PA9. Frequency of complaints/reports on water quality and water related diseases
S12. Wastewater treatment	

3 The CASTWATER online tool

The CASTWATER project will make available an online tool, **exclusively addressed to tourism sector SMEs in Mediterranean,** that will allow them to understand, compare (with other SMEs), assess and rate their performance on water efficiency & water management.

Tourism SMEs (i.e. end users) will be invited to provide business related information regarding their investments, measures and actions to promote water efficiency in their establishments, as well as their perceptions on the effectiveness and adequacy of the existing policy framework for water resources in their region.

The data to be gathered by tourism SMEs' replies will be further utilised by public authorities to monitor tourism sector's overall performance in their region and measure the effectiveness of territorial policies on water management.

The online tool will be designed to serve **two key functions**:

1. To enable tourism SMEs to self-evaluate their performance in sustainable water management, and learn what they can further do to promote water efficiency in their establishment.
2. To measure the degree of good governance and the effectiveness of water-tourism policies to improve sustainable water management, especially at regional and local level.

To this end, the CASTWATER online tool will integrate a system with two different types of indicators; one intended for tourism SMEs (to be provided by SMEs' replies in the "self-assessment" section) and one for Public Authorities (to be provided by SMEs' replies in the "monitoring" section). This will allow measuring the degree of both tourism SMEs and public authorities' compliance with the principles of sustainable water management. On the one side, the indicators intended for tourism SMEs will be automatically displayed in the online tool, enabling thus the grading of SMEs' performance in promoting water efficiency, while on the other side, the indicators intended for Public Authorities will be made available upon request during the analysis stage (as aggregate statistics) to help them derive useful conclusions about sector's overall performance and the surrounding environment (e.g. policy framework, territorial context) affecting the adoption of water efficiency measures. **Again, all indicators will be produced by the answers provided by the SMEs only.**

To motivate massive participation and minimise the risk for a high dropout rate, the tool will require information (i.e. replies) that is already available in the company or easy to find. To complete the questionnaire, users should not carry out any type of research or consultation process (which risk to abandon the questionnaire before completion); even in the "monitoring" section (addressing policy issues) users will declare their own views and opinions.

As already mentioned, the CASTWATER online tool will consist of two sections: **a) self-assessment (indicators for SMEs)**, and **b) monitoring (indicators for Public Authorities)**. Figure 1 displays the structure of the online course.

A. Self-assessment areas

The "self-assessment" section will provide evidence to facilitate the evaluation of tourism SMEs performance in fostering sustainable water management. Tourism SMEs will be asked to rate their current level of achievement in implementing measures that target the promotion of water efficiency. This section will yield indicators (**exclusively addressed to tourism SMEs**) that will help measure their capacity to deal with water scarcity issues and growing water demand during touristic peak seasons. This will be realised by calculating an aggregate score from users' replies in four (4) assessment areas; namely a) water saving technologies, b) strategic planning and management services, c) awareness raising, and d) actual water consumption. The tool will employ a traffic light system (red, yellow, green) to present the results of self-assessment process. The tool will also integrate a mechanism to rank users' performance compared to other users' results (for example displaying a ranking table based on the score obtained by participating SMEs) and will provide users with recommendations on how to improve their water management performance, indicating the areas in which more actions and investments are required.

B. Monitoring fields

The "monitoring" section seeks to provide evidence that will allow to evaluate whether the systems of governance for water resources are functioning properly. This section will yield a number of indicators and information resulting from SMEs' replies, **exclusively addressed to public authorities**, to measure the effectiveness of existing policies on water management and pave the way for improvements and further action. **These indicators will not be displayed in the tool as they are not addressed to tourism SMEs**.

Nevertheless, they will be used by public authorities to extract useful conclusions on the strengths and weaknesses of the water management system and evaluate the surrounding environment (i.e. policy framework, territorial context) affecting regional performance. In addition, these indicators can be the "vehicle" to achieve greater transparency in the functioning of water governance by improving data availability, risk assessment and policy implementation, whilst allowing to address water scarcity issues, a severe problem that MED coastal areas have to deal with during summer months (i.e. peak touristic periods). Three areas will be investigated in the "monitoring" section: a) policy framework, b) territorial context, c) water availability, quality and environmental health.

