Sustainable Tourism Observatory of Malaga

Wastewater management

Financiado por:

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01.

Context

The sanitation and treatment of urban wastewater is a public service as well as a measure to protect the environment and public health.

Its implementation requires different infrastructures and facilities to be built, maintained and operated within an environmental and administrative framework. Furthermore, from this activity others are derived such as the management and disposal of sludge or the reuse of treated water. In order to protect the environment from the negative effects of wastewater discharges, Directive 91/271/EEC of the Council of the European Economic Community of 21 May 1991 established a series of measures, including those necessary for the collection and treatment of urban wastewater

Royal Decree-Law 11/1995 incorporates this directive into the Spanish legal system, establishing municipal competence in water management. In addition, it is the autonomous communities, in coordination with the municipalities, that set the metropolitan areas in which their territory is structured, establishing the public body that represents the municipalities for the fulfilment of the provisions of RD 11/1995. It also obliges municipalities to have collector systems and apply secondary treatment. Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for community action in the field of water policy provides that from 2010, Member States are to ensure that pricing policy encourages consumers to use resources effectively and that different economic sectors contribute to the recovery of the costs of services related to water use, including environmental and resource costs.

This directive is implemented in Spain by Law 62/2003, of 30 December, on fiscal, administrative and social order measures, which includes, in its article 129, the amendment of the revised text of the Water Act, approved by Royal Legislative Decree 1/2001, of 20 July. This establishes a maximum period to comply with the requirements and objectives of the Directive until 2015, which may be extended on some occasions until 2027. In the case of Andalusia, Water Act 9/2010 of 30 July of Andalusia establishes the treatment charge to be used for the improvement of the hydraulic infrastructures of interest. The great investment effort made in recent years in the field of wastewater treatment has greatly improved the situation in Andalusia. However, the deadlines imposed by the European Directive have not been fully met and even today, there are important metropolitan areas that do not adequately treat their wastewater.

Article 25 of Act 7/1985 of 23 April, which regulates the Foundations of Local Government, grants the municipality the competences, among others, of water supply, sewerage and wastewater treatment. The Regional Government of Andalusia exercises the powers of assistance, both technical and economic, to Local Corporations for investments in supply, sanitation and treatment. Royal Decree-Law 11/1995 establishes the municipal competence for water management, but the municipal ownership of the service does not imply that the management itself must necessarily be carried out by these authorities, and these powers may be entrusted to the private sector, and/or groups of municipalities or consortia may be created to optimise the provision of the supply or sanitation service.

02.

Targets

- Increase capacity and increase the percentage of tertiary treatment.
- Generate a greater volume of reclaimed water by investing in capacity improvements of the Peñón del Cuervo WWTP.
- Create an anti-pollution tank that will eliminate direct discharges to the Port's dock, reducing the volume discharged into the sea by 40%.
- Produce renewable energy through the use of wastewater as raw material, by the gas generated in the digesters of the WWTP (Waste water treatment plant) and reused in the thermal sludge drying process.

03.

Results

Wastewater treatment

A supply network, more than 1,500 km long and with pipe diameters between 100 and 2,200 mm, supplies water to the city of Malaga, delivering an average of 2,000 litres per second per day.

"The currently achievable tertiary water treatment capacity is 21.58%. The period 2015-2020 saw values lower than 10% of tertiary treatment."

This water comes from the La Viñuela (170 Hm3), Guadalteba (156 Hm3), Guadalhorce (126 Hm3), Conde de Guadalhorce (70 Hm3), Concepción (56 Hm3) and Pilones (2.2 Hm3) reservoirs. This network is completed with 3 drinking water treatment plants (the DWTPs of El Atabal, Pilones and El Limonero) and with more than 20 storage tanks, with a total capacity of 260,000 m3, of Teatinos (91,590 m3), Olletas Bajo (47,000 m3), Olletas Alto (31,070 m3), Florida (18,000 m3), Jaboneros (16,500 m3), Depuradora (14,641 m3), Palmilla (13,236 m3) and Suárez (10,807 m3).

The tariffs charged for sanitation and wastewater treatment in the municipality of Malaga are regulated in the Malaga Official Gazette (BOP). The variable tariff paid for all consumption (industrial, commercial and other uses with discharges not related to households) is 0.266 euros/m3 in the case of treatment and 0.362 euros/m3 for sanitation. For domestic consumption, the tariff for a supply of 3 to 5 m3/inhabitant/month in treatment is 0.315 euros/m3 and in sanitation 0.351 euros/m3.

