



BRINGING LIFE BACK TO THE TAGUS RIVER

THE TAGUS ESTUARY CLEAN-UP PROJECT

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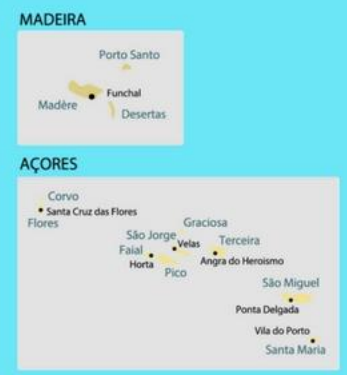
WHAT WAS THE PROBLEM?

Bringing life back to the Tagus Estuary

The Tagus estuary is located in Portugal where the transnational river with the same name meets the Atlantic Ocean, near the capital city of Lisbon and its metropolitan area.

This estuary plays a fundamental role from the ecological and economic points of view. However, the concentration of densely urbanized areas and industrial clusters in the region has resulted in environmental degradation that could only be curbed through combined efforts and integrated solutions.

WHERE IS THE ESTUARY?





TAGUS ESTUARY

**THE LARGEST ESTUARY IN WESTERN EUROPE
(34,000 HECTARES)**

Important Natural Reserve

A protected area that is the largest wetland in Portugal and one of the most important in Europe

80,629 square kilometers

(24,800 square kilometers in Portugal)

Total area of the Tagus basin

19 Municipalities

in the Estuary

2.8 million inhabitants

the highest population concentration in Portugal

Ecosystem affected by highly polluting activities

receiving wastes from agricultural and industrial activities and from large urban centres

TRIGGERS

EXPO'98 - LISBON INTERNATIONAL EXHIBITION

DEFINED SCHEDULE AND PLANNED OBJECTIVES

POLITICAL WILL

AVAILABLE EUROPEAN FUNDING

ECOLOGICAL AWARENESS

**GROWING IMPORTANCE OF TOURISM AND
LEISURE ACTIVITIES (BATHING, SURFING, SAILING)**

**TECHNICAL COMPETENCE
OF AdP GROUP COMPANIES**



COMBINED EFFORTS BY MANY ENTITIES

THE REQUALIFICATION INCLUDED

DEPOLLUTION
OF THE
WATERLINES

SLUDGE
REMOVAL
AND
TREATMENT

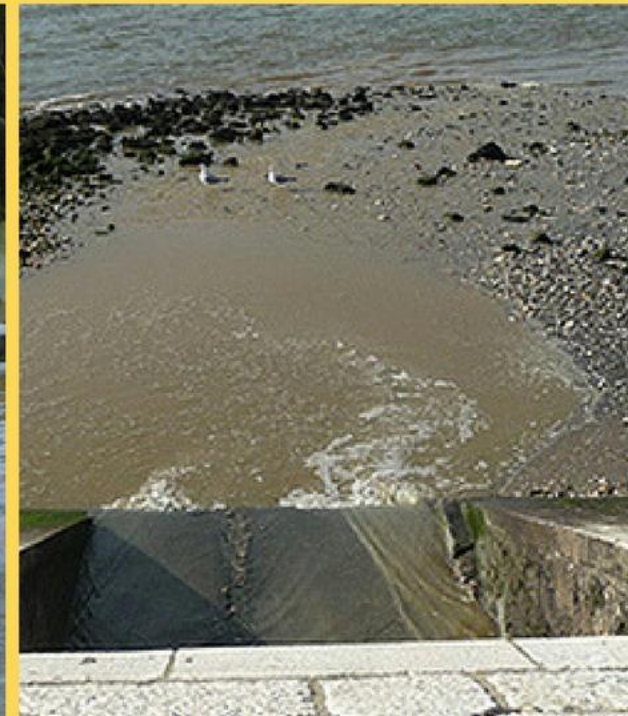
FLUVIAL
REGULARIZATION
AND FLOOD
CONTROL