Figure 1: Structure of the CASTWATER online tool
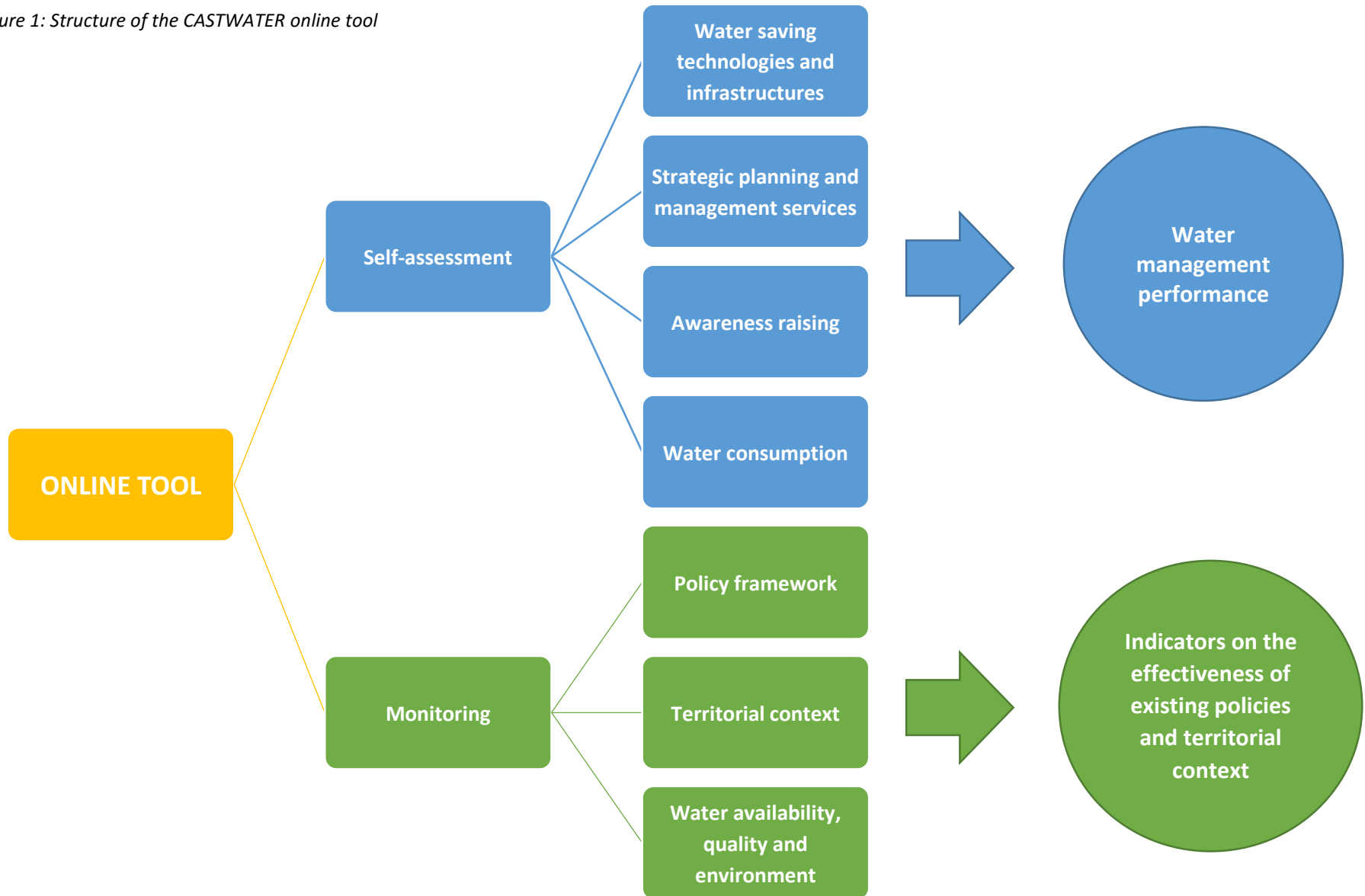
4 Functional specifications

4.1 Entry information (demographics)

The entry section of the tool will include demographic questions. Demographic questions will be used to assist researchers (i.e. regional authorities) in categorising users and their replies, and to facilitate aggregate calculations for the tourism sector (incl. its segments). The collection of demographic information will enable to cross-tabulate and compare subgroups (e.g. accommodation, food and beverage, recreational activities centres). In addition, it will allow to see how water management vary among the different types of establishments or MED countries, whilst allowing to identify patterns and common issues.

1. Please indicate your country of origin

- o   Croatia
- o   Cyprus
- o   France
- o   Greece
- o   Italy
- o   Malta
- o   Spain
- o   Other (please specify)

2. Please select the type of your establishment

- o   Hotel
- o   Guesthouse / Apartments
- o   Hostel
- o   Restaurant
- o   Bar or Pub
- o   Leisure centre (e.g. water park, golf centre)
- o   Spa
- o   Bathing establishment
- o   Other (please specify)

4.2 Self-assessment areas

The tool will include a "self-assessment" section with questions that will enable tourism SMEs in MED areas to evaluate their technological (incl. infrastructures) and managerial capacity. Tourism SMEs will be asked to assess their business by rating their current level of achievement in implementing sustainable water management measures. Four (4) thematic areas will be investigated by the "self-assessment section": a) water saving technologies and infrastructures, b) strategic planning and management services, c) awareness raising, and d) water consumption.

