



ÁGUAS DO TEJO ATLÂNTICO

Águas de Portugal Group



WASTEWATER END USER

23

Municipalities served

2,4 Millions

Inhabitants served

500.000 m³ / day

Wastewater treated

146.000 t / year

Sludge Produced

14 & 36 GWh / year

Energy Produced & Consumed

2017 – 2020 CAPEX

47 million euros



INNOVATION TARGET 2027



45

Energy Neutral WRRF

30%

Wastewater reuse

1

Innovation Center

5 WRRF

Nutrient Recovery

Reverse Sludge Pricing

Expense to Profit

5

Innovation products

WATER FACTORY



ENERGY PRODUCTION

Europe's largest solar panel array installed on our QE2 reservoir.

About Thames Water

We are the UK's largest water and wastewater services provider serving 15 million customers across London, the Thames Valley and surrounding areas. For an average of just over 11 a day per household, we provide 2.6 billion litres of clean drinking water and safely remove 4 billion litres of wastewater – 20 hours a day, 365 days a year. We are regulated by Ofwat, the Environment Agency and the Drinking Water Inspectorate and all customers will benefit from our £4.5 billion investment programme between 2019 and 2020, the largest in the UK water industry. Our ultimate parent company, Kemble Water Holdings Limited, is owned by a consortium of pension funds and other long term investors from the UK and around the world.



Legend:
We provide water and wastewater services in this area.
We provide wastewater but not water services in this area.



The solar power plant at Moura, Portugal, produces 45 MW of electricity each year, powering 30,000 homes. Photograph: Universal Images Group/Getty Images

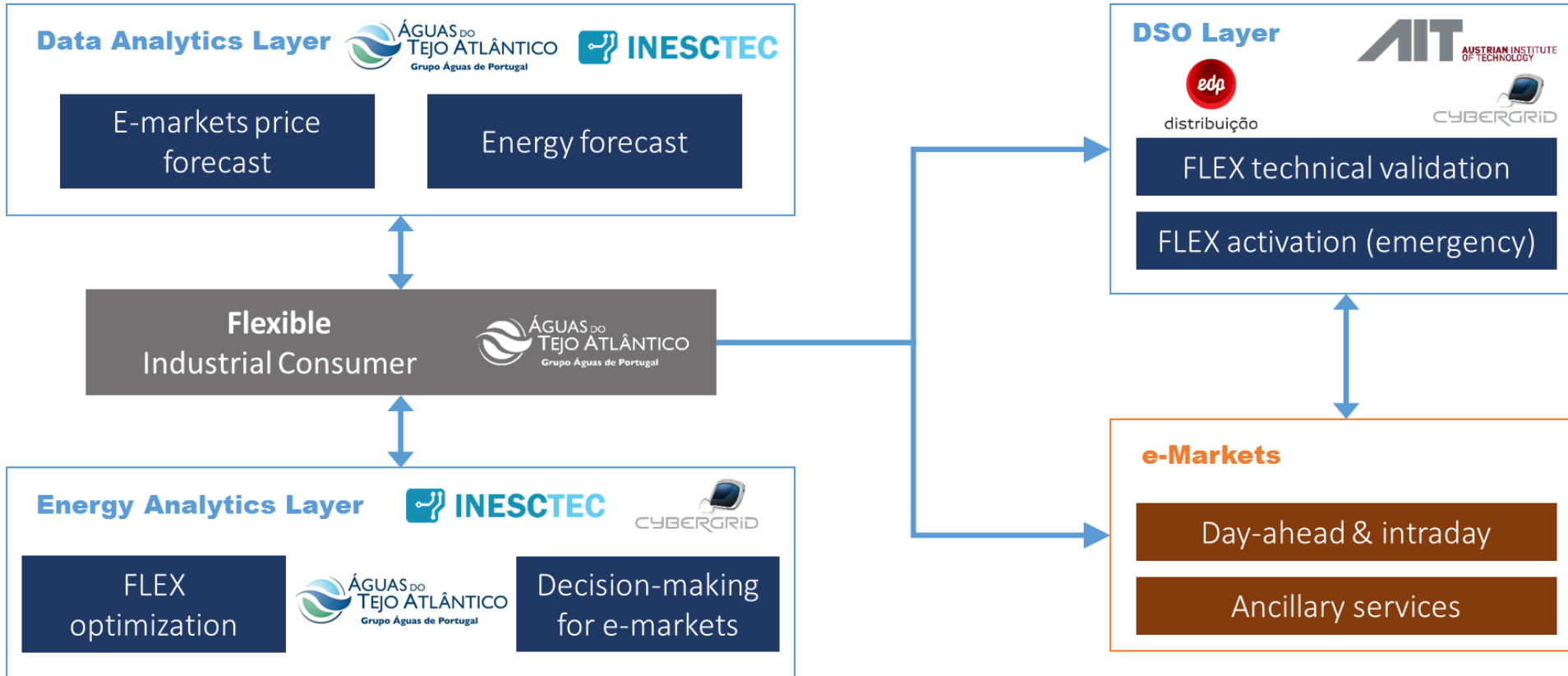


3 Portugal is entirely powered by renewable energy for four days

7-11 May

The high point for me this year from an engineering perspective was the announcement by Portugal that the entire country's electric usage had been provided by renewables for four consecutive days in early May. Moving away from fossil fuels to renewable energy is surely the most important engineering and scientific challenge of our age. The shift to coal in the 19th century and then to oil in the 20th century gave us the modern world of cheap energy, plentiful food, consumer goods and sunny holidays. If we want to prevent climate change while allowing our children to have these things too, then we must wean ourselves off fossil fuels. It seems unthinkable. It seems impossible. But