REFORESTATION

REQUALIFICATION
OF
RIVERFRONTS

ISSUES

- Unreliable wastewater treatment facilities
- Functional failure of sewage network during storm events
- Constant and devastating floods
- Untreated domestic and industrial wastewater discharged in the river
- Strong and growing environmental degradation
- Trancão river, an affluent to the Tagus, was the most polluted river in Europe at the time
- Polluted beaches





AdP GROUP INTERVENTION

THE TAGUS ESTUARY CLEAN-UP PROJECT

The intervention of Águas de Portugal involved **several multi-municipal systems** that gathered together **2 wastewater AdP Group companies and 19 municipalities**.



- gathering together skills
- sharing management structures
- rationalising investments
- enabling economies of scale

HIGH SCALE AND TECHNICAL COMPLEXE INTERVENTION

680 million euros
invested by AdP Group
through its subsidiaries

3.8 million equivalent inhabitants
served by these sanitation systems

100%
wastewater treated
before discharge

35 beaches
suitable for bathing
next to the estuary



GUIDELINES

The treatment level of the WWTP's (secondary, tertiary and tertiary with disinfection) comprised the discharge location and the quality requirements of the receiving waters for specific uses and also the re-use of treated water.

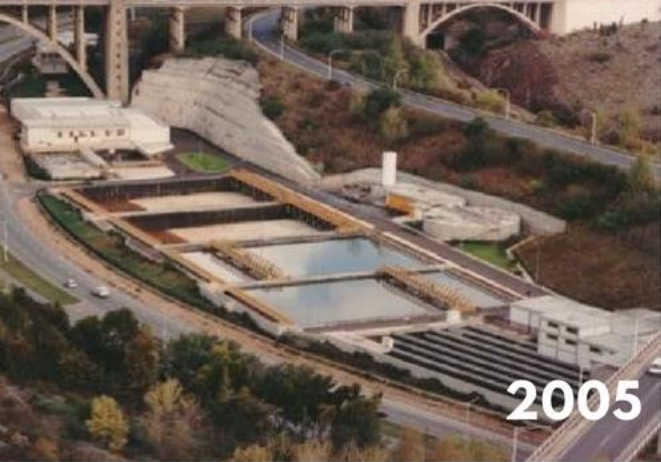
All technological solutions considered the integration of the infrastructures in the landscape, with minimization of environmental impacts.

Smart asset management based on innovation, sustainability and resilience.



1. ALCANTARA WWTP

The Alcantara WWTP treats urban wastewater from approximately 900 thousand households in Lisbon and its outskirts. Today, Alcantara WWTP is an international case study. The intervention included the WWTP expansion of the most important WWTP in Portugal and the improvement of its treatment standards (to secondary treatment + disinfection), reducing odours and landscaping.