4.2.1 Water saving technologies & infrastructures

Description

Sustainable water management in tourism SMEs is closely linked to the adoption of water saving technologies & infrastructures, which are designed to both minimise water consumption (demand) and increase water availability (supply). All tourist facilities can save substantial amounts of water by using fixtures that can affect water demand and decrease water consumption. For instance, the installation of water efficient fixtures in guest rooms (e.g. aerators on taps, flow control and timer mechanisms) will (directly) reduce water consumption, without requiring additional effort from guests (e.g. behavioural change). Water efficient irrigation technologies allow to promote water conservation in green areas via smart control systems and environmental sensors that optimise the operation of the irrigation system (based on environmental conditions and particularly soil moisture). The same stands for water recycling technologies, which constitute an excellent way to conserve water by providing tourism SMEs with additional water resources in situations where it's difficult to satisfy the demand through public utilities. For example, the deployment of a sewage treatment plant can help treat wastewater/effluent in a way that it can be used for non-potable purposes.

Questions

Q1. What percentage of your **annual budget** do you invest in water saving technologies and infrastructures?

Budget ratio	
1. Up to 1%	○
2. 1-2%	○
3. 3-5%	○
4. More than 5%	○
5. None	○

Q2. Which of the following **water saving devices and fixtures** does your business use to reduce water consumption? Select all that apply

Fixtures	
1. Low-flow or dual flush toilets	☐
2. Flow/pressure regulators or aerators on showerheads	☐
3. Sensors or timers to control faucets	☐
4. Water saving washing machines	☐
5. Water saving cooking appliances	☐
6. None of the above	☐

Q3. Which of the following **water recycling technologies** has your business adopted to promote water reuse? Select all that apply

Technology / System	
1. Greywater reuse system	☐
2. Rainwater harvesting system	☐
3. Sewage treatment plant	☐
4. None of the above	☐

Q4. Which of the following **water efficient irrigation technologies/devices** has your business adopted to promote water conservation in green areas? Select all that apply

Irrigation devices	
1. Soil moisture sensors	☐
2. Rain sensors	☐
3. Micro-irrigation or drip systems	☐
4. None of the above	☐
5. Not applicable to my establishment	☐

Indicators

Code	Item	Indicator	Indicator description
S1	Q1	Annual budget for investments in sustainable water management	This indicator will measure the total amount of money (expressed as percentage of annual budget) invested by tourism establishments in water efficiency measures
S2	Q2	Adoption of water saving devices and fixtures	This indicator will measure tourism SMEs' investment in water saving devices and fixtures, seeking to decrease water consumption in a passive way.
S3	Q3	Installation of water recycling systems	This indicator will evaluate the measures adopted by tourism SMEs to increase water availability (i.e. supply).
S4	Q4	Deployment of water efficient irrigation technologies	This indicator will measure the amount of tourism SMEs using smart irrigation technologies, as a means to optimise water usage for gardening purposes.

4.2.2 Strategic planning and management services

Description

Strategic planning and management processes are a key aspect of a successful water conservation programme. Creating a comprehensive plan that will present company's water use profile, will substantially facilitate the adoption of targeted measures to minimise water consumption. In the same context, the definition of water management processes such as continuously monitoring water consumption or/and regularly inspecting plumbing infrastructures for leakages or malfunctions, will contribute to achieving water reduction targets.

Questions

Q5. Has your establishment adopted an **environmental management system**[2] (e.g. ISO 1400, EMAS)? If yes, please indicate the name of the system.

- o Yes
- o No

Please indicate the name of the system ………………………………………………………………………………………….

Q6. Which of the following actions have you performed to improve your **water management planning**? Select all that apply

Actions	
1. Measure water consumption	☐
2. Compare business' water consumption with tourism industry benchmarks	☐
3. Establish water reduction targets	☐
4. Create a shortlist with potential water management measures	☐
5. Conduct cost-benefit analysis to make informed decisions for measures	☐
6. None of the above	☐

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[2] *Environmental management system (EMS) refers to the structure, planning and resources for developing and implementing enterprise's environmental policy.*

Q7. Which of the following **actions** does your business perform to improve **water management**?

Actions	Yes	No	Not applicable
1. Carry out regular inspections to detect leaks	○	○	○
2. Carry out routine maintenance to prevent malfunctions	○	○	○
3. Use washing machines on full load	○	○	○
4. Avoid to use high polluting detergents	○	○	○
5. Use pool covers to minimise evaporation	○	○	○
6. Schedule gardening to prevent water loss (e.g. gardening either early in the morning or late in the evening to prevent water loss due to evaporation.	○	○	○

Q8. How does your business **monitor water consumption**? Select all that apply

Monitoring methods	
1. Monitoring based on water bills	☐
2. Water audit (process that enables to inventory all water uses in your facility and identify ways to increase water use efficiency)	☐
3. Smart metering	☐
4. Real time monitoring (software used to measure water consumption in real time)	☐

Indicators

Code	Item	Indicator	Indicator description
S5	Q5	Implementing environmental management systems (EMS)	This indicator will reveal whether tourism SMEs apply environmental management systems to achieve their sustainability goals.
S6	Q6	Fostering strategic planning for sustainable water management	This indicator will evaluate tourism SMEs' strategic planning to promote sustainable water management.
S7	Q7	Performing water management services	This indicator will evaluate tourism SMEs' course of actions to further promote sustainable water management.
S8	Q8	Monitoring water consumption	This indicator will assess the methods employed by tourism SMEs for monitoring water consumption across all business facilities.