The treatment of wastewater that is dumped into the sea or a river is a basic issue affecting the cleanliness and hygiene of natural water environments. It contributes to reducing water pollution and is part of the cycle of renewal of natural resources. In the city of Malaga, the volume of treated water has followed a constant trend in recent years, with values exceeding 60,000 m3.

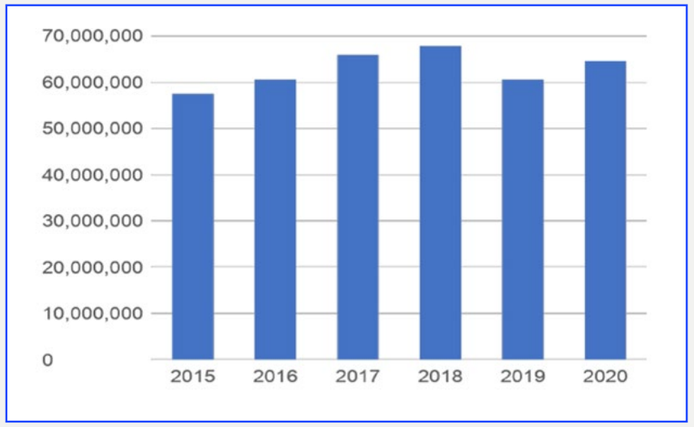
Secondary treatment, i.e. the removal of biodegradable organic matter from wastewater, stands at 100% from 2016 onwards. Tertiary treatment, furthermore, makes it possible to recover part of the treated water, to use it for irrigation of sports facilities, green areas and gardens, and the cleaning of the city's streets and squares. The currently achievable tertiary water treatment capacity is 21.58%. The period 2015-2020, saw values below 10% of tertiary treatment, calculated on the total volume of water with secondary treatment.

Water treatment systems in the city of Malaga

"Wastewater treatment and the degradation of organic matter generates emissions affecting the city's carbon footprint ranging between 115,000 and 125,000 tCO2e in the period 2015-2020."

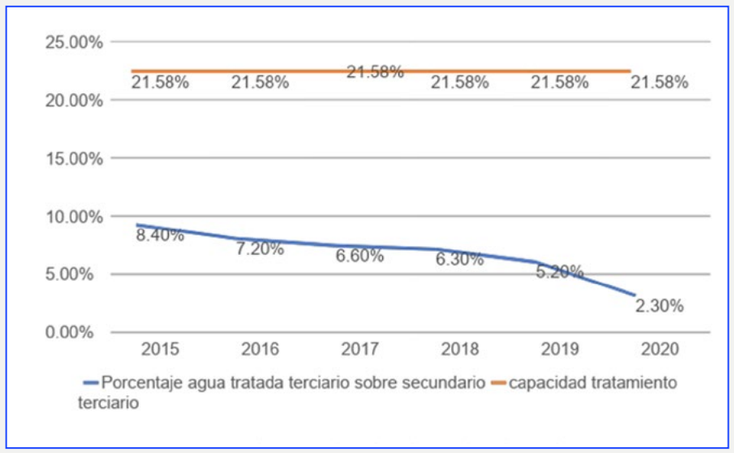
The General Urban Development Plans approved for Malaga since the 1980s require that any new developments in the city be designed with separate sewage and stormwater networks. Thanks to this, approximately 55% of the urban area of the capital has these separate networks. However, tourist establishments do not have their own wastewater treatment system, since this depends on Malaga City Council through EMASA.

Figure 1: Total volume of treated water (m^3) 2015-2020



Source: Urban Environment Observatory (OMAU)

Figure 2: Percentage of treated tertiary/secondary water 2015-2020



Source: Urban Environment Observatory (OMAU)

Even so, there are some hotels in the city that are starting to implement pioneering measures in water management and treatment, in order to improve efficiency and implement best practices to contribute to reducing the water footprint.

Hotel Vincci incorporates flow reducers in taps and showers. It also has a project called "Agua Km 0" which consists of collecting water from the local network and subjecting it to a filtration process, to obtain water free of odours or any other harmful substance, preserving its natural minerals.