MAIN INTERVENTIONS

GREEN ROOF WITH 2.7 HECTARES

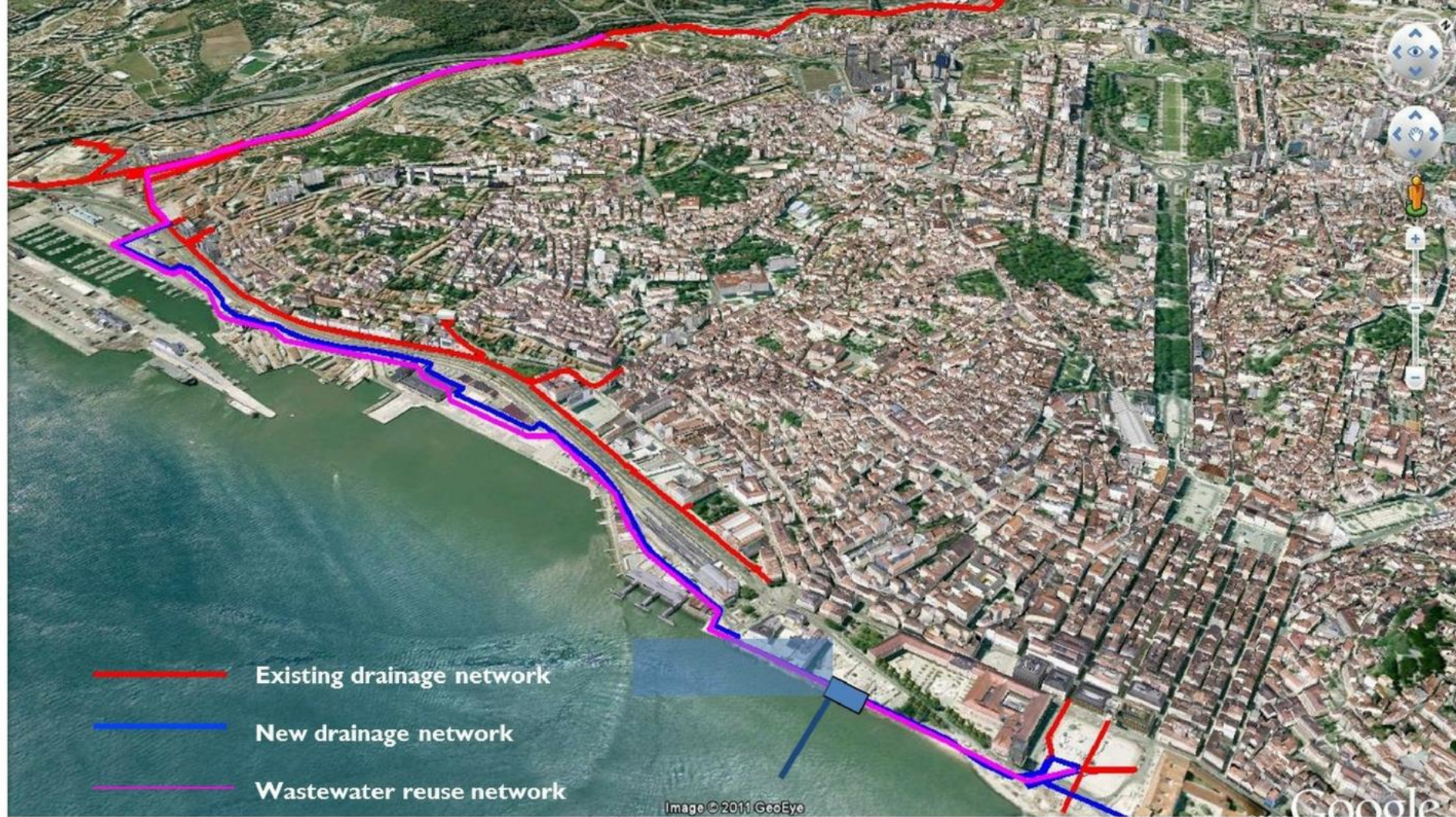
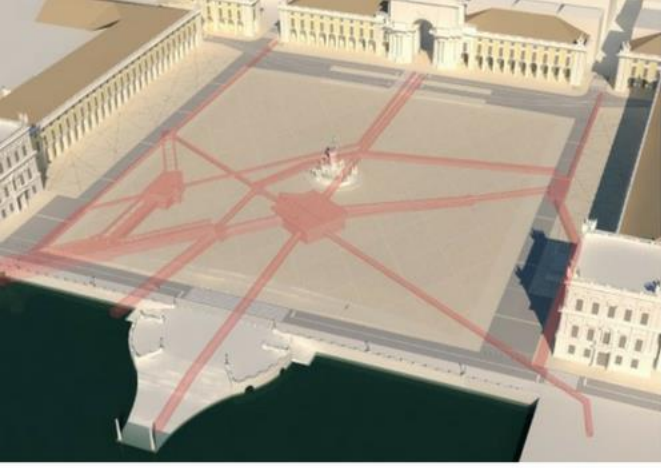
One of the innovative aspects of this WWTP is its green roof that reduced the landscaping impact of a large WWTP in the middle of the city and next to a Natural Park and also has benefits in terms of the thermal and acoustic insulation of the facilities.