4.2.3 Awareness raising

Description

Water conservation strategies require both employees and customers' participation to become a success. Training staff on how to perform water management procedures (e.g. apply pool covers to minimise evaporation or water plants early in the morning) or/and to maintain equipment for optimum water consumption is a key prerequisite to achieve sustainability goals. The main reason is that training can mobilise personnel to adopt sustainable water consumption patterns and adhere to business water management plan. In addition, raising customers' awareness about water scarcity issues and company's commitment to promote sustainable management, will increase their willingness to participate in relevant measures and actions (e.g. reuse towels and linens).

Questions

Q9. Do you implement any **training programs** for your staff? What do these programs include? Select all that apply

Actions	
1. Communicate company's commitment to promote water conservation	☐
2. Communicate water reduction targets	☐
3. Train staff on how to make prudent use of water and use water saving technologies	☐
4. Encourage staff to suggest new ways to decrease water consumption	☐
5. Establish a reward system for employees with environmental awareness	☐
6. No training programs	☐

Q10. How do you manage to **engage customers/guests** on water sustainability? Select all that apply

Actions	
1. Inform customers about the measures adopted by the enterprise	☐
2. Invite customers to reuse towels and linens	☐
3. Display water saving notices	☐
4. Rewards for low water consumption (e.g. discounts, spa special offers)	☐

Actions	
5. None of the above	☐

Indicators

Code	Item	Indicator	Indicator description
S9	Q9	Training staff	This indicator will evaluate tourism SMEs' efforts to train staff on how to perform sustainable water management processes.
S10	Q10	Engaging customers on water sustainability	This indicator will measure tourism SMEs' performance in raising customers' environmental awareness and engaging them on sustainable water management practices.

4.2.4 Water consumption

Description

The Mediterranean region confront substantial challenges regarding water management due to the increasing number of tourists selecting coastal destinations to spend their vacations during summer months. Massive tourist arrivals are expected to increase the demand for water. This is further exaggerated by the fact that the average tourist's water consumption is much higher than the average per capita consumption of residents. All the above highlight the need to alleviate pressures on water resources (especially during summer); mostly by attaining sustainability in water demand management. Besides, there is huge potential to decrease water consumption within the industry. Furthermore, the demand for water varies significantly across the different types of tourism establishments (e.g. hotel, campsites, restaurants, spa centres, and bars) and recreational activities (e.g. yachting, golf, and swimming). In this sub-section, tourism SMEs (i.e. users) will be asked to provide figures on their water consumption that will enable to calculate the amount of water required during peak seasons, and subsequently the extent of pressure placed on water resources.

Questions

Q11. Please indicate the **average water consumption per visitor day** per touristic season.

Touristic season	Water consumption per visitor day (litres)
1. Peak season (mid-June through August)	
2. Shoulder season (April through mid-June, September & October)	
3. Off-season (November through March)	

Q12. Please indicate your establishment's **water consumption percentage per usage/category**. The sum must be 100%.

Usage / category	%
1. Accommodation	
2. Laundry	
3. Kitchen	

Usage / category	%
4. Swimming pool	
5. Irrigation	
6. Outdoor activities	
7. Other	

Q13. Please complete the following fields to calculate the relative amount of **wastewater receiving treatment**

Yearly water consumption (m²)	Amount of waste water receiving treatment (m²)	Relative amount of wastewater receiving treatment (*to be calculated automatically)
		1. 0% - 10% 2. 10% - 30% 3. 30% - 50% 4. 50% - 75% 5. 75% - 100%

Indicators

Code	Item	Indicator	Indicator description
S11	Q11	Actual water consumption	The indicator will demonstrate whether user's actual water consumption is above or below the tourism sector's average* (at national level)
S12	Q13	Wastewater treatment	The indicator will estimate the relative amount of wastewater receiving treatment

Table 1: Statistics for water consumption in partnership countries (country breakdown)

Country	Average domestic consumption per capita per day*	Average water consumption per visitor per day**
Croatia	125 litres/day	130 litres/day
Cyprus	200 litres/day	465 litres/day
France	140 litres/day	169 litres/day
Greece	220 litres/day	400 litres/day
Italy	240 litres/day	264 litres/day
Malta	136 litres/day	312 litres/day
Spain	144 litres/day	188 litres/day

* Source: Eurostat (2015)

** Source: Partners' input & Becken (2014)[3]

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[3] Becken S. (2014), "Water equity – Contrasting tourism water use with that of the local community", Water Resources and Industry, Elsevier, vol. 7-8, pages 9-22.

