



# MONITORING AND EFFICIENCY IN SMART CITIES

In the near future, water sector stakeholders will be facing major challenges, including the ageing of infrastructure and energy and water shortages, among others. To deal with them, ACCIONA is increasingly embracing the concept of smart water.

## A challenge

All stakeholders in the water sector - particularly water infrastructure managers - face major challenges in the coming years. In Spain, according to the 15th Drinking Water Supply and Sanitation Assessment carried out by AEAS-AGA, which estimated the water supply network in the country to be 224,673 kilometres (4.7 metres of pipe per inhabitant), 39% of the network as-

 ADRIÁN CAMPOS, DEPARTMENT OF AUTOMATION AND CONTROL



sets are more than 30 years old, 19% are between 20 and 30 years old, 26% are 10-20 years old, and only 17% are less than 10 years old.

In addition to the above-mentioned ageing of the network, the following is a list of the main challenges facing ACCIONA over the next few years; our services will:

- ★ Proactively manage the ageing of our infrastructure.
- ★ Effectively manage energy and water shortages.

**ACCIONA is moving towards the concept of smart water, driven by technologies such as Big Data, IoT, robotics, cloud computing and AI**

- ★ Guarantee quality throughout the entire cycle.
- ★ Comply with regulatory requirements in a sustainable manner.
- ★ Put citizens at the centre of our priorities, creatively meeting their expectations and surprising them.

To this end, ACCIONA is moving steadily towards the concept of smart water, driven by technologies such as Big Data, IoT, robotics, cloud computing and artificial intelligence.

#### **A custom-made suit**

At ACCIONA we have been repeating almost like a mantra that Industry 5.0 is the industrial revolution of people. This notion is at the core of all our innovation-related developments. Digitalization is now for the people:

- ★ For operators, enabling optimized and efficient management.
- ★ For service managers, providing them predictive models.
- ★ For area managers, by centralizing transactional data.
- ★ For management, enabling the visualization of indicators.

Our way of working has a direct impact on Business Development, expanding our bidding capacity and increasing our brand presence, is aligned with the company's digital transformation strategy, integrates different urban services and is inspired by the concept of sustainability.

We believe that the distribution of data throughout the company should be tailored to each of the roles, so that each person has the information they need when they need it. To this end, considering the broad assortment of indicators that we generate, we allocate them ad-hoc:

- ★ Country, zone: consolidated indicators related to performance or turnover.
- ★ Service: indicators related to the network, meters or service debt.
- ★ District metered area: indicators related to flow rates, leak detection tools or event detection.

One of the recent projects that illustrate this methodology is the digitalization of ACCIONA's Drinking Water Supply and Sewerage Service in Andratx (island of Mallorca, Spain). To control household consumption in the entire fleet, 6,646 static metering sensors have been installed to detect leaks or anomalous events in real-time with maximum precision. The integration of these readings with multiple data sources such as remote control and geographic information systems, commercial management or maintenance, among others, allows the service to use Artificial Intelligence models to maximize its efficiency, putting the end user at the centre of our priorities. For all these reasons, the Andratx Water Service is already a strategic project reference in the digital transformation of our business.

Another exemplary project is SmartWaterLights, which involves the implementation of a smart city in the town of Toro (province of Zamora, Spain), where we have installed IoT sensors belonging to different ACCIONA business lines (domestic water meters in 4 district metered areas, public lighting, fleet of municipal vehicles, waste recycling service). For their monitoring and subsequent integration, we have deployed a LoRaWAN communications network (bidirectional low power consumption wireless technology). Since its implementation, important benefits have been achieved, such as the early detection of events, the resolution of leaks and breaks in less time, the identification and reduction of anomalous consumption and better planning of operation and maintenance tasks. This

**Data distribution throughout the company should be tailored to each role, so that each person has what they need when they need it**

## SmartWaterLights is an example of how working with aggregated information helps detect events in advance and supports decision making

project is yet another example of how working with aggregated information helps us to detect events in advance and supports decision making.