2. TERREIRO DO PAÇO SQUARE

Construction of a wastewater drainage system along Lisbon's waterfront area and its routing to treatment in the Alcântara WWTP, incorporating secular infrastructures in one of the most modern wastewater collection and treatment systems in Europe.






SANITATION INTERVENTION PLAN

Construction of 2 interception chambers (with tidal valves) in the old 18th century drainage pipes, and the construction of interceptors and wastewater pumping stations for the routing of the flow to the Alcantara WWTP, comprising a total of 20 contracts.






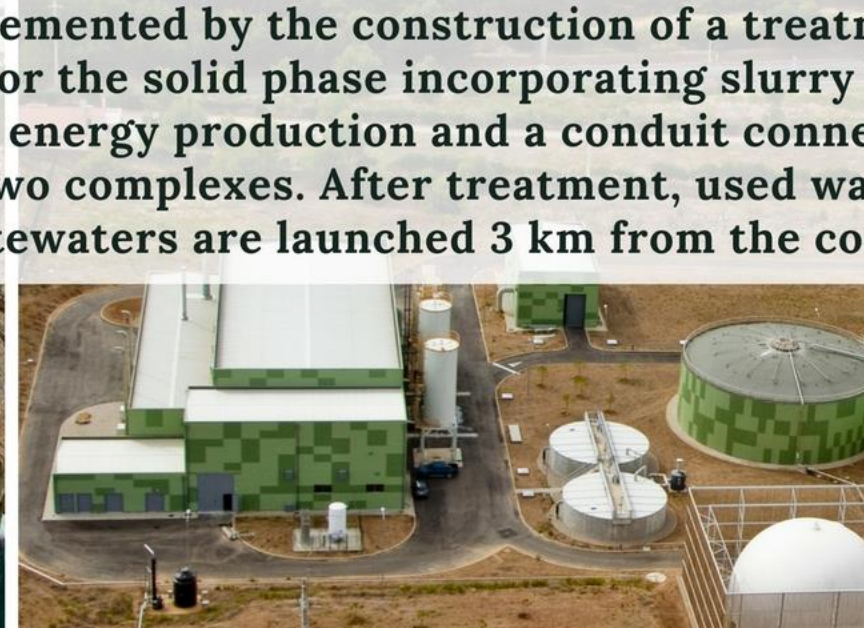
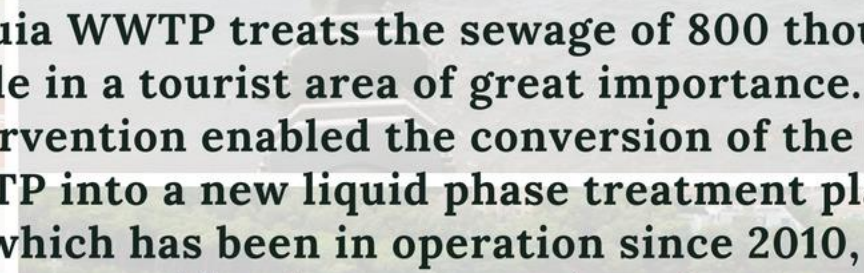




3. WWTPs ON THE SOUTH BANK

Construction of several new WWTPs on the south bank of the Tagus river, near some of the most important industrial districts of the country. One of the largest treatment plants serves Barreiro/Moita and has been designed to deal with wastewater volumes of 294 thousand equivalent inhabitants, at an average flow of 64 790 m³/day.



4. GUIA WWTP

The Guia WWTP treats the sewage of 800 thousand people in a tourist area of great importance. The intervention enabled the conversion of the old WWTP into a new liquid phase treatment plant, which has been in operation since 2010, supplemented by the construction of a treatment plant for the solid phase incorporating slurry based biogas energy production and a conduit connecting the two complexes. After treatment, used waters wastewaters are launched 3 km from the coast.



