

SIMTWIST PROJECT

Simulating tourism water consumption with stakeholders

Appendix 1

SUMMARY OF THE INTERVENTION OPTIONS AIMED AT WATER CONSERVATION IN TOURISM INDUSTRY EXTRACTED FROM THE SPANISH LITERATURE AND POLICY DATABASE

| Type of measure | Scale of intervention/ Stakeholders involved | Intervention option (I.O.) | Nº of papers/laws /regulations which cited this I.O. |
|-----------------|---|---|--|
| Technical | Hotel | Installation of water-saving devices in showers, toilets and taps (all over the hotel) | 22 |
| Technical | Hotel | Installation of water-efficient irrigation systems and/or irrigation programmers/humidity sensors, pressure limiters | 15 |
| Technical | Hotel | Installation of grey water systems for non-potable uses/ Use treated wastewater for gardening | 12 |
| Technical | Hotel | Installation of water use efficient appliances (Kitchen and Laundry) | 9 |
| Technical | Hotel | Leak control (periodic review and improve management) | 8 |
| Technical | Hotel | Installation of desalting plants to treat brackish water from private wells in hotels/ Use water from private wells in hotels | 6 |
| Technical | Hotel | Installation of rainwater harvesting systems in hotels | 6 |
| Technical | Hotel | Use closed system for water treatment in swimming pools in order to avoid annual emptying and filling | 5 |
| Technical | Hotel | Bathtub replacement by showers | 5 |
| Technical | Hotel | Use salt water in swimming pools | 4 |
| Technical | Hotel | Replacement of air refrigeration and condensing units | 4 |
| Technical | Hotel | Use a pool cover to prevent evaporation losses | 4 |

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| Technical | Hotel | Install pressure regulators/work with moderate operating pressures | 4 |
| Technical | Public administration/ Water utility | Water conservation measures at river basin level and/or at local level (Reduce leakages, halt illegal extraction, improve water distribution network management and initiatives to improve efficiency, promotion of non-conventional resources) | 3 |
| Technical /Planning | Hotel | Water consumption control measures through installation of water meters (monitoring) | 10 |
| Planning | Public administration / Hotels | Introduce garden typologies with low-water requirements vegetable species | 12 |
| Planning | Hotel | Outdoor paving | 3 |
| Planning | Hotel | Set annual water consumption reduction targets and establish monitoring indicators | 3 |
| Planning | Anyone | Define a water consumption model aimed at define factors that determine water consumption in hotels to improve the promotion of water-saving measures | 2 |
| Planning | Commercial and Industrial users | Establishment of the requirement of a municipal authorization for non-domestic wastewater discharge, which may have a maximum values of electrical conductivity of 3,150 $\mu\text{S}/\text{cm}$ | 2 |
| Planning | Public administration | Review and Update the Water Purification and Reclaimed water reuse plan and expand reclaimed water network on an urban scale | 2 |
| Planning | Public administration | Improve society's knowledge and perception of climate change. | 1 |
| Management | Hotel | Recommendations to customers to moderate water consumption (sensitization) | 13 |
| Management | Hotel | Employee/Staff involvement and training in water management practices and efficient use of water | 11 |
| Management | Hotel | Give clients the option/Encourage clients to extend replacement time for towels and linen | 9 |
| Management | Public administration/ Water utility/Hotel | Promote water-saving awareness-campaigns (Guest-centered strategies) | 8 |
| Management | Hotel | Apply a voluntary environmental management system (such as ISO 14001, ISO 50001 and EMAS) aimed at foster sustainability and reduce resources consumption | 7 |
| Management | Public administration/ Water Utility/ Hotel | Drought management plans and mandatory measures: Prohibition of the replenishment of swimming pools, restrictions on garden irrigation, intensification of leak detection campaigns, pressure reduction, increase reclaimed water consumption and activation of external transfers. | 5 |
| Management | Hotel | Outsource laundry service | 3 |
| Management | Hotel | Establishment of irrigation schedules between June and September (from 20:00 to 10:00) | 2 |

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| Management | Public administration/ Water utility/Hotel | A private user must notify to the water utility when is it going to empty its pool, in order to collect this water for public gardens irrigation and street cleaning | 1 |
| Management | Public administration/ Hotel | Requirement to use unconventional resources for green areas of more than 1,000 m ² (with drip irrigation, rain, humidity and wind sensors, leak control and alarm systems, short-range sprinklers in grass areas, runoff prevention systems, irrigation controllers and specific water meter). | 1 |
| Management | Public administration/ Hotel | In the case that the filling swimming pool water comes from a water source other than the general network the pertinent authorization must be obtained, for use as bathing water, which will be requested annually from the services territorial of the Regional Ministry of Environment. | 1 |
| Economic | Public administration/ Water utility | Design of new water tariffs structures to reduce water consumption | 8 |
| Economic | Public administration | Eco tax to be charged for all tourists and visitors to for the maintenance of the water supply system and environmental sustainability | 1 |
| Agreement/ Stakeholders involvement | Tourist sector/ Public administration | Active stakeholder pressure may incentivize the adoption of measures aimed at water conservation in hotels | 1 |
| Agreement/ Stakeholders involvement | Tourist sector/ Public administration/ Farmers | Agreements between tourist sector and farmers to exchange treated wastewater to be used for irrigation for freshwater to urban and tourist uses. | 1 |
| Agreement/ Stakeholders involvement | Tourist sector/ Public administration | Foster institutional cooperative mechanism between stakeholders with common objectives and participatory formulas and boost tourism sustainability (circular economy, environmental protection and use of clean energies) | 1 |