The Hotel Mariposa has a vertical garden, with a hydroponic system that irrigates said garden through the use of reclaimed water. To do this, it treats the grey water generated by 2 hotel rooms through a treatment plant located in the basement. From there, the water is pumped to the roof where it is introduced into the irrigation system.

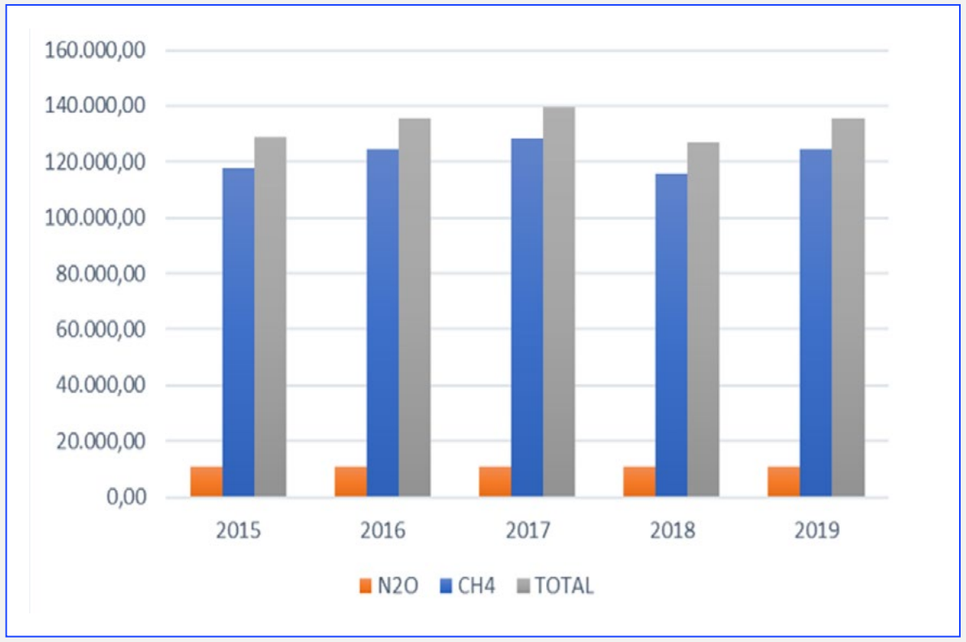
Pollution from wastewater treatment

"Tertiary treatment in Malaga has followed a negative trend in recent years, and is very far from achieving its maximum treatment capacity.."

Wastewater treatment and the degradation of organic matter generates emissions that affect the city's carbon footprint. There are two main types of gases that contribute negatively to the environment from this type of activity: CH4 (methane) and N20 (nitrogen oxide).

Figure 3 shows that methane gas is the predominant gas, exceeding 90% of total emissions for all years. The trend is constant with totals ranging from 115,000 to 125,000 tCO2e.

Figure 3: Trend in emissions from wastewater treatment 2015-2019



Source: Ministry of Sustainability, Environment and Blue Economy. Carbon Footprint of the municipalities of Andalusia

04.

Conclusions

The practice of regenerating and reusing wastewater constitutes a practice that must be included within the integral management of water and assumed within the structure of the institutions of the hydraulic sector.

It is also worth highlighting the importance of tertiary wastewater treatment as a key measure to protect the environment and improve people's quality of life. It is essential that the authorities, companies and society in general become aware of the importance of this process and promote its application in all wastewater treatment plants. The water deficits that Malaga currently suffers require the management of the quantity and quality of all available water, with tertiary treatment and the expansion of rainwater separation networks being two aspects to be improved.

Tertiary treatment in Malaga has followed a negative trend in recent years and is very far from achieving its maximum treatment capacity. The investment in the improvement of hydraulic infrastructures, which will be carried out through the increase in the tariff system, aims to influence this aspect. Therefore, it is hoped that this situation will be reversed with these investments, increasing the capacity and consequently the proportion of tertiary treatment.

In the tourism sector, it should be noted that there are already hotel establishments that have voluntarily implemented wastewater reuse as a sustainable management strategy, given the cost-benefit it can provide as a sustainability strategy for their marketing.

https://sto.malaga.eu/indicadores/gestion-de-aguas-residuales/

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