OPPORTUNITY FOR I&D

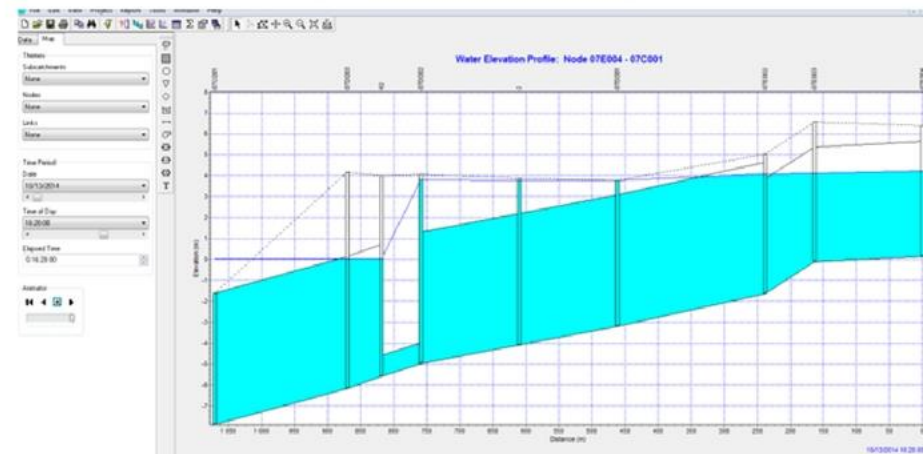
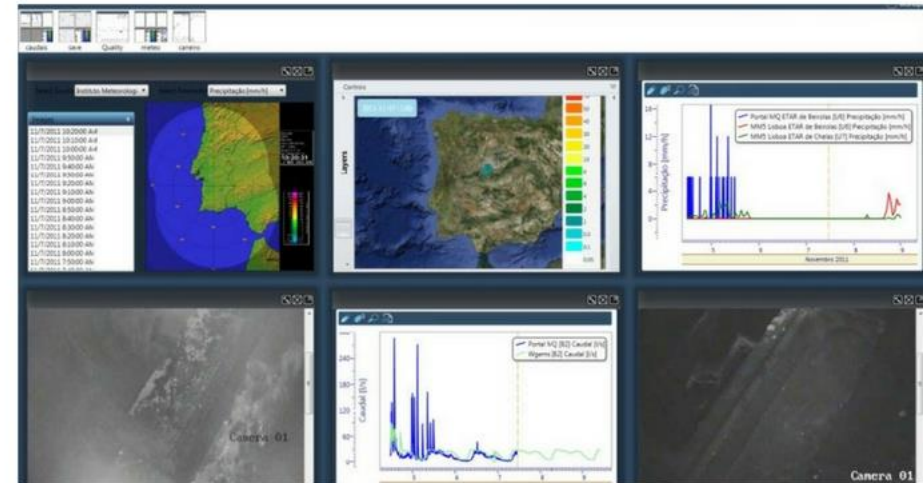
AQUASAFE: INTEGRATED DECISION SUPPORT SYSTEM

Aquasafe is an **awarded International Water Association (IWA) Operational Decision Support System (ODSS)**, designed by wastewater experts.

Lies in the link established between complex mathematical modelling and several data acquisition (excel, SCADA, SQL BD, Web services) and as an intelligent information system, **helps to reduce the time needed to make decisions and improves the consistency and quality and efficiency.**

It covers the Big Data in operational urban water cycle from weather, flow and energy forecasting to environmental effects of the discharge impact scenarios in rivers and ocean. **The new energy module contributed for energy efficiency representing already an annual saving of 1.000,000 euros.**

AQUASAFE system has been online since February 2011 and has been **providing constant and accurate forecasts to the management and operational teams, increasing operational efficiency.**