4.3 Monitoring fields

This section aims to provide regional authorities with evidence for assessing water efficiency and sustainability at local and regional level. SMEs' (aggregated) replies in this section will be used by policy makers to identify patterns, regions' weaknesses and strengths, design or improve policies on water demand management, and adapt plans towards water sustainability. Tourism SMEs will be asked to evaluate the effectiveness of water policies and assess the surrounding environment affecting sustainable water management. Three thematic areas will be investigated in the "monitoring section"; namely a) policy framework, b) territorial context, and c) water availability, quality and environmental health.
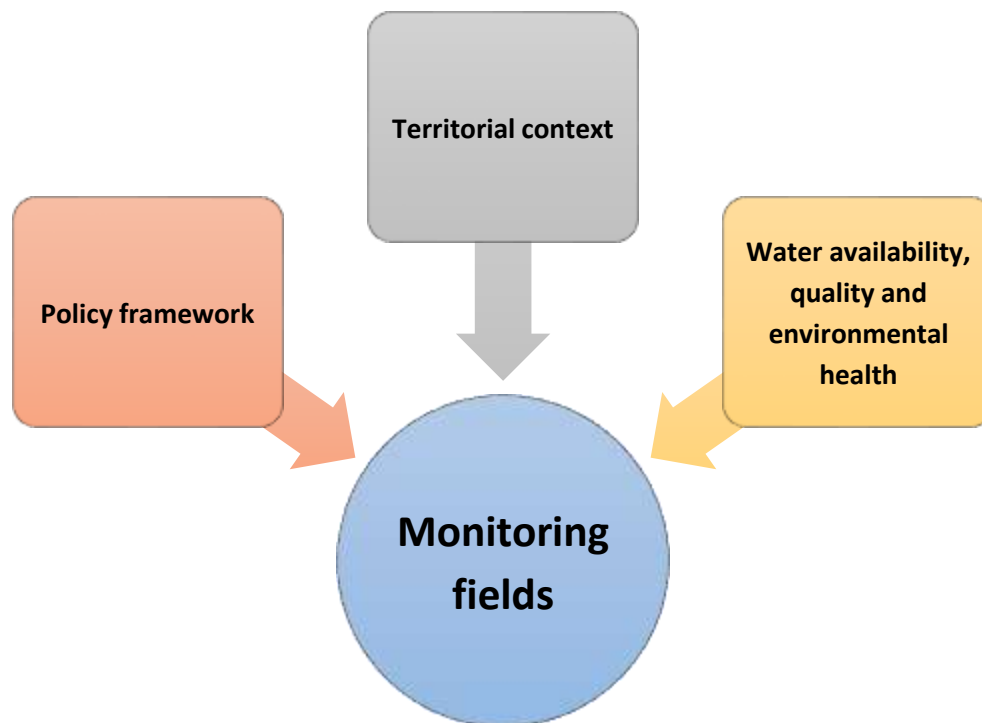
4.3.1 Policy framework

Description

Policies describe a set of actions or measures taken by a public organisation to reach pre-determined objectives (e.g. to promote sustainable tourism water management), to help overcome problems and barriers or to establish the framework for private sector initiatives in the field. The implementation of policies does not impact only on the intended functions by policy makers, but also on almost all segments of the society, including civil society and private sector (e.g. tourism SMEs). Existing policies on water resources cover a great range of issue areas related to sustainable water management such as cooperation improvement, joint and integrated planning (based on a participatory approach involving tourism SMEs, civil society and policy makers at all levels), conflicts resolution, promotion of services and infrastructures, and incentives provision. Users will be asked to assess the policy framework underlying tourism water management in their territory.

Q13. How would you rate the **effectiveness of your territory's policies** on the following areas related to sustainable water management? (On a scale from 1-5, with 1 being "poor" and 5 being "very high")

Policy areas	1	2	3	4	5	Not appl.
1. Clear assignment of roles and responsibilities for water policy and implementation	○	○	○	○	○	○
2. Local authorities' participation in the water management system	○	○	○	○	○	○
3. Coherent management of water-tourism policies	○	○	○	○	○	○
4. Local authorities' available funding (i.e. budget) for implementing water policies	○	○	○	○	○	○
5. Policies for promoting integrity and transparency in water management	○	○	○	○	○	○
6. Public consultation and participation of stakeholders in water policies	○	○	○	○	○	○
7. Conflict resolution mechanisms (e.g. addressing conflicts arising between different sectors such as agriculture and manufacturing)	○	○	○	○	○	○

Policy areas	1	2	3	4	5	Not appl.
8. Educational programs for tourism SMEs to foster sustainable water management	○	○	○	○	○	○
9. Awareness raising campaigns (for the public) on water scarcity issues	○	○	○	○	○	○
10. Provision of financial incentives to tourism SMES to adopt water efficiency technologies	○	○	○	○	○	○

Q14. How often do public authorities carry out **chemical controls on the quality of water** provided by tourism enterprises in your region?

- o Biweekly
- o Monthly
- o Every three months
- o Every six months
- o Annually
- o Only during summer months
- o Never

Indicators

Code	Item	Indicator	Indicator description
PA1	Q13	Effectiveness of water management policies	This indicator will measure the effectiveness of policies and instruments related to water management in the tourism sector
PA2	Q14	Frequency of water quality controls	The indicator will measure the frequency of water quality controls, seeking to evaluate the effectiveness of control policies effectuated by public authorities.