### A path forward

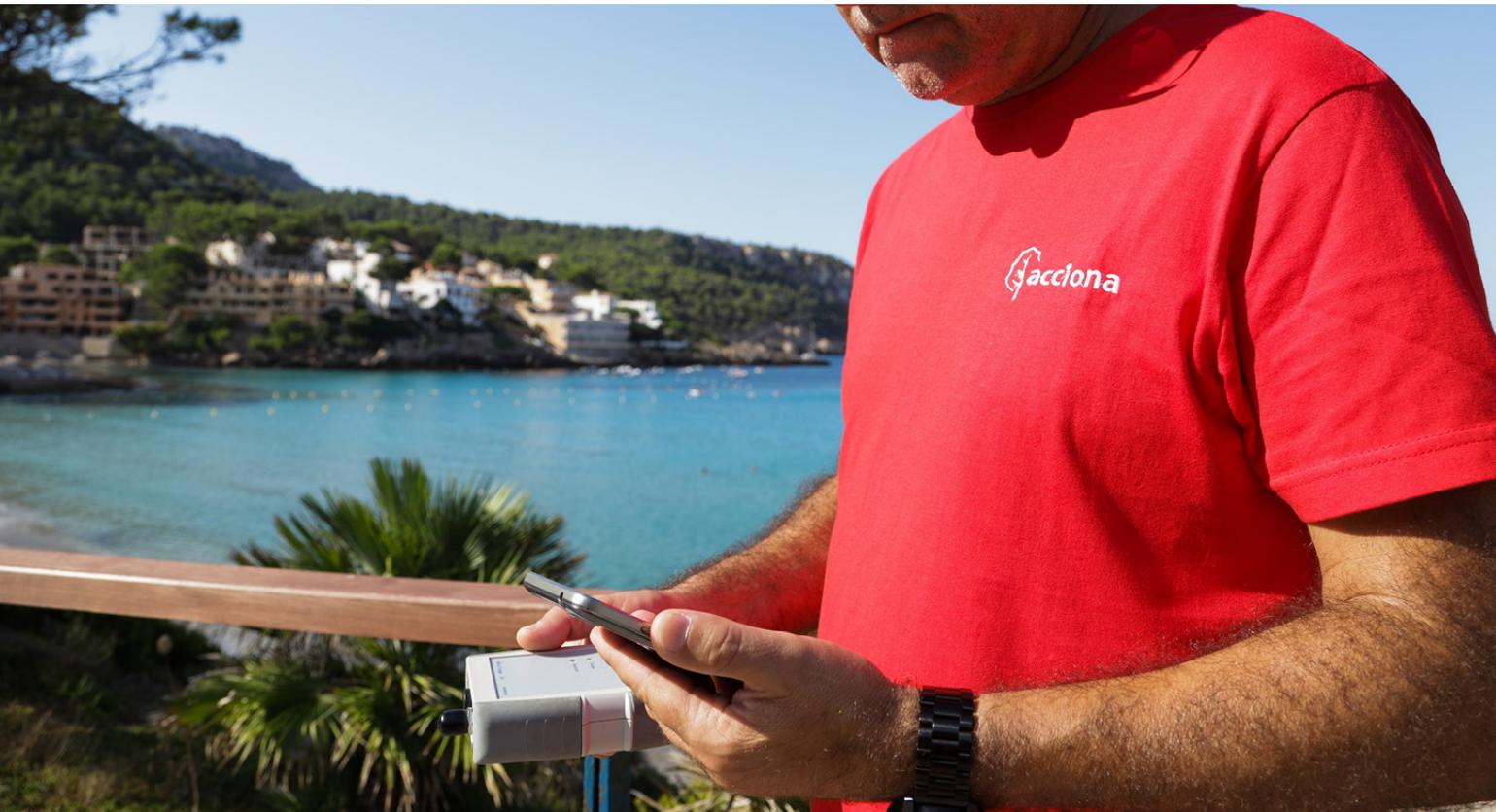
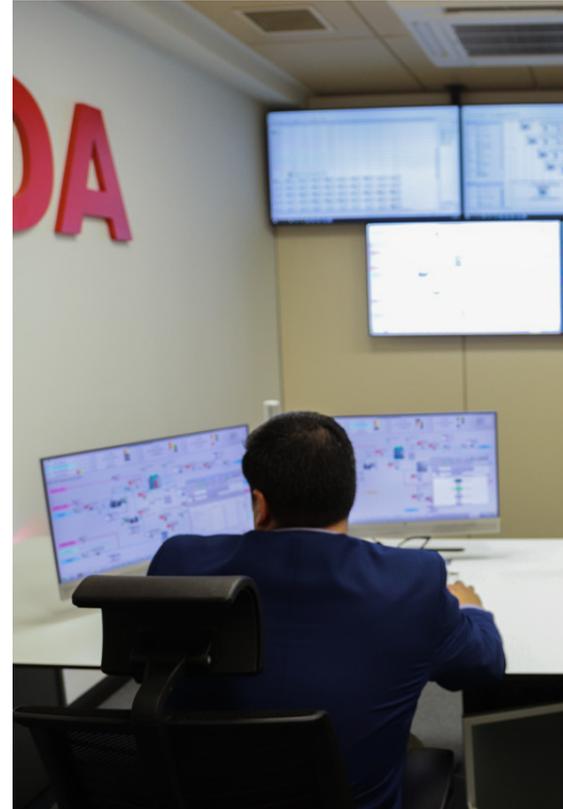
Could we identify what are the criteria that establish the need, in the immediate future, to invest in smart water cities? Personally, I have been talking for many years with water sector stakeholders from different countries (and continents!) and I can confirm that there are many models that allow defining the returns of smart water cities. I also

consider it necessary to point out that, although at very specific moments the bibliography may include slight conceptual disagreements, all these analysts agree emphatically that:

★ On the one hand, we find the so-called direct economic criteria, derived from sustained technological evolution and the progress that enables to, for example, reduce water losses or reduce OPEX.

★ On the other hand, there are the intangible economic criteria; these, because they are less straightforward, are my favourite. They are framed within what we know as disruptive technologies; from them, we derive intangible cost savings brought about by Artificial Intelligence, the use of synergies, customer loyalty, commercial reasons or the Sustainable Development Goals themselves.

In numerous books and interviews, Naval Ravikant (a renowned entrepreneur, investor and in my opinion one





## From talking with water sector stakeholders, I can confirm that there are many models to define the returns of smart water cities



of the great thinkers of our time) has put into words an idea that, in my opinion, has been hanging over smart water management since its inception: "The difficult part of any technological journey is not the ability to learn, but to unlearn". As a team progresses through a smart water project - and thus climbs

the mountain of knowledge - the sunk cost feeling becomes stronger. This makes it increasingly difficult to identify what might not be the right mountain to climb and make the wise decision to return to base camp. The difficulty lies in having a beginner's mindset throughout the entire project.