OPPORTUNITY FOR I&D

AQUASAFE: INTEGRATED DECISION SUPPORT SYSTEM

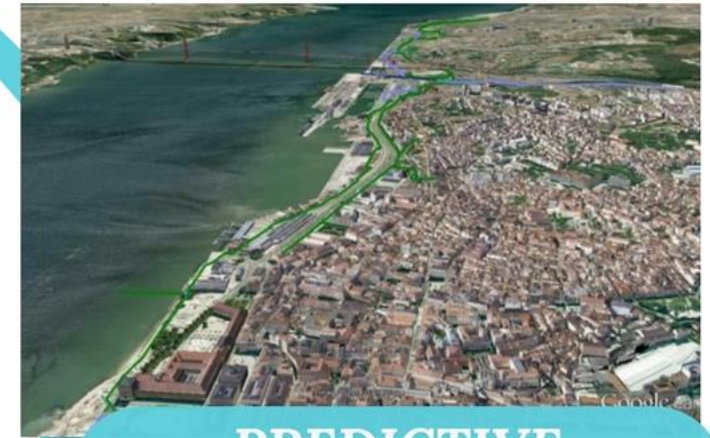
WET WEATHER SMART OPERATION
(DATA + MODEL'S)



PREDICTIVE
CSO IMPACTS



AQUASAFE



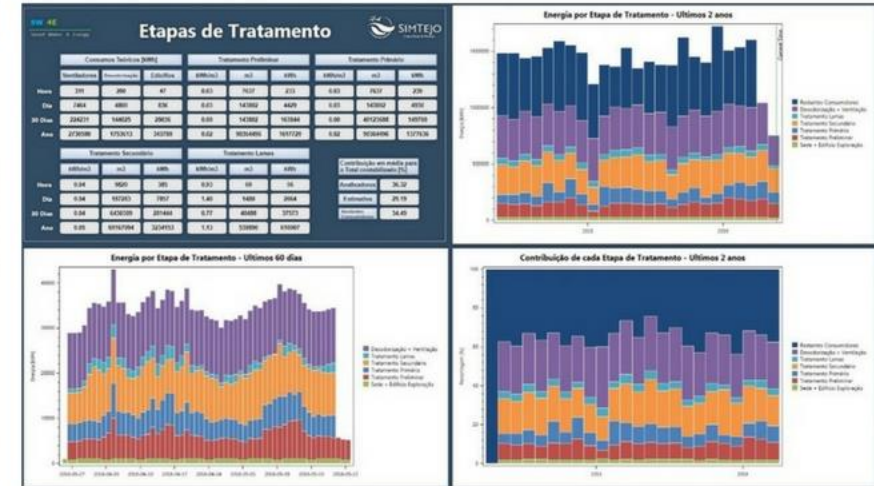
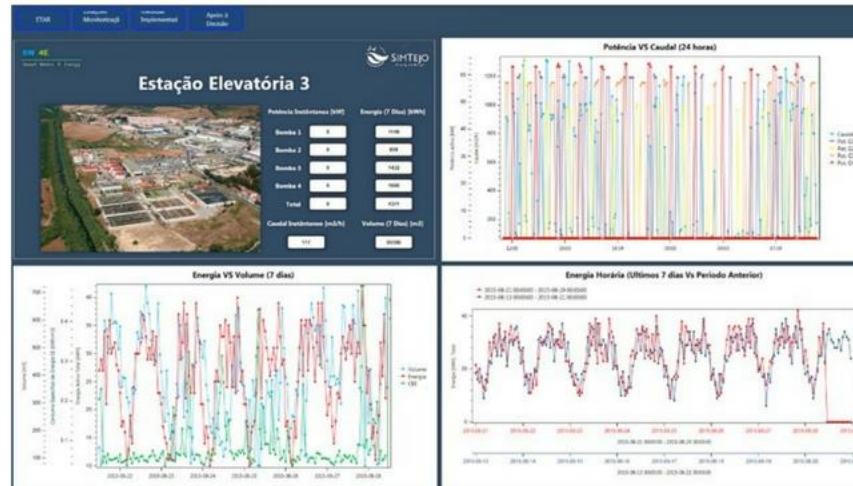
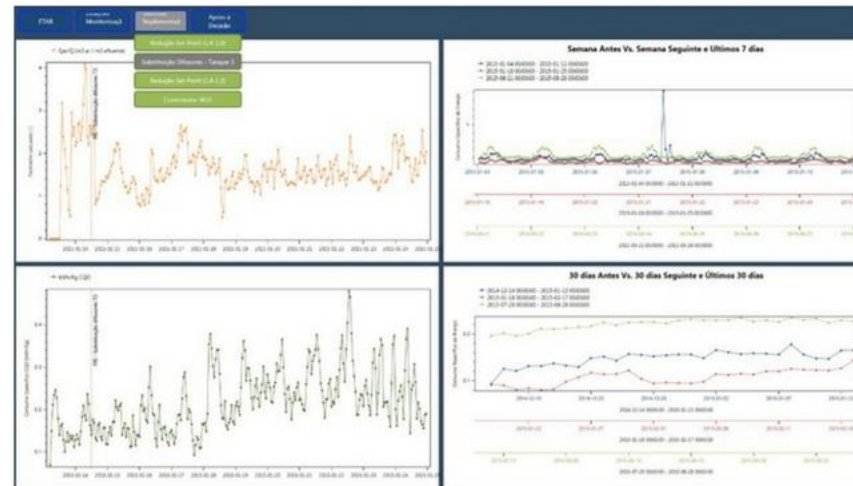
PREDICTIVE
FLOOD WARNING