4.3.2 Territorial context

Description

Assessing territorial capacity is essential for identifying the regional attributes and resources that can be utilised by policy makers to support measures on sustainable tourism water management. A "SWOT analysis" approach (following CASTWATER A3.4) will be employed for analysing users' territorial context. The SWOT analysis takes information from an environmental analysis and separates it into internal strengths and weaknesses and external opportunities and threats, to evaluate what a territory can and cannot do. Users will be asked to assess their territory's capacity (i.e. regional environment) in supporting measures on sustainable tourism water management. The focus will be on PESTEL analysis factors (Political, Economic, Socio-cultural, Technological, Environmental, and Legal).

Questions

Q15. How would you rate the following **political factors** (present in your area) in affecting sustainable tourism water management in your territory? (On a scale from 1-5, with 1 being "poor" and 5 being "very strong")

Political factors	1	2	3	4	5
1. Territorial policies on sustainable water management	○	○	○	○	○
2. Tourism development policies	○	○	○	○	○
3. Water governance	○	○	○	○	○

Q16. How would you rate the following **economic factors** (present in your area) in affecting sustainable tourism water management in your territory? (On a scale from 1-5, with 1 being "poor" and 5 being "very strong")

Economic factors	1	2	3	4	5
1. Flexible water pricing policies	○	○	○	○	○
2. Cost of water saving measures	○	○	○	○	○
3. Funding programmes for water sustainability	○	○	○	○	○

Q17. How would you rate the following **socio-cultural factors** (present in your area) in affecting sustainable tourism water management in your territory? (On a scale from 1-5, with 1 being "poor" and 5 being "very strong")

Socio-cultural factors	1	2	3	4	5
1. Public awareness on water scarcity issues	○	○	○	○	○
2. Cultural issues related to water management	○	○	○	○	○
3. Conflicts of economic and environmental interests	○	○	○	○	○

Q18. How would you rate the following **technological factors** (present in your area) in affecting sustainable tourism water management in your territory? (On a scale from 1-5, with 1 being "poor" and 5 being "very strong")

Technological factors	1	2	3	4	5
1. Water infrastructures	○	○	○	○	○
2. Technologies' availability in the local market	○	○	○	○	○
3. Tourism SMEs' compatibility to new technologies	○	○	○	○	○

Q19. How would you rate the following **environmental factors** (present in your area) in affecting sustainable tourism water management in your territory? (On a scale from 1-5, with 1 being "poor" and 5 being "very strong")

Environmental factors	1	2	3	4	5
1. Fresh water availability	○	○	○	○	○
2. Climate change pressures	○	○	○	○	○
3. Vulnerability to extreme events	○	○	○	○	○

Q20. How would you rate the following **legal factors** (present in your area) in affecting sustainable tourism water management in your territory? (On a scale from 1-5, with 1 being "poor" and 5 being "very strong")

Legal factors	1	2	3	4	5
1. Regulation on the uses of recycled water	○	○	○	○	○
2. Regulation on water use during droughts	○	○	○	○	○

Q21. Is your establishment **connected to sewage and waste water treatment facilities**?

- o   Yes, my establishment is connected to the central sewage system
- o   Yes, we have our own wastewater facilities
- o   Not yet, we pump our wastewater into local ditches, septic tanks or the sea

Q22. Does your establishment provide tourism services that are environmentally and culturally responsible while appreciating nature and promoting conservation (e.g. **ecotourism services**)?

- o   Yes
- o   No

Indicators

Code	Item	Indicator	Indicator description
PA3	Q15-20	Potential for sustainable water management at regional level	This indicator will evaluate the surrounding environment underlying the adoption of water efficiency measures in the tourism industry for partnership areas.
PA4	Q21	Percentage of tourism SMEs connected to wastewater treatment facilities	The indicator will indicate how many tourism SMEs are connected to or have developed facilities that allow them to treat their wastewater.

Code	Item	Indicator	Indicator description
PA5	Q22	Percentage of tourism SMEs providing sustainable tourism services (e.g. ecotourism)	This indicator will reveal the diffusion of ecotourism and, in general sustainable tourism models in Mediterranean tourism destinations.
PA6	Q11	Tourism industry's consumption compared to residential consumption *(Aggregate results from Q11)*	The indicator will enable to compare tourism sector's average consumption (expressed as consumption per visitor day) with those of local residents during the different touristic seasons. (Volume of water consumed per tourist per night / Volume of water consumed per inhabitant per day).

4.3.3 Water availability, quality and environmental health

Description

This sub-section seeks to identify the degree that water resources in coastal areas meet the seasonal needs of the tourism industry, and gather valid evidence on the most common sources of water used by tourism SMEs to address issues related to water availability. The replies from tourism SMEs representatives (i.e. end users) will be used to measure the impact of the adoption of water efficiency measures on ecosystem conditions, and more especially on the quality of water in Mediterranean beaches.

Questions

Q22. What **water supply sources** are used in your establishment? Select all that apply

Technology / System	
1. Public water utility	☐
2. Private water utility	☐
3. In-house groundwater abstraction	☐
4. In-house rainwater harvesting	☐
5. In-house greywater recycling	☐
6. Other (please specify)	

Q23. How would you rate the **quality of water** provided by your establishment for the different uses? (On a scale from 1-5, with 1 being "very poor" and 5 being "excellent")

Water uses	1	2	3	4	5
1. Drinking	○	○	○	○	○
2. Bathing	○	○	○	○	○
3. Swimming pool	○	○	○	○	○
4. Spa and wellness	○	○	○	○	○
5. Recreational activities	○	○	○	○	○

Q24. Have ever **water borne diseases** been reported at your establishment?

- o   Yes
- o   No

Q25. How many **complaints about your establishment's water quality** have you received during the last year?

Total number of complaints

Indicators

Code	Item	Indicator	Indicator description
PA7	Q22	Percentage of water supplied from sources other than public utility	This indicator will measure tourism SMEs' capability to increase the availability of water (thus meeting increasing water demand) via multiple sources.
PA8	Q23	Quality of water resources utilised in the tourism industry	This indicator will evaluate the quality of water resources utilised by tourism SMEs for drinking, bathing and recreation purposes.
PA9	Q24-25	Frequency of complaints / reports on water quality and water related diseases	This indicator will measure the frequency of customers' complaints about water quality or/and diseases caused by microorganisms and toxic contaminants in water

5 Rating system

The tool's rating system will have the following structure:

- Users (after having successfully completed the questionnaire) will obtain a score in a 0-100 scale, which will indicate their overall performance in sustainable water management.
- The aggregate score will be made up of the four (4) scores to be obtained in each assessment area after they have been added together. The four assessment areas are: a) water saving technologies and infrastructures, b) strategic planning and management services, c) awareness raising, and d) actual water consumption.
  - o Each self-assessment area has a different weight. In particular, "strategic planning and management services" account for 35% of the total score; "water saving technologies and infrastructures" account for 30%; "awareness raising" for 20%, while "actual water consumption" for 15%. This means that for each self-assessment area, users will obtain a different score that will demonstrate their performance in this particular category.
  - o Evaluation will not be presented only as overall score, but will be further divided/analysed into the different assessment areas.
- The score to be obtained in each self-assessment area will be the sum of the points received in the course of questions included in this category.
  - o Each question has a different weight so certain questions may contribute to the overall score more than others.
  - o Each question is divided into sub-questions that contribute different points to the total score (to be obtained) for each category.

Table 1. Score grid

A. Water saving technologies and infrastructures				
Q1. Annual budget for investments in water sustainability	Single answer question	Q1.1 (1 points) Q1.2 (2 points) Q1.3 (4 points) Q1.4 (6 points) Q1.5 (0 points)	6 points	**30 points**
Q2. Water saving devices and fixtures	Select all that apply	Q2.1 (2 points) Q2.2 (2 points) Q2.3 (2 points) Q2.4 (1 points) Q2.5 (1 points) Q2.6 (0 points)	8 points	
Q3. Water recycling technologies	Select all that apply	Q3.1 (2 points) Q3.2 (3 points) Q3.3 (5 points) Q3.4 (0 points)	10 points	
Q4. Irrigation technologies	Select all that apply	Q4.1 (2 points) Q4.2 (2 points) Q4.3 (2 points) Q4.4 (0 points)	6 points	
B. Strategic planning and management services				
Q5. Environmental Management System (EMS)	Single answer question	Q5.1 (5 points) Q5.2 (0 points)	5 points	**35 points**
Q6. Planning	Select all that apply	Q6.1 (2 points) Q6.2 (1 points) Q6.3 (3 points) Q6.4 (2 points) Q6.5 (2 points) Q6.6 (0 points)	10 points	
Q7. Management services	Select all that apply	Q7.1 (3 points) Q7.2 (2 points) Q7.3 (1 points) Q7.4 (1 points) Q7.5 (1 points) Q7.6 (2 points)	10 points	

Q8. Monitoring	Select all that apply	Q8.1 (1 points) Q8.2 (2 points) Q8.3 (3 points) Q8.4 (4 points)	10 points	
C. Awareness raising				
Q9. Training staff	Select all that apply	Q9.1 (2 points) Q9.2 (2 points) Q9.3 (3 points) Q9.4 (2 points) Q9.5 (3 points) Q9.6 (0 points)	12 points	**20 points**
Q10. Engaging customers	Select all that apply	Q10.1 (2 points) Q10.2 (2 points) Q10.3 (2 points) Q10.4 (2 points) Q10.5 (0 points)	8 points	
D. Water consumption				
Q11. Average consumption per visitor day	Select all that apply	Q11.1 (3 points) Q11.2 (3 points) Q11.3 (4 points)	10 points	**15 points**
Q13. Wastewater treatment	Single answer question	Q13.1 (1 points) Q13.2 (2 points) Q13.3 (3 points) Q13.4 (4 points) Q13.5 (5 points)	5 points	

6 Results presentation

6.1 For SMEs

The CASTWATER online tool will include the following features, so as to present the results from "self-assessment" section in a comprehensive and well-structured way.