OPPORTUNITY FOR I&D

SMART WATER FOR ENERGY (SW4E)

The **SW4E** project aims to develop an **intelligent system for the energy management of the WWTP** monitoring in real time the energy consumptions associated with the wastewater treatment processes, as well as the changes in the consumptions resulting from the implementation of energy efficiency measures in the WWTP.



AN INTERNATIONAL CASE STUDY BY ITS COMPLEXITY AND EXCELLENT RESULTS

INCREASED EFFICIENCY IN TERMS OF OPERATION AND THE
OVERALL PERFORMANCE OF THE SANITATION SYSTEMS

SIGNIFICANT REDUCTION OF POLLUTANT DISCHARGE

BIODIVERSITY CONSERVATION AND HABITAT RESTORATION

SIGNIFICANT INCREASE IN THE NUMBER
OF BLUE FLAGS BEACHES





HAVE WE ALREADY MET?

Almost 25 years of experience in the sector

The AdP Group has invested over €7.5 billion which, together with its planning and implementation capacities, its operational and financial management experience, the development of innovative solutions and the great commitment and dedication of its members of staff, has enabled a major improvement in water supply and wastewater sanitation.

This has resulted in positive and concrete impacts on the quality of the environment, public health, service standards and the overall sustainability of the sector.



OVER 7.5 BILLION EUROS

invested over the years

14 MARKETS

Portugal, Angola, Mozambique, Democratic Republic of Congo, Sao Tome and Principe, Guinea Bissau, Ivory Coast, Cape Verde, Algeria, Morocco, East Timor, Indonesia, Azerbaijan, Brazil



3,200 PROFESSIONALS

with multidisciplinary skills



INTERNATIONAL EXPERIENCE

Created in 2001, AdP Internacional works to ensure the effective training and transfer of know-how to local human resources, through:



**PLANNING AND
INVESTMENT
MANAGEMENT**



**STRATEGIC
STUDIES**



**WATER SUPPLY AND
SANITATION SERVICES
MANAGEMENT**



**OPERATION AND
MAINTENANCE OF
INFRASTRUCTURES**



**TRAINING
AND CAPACITY
BUILDING**



STRATEGIC PARTNERSHIPS

AdP Internacional can leverage financing from international financing institutions and from other multilateral institutions.

It is also recognized as a privileged partner for the development of international cooperation projects by entities worldwide.

FURTHER INFO
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 **ÁGUAS DE
PORTUGAL**