- A traffic light system (green, yellow, red) to present SMEs' overall performance in sustainable water management (Figure 2). This table will indicate the total score obtained by participating SMEs, their rate as well as a rate description.
- A radar chart to present SMEs performance in the four (4) self-assessment areas
- Tables with users' ranking sorted by country and type of establishment
- List of recommendations on how to improve their water management performance, indicating the areas in which more actions and measures are required. All suggestions will be based on SMEs' replies in the different assessment areas. The tool will highlight the major (identified) weaknesses related to water management so as to guide SMEs' next actions. Recommendations will appear as follows:

Well done! Your performance is **very good**! To further improve your performance in sustainable water management, consider taking actions on the following areas:

- Raising public awareness on water scarcity issues

- Adopting water recycling technologies to promote water reuse

- Displaying water saving notices to mobilise guests

Unfortunately, there is still a lot to do to promote water efficiency in your establishment! You can start by developing a water management plan that will reveal the opportunities for reducing water consumption and help prioritise actions based on actual needs.

Figure 2: Traffic light system

Score obtained	Rate	Rate description	Traffic light
Above 90 points	A+	Outstanding	🟢
80 – 89 points	A	Excellent	🟢
70 - 79 points	B+	Very Good	🟢
60 – 69 points	B	Good	🟡
50 – 59 points	C+	Fairly Good	🟡
40 – 49 points	C	Poor	🔴
20 – 29 points	D	Insufficient	🔴
0 – 19 points	E	Still a lot to do	🔴

6.2   For public authorities

The CASTWATER online tool will provide PAs with access to key metrics (e.g. mean, median, standard deviation, variance, rank and kurtosis) and visualisations (e.g. column, line, pie, bar, bubble and radar charts), drawn from SMEs' replies in both the "self-assessment" and "monitoring" sections stored in the database. Public authorities will be able to obtain data sorted by type of establishment and country of origin; the tool will not provide recommendations on how to improve water policies, as it is up to public authorities on how to interpret evidence and extract useful conclusions.

7 Technical specifications

7.1 Components

The platform that will host the CASTWATER online tool should be a web-based front-end for users to access the system. This service should contain tools to manage and save the content (provided by users in the form of replies), using a database. The tool should be also accessible from portable computing / communication devices such as smartphones, tablets and laptops. The CASTWATER online tool will contain the following components:

1. Support of different languages
2. User management
3. Online service

Support of different languages

The CASTWATER project brings together 11 partners from 7 countries to reduce the impact of tourism activities on environmental heritage and to improve management of water resources. To this end, CASTWATER follows a studying, testing and transferring approach of transnational cooperation. Therefore, the content of the tool (incl. interface) should be available in all partnership languages, including English.

- English
- Greek
- Croatian
- French
- Italian
- Spanish

User management

The CASTWATER online tool will incorporate some form of authentication and authorization for accessing tool's resources. This will enable to a) verify users before granting access to the platform's environment, b) categorise users (tourism SMEs vs public authorities) and direct them to the appropriate section, and

c) monitor users' activity and results. User management means that users will have to create an account to access tools' features and services while all the information about their progress, activity, scores will be saved under this account. This will also contain an administration feature for public authorities, where they can access aggregate results from tourism SMEs' replies.

Online service

The tool will be made available through a web hosting service. This service will make the tool available to end users via the internet. The only way to allocate a website online is by using a server to manage network resources.

7.2   Minimum system requirements

The CASTWATER online tool will be designed to be compatible with the following (versions) operating systems and web browsers.

- **Operating systems** (minimum requirements)
    o   Desktop: Windows, Mac and Linux
    o   Mobile devices: Android 4.0 and above & iOS 7 and above
- **Web browsers**
    o   Google Chrome
    o   Firefox
    o   Safari
    o   Internet Explorer 11

A strong broadband internet connection will be necessary for good performance. A minimum download speed of 1.5 Mbps will be required for using the CASTWATER online tool, however faster connections, will further enhance online experience.

7.3   Login system & access to data

The CASTWATER online tool will include a login page firstly to distinguish users (i.e. tourism SMEs, public authorities and administrators) and secondly to guarantee the security of the tool and protect the system from invaders or other threats. This is a process by which individual access to the CASTWATER tool is

controlled by identifying and authenticating the user through its credentials. All users must create a user profile to get access to the tool's features and resources. To create a new profile account, users have to a) enter their first name, last name, and a valid e-mail address to use as the login and b) indicate their identity (i.e. tourism SMEs, public authorities, and administrators). It is important that users check their email address carefully before signing up as they will not be able to change it later.

The CASTWATER online tool will be designed to recognise three distinct types of users (i.e. tourism SMEs, public authorities and administrators), providing different levels of access to the database.

- **Tourism SMEs** will be the main target group to use the tool. They will provide information on their actions and measures to promote water efficiency as well as their perceptions on the existing policy framework and territorial context.

- **Public authorities** will have access to a series of indicators (those addressed to public authorities as defined in A3.6) that will enable them to monitor tourism sector's overall performance in their territory and assess the implementation of water management policies and their effectiveness.

- **Administrators** will have unlimited access to the tool's database, being able to extract files with all the gathered data and information.