ROLE OF WATER SECTOR IN SMART GRID



Demonstration of **Intelligent** grid technologies for renewables **Integration** and **Interactive** consumer participation enabling **Interoperable** market solutions and **Interconnected** stakeholders



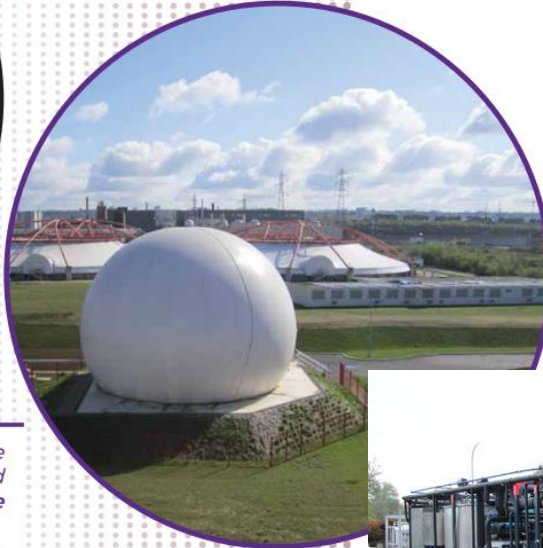
WISHLIST

The **siaap** and **suez** introduce **Biognval**, an unprecedented solution to convert wastewater into liquid biofuel

French water treatment company **Suez Environnement** has developed an innovative new process that converts wastewater into liquefied biogas (LBG) using membrane based technology.



BIOGNVAL
Coordinated by
SUEZ ENVIRONNEMENT



Wastewater **treatment plants** help produce biogas primarily made up of methane and CO₂. Biogas is a **locally-produced renewable energy**.

After separating the methane and CO₂, this biogas can be used as:

- a **clean biofuel (biomethane)** that does not release any **fine particles** into the air.
- **liquid CO₂ for the industry**.

BioGNVAL is an innovative system enabling the recovery of biogas.

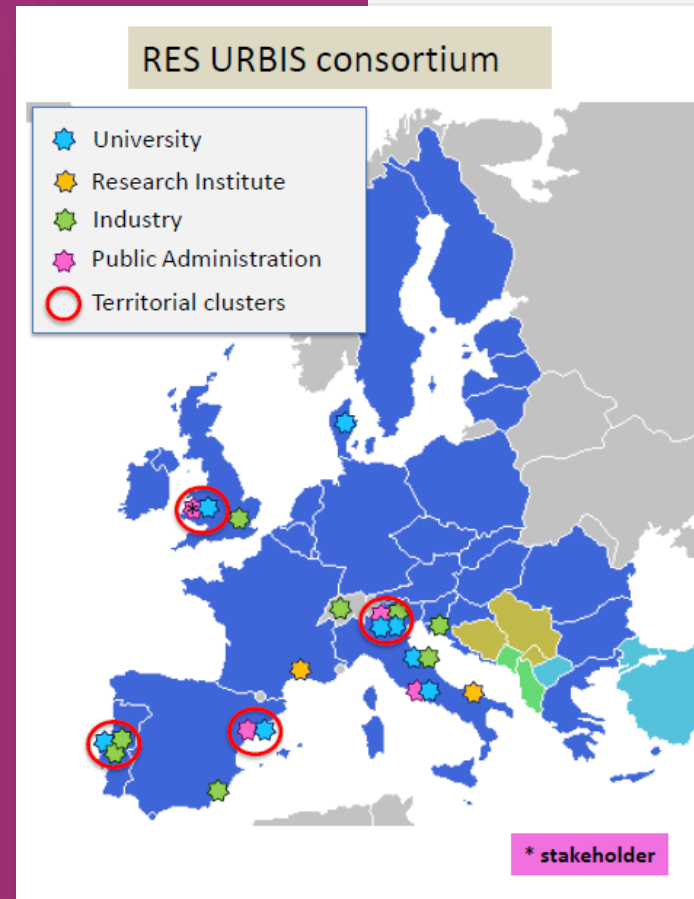
LIQUID

BIOPRODUCTS



OBJECTIVES

- To integrate treatment of all relevant bio-waste of urban origin
- To develop an urban bio-waste biorefinery and related bio-based products
- To take care of the whole technology chain and as function of territorial conditions
- To take care of all other technical and non technical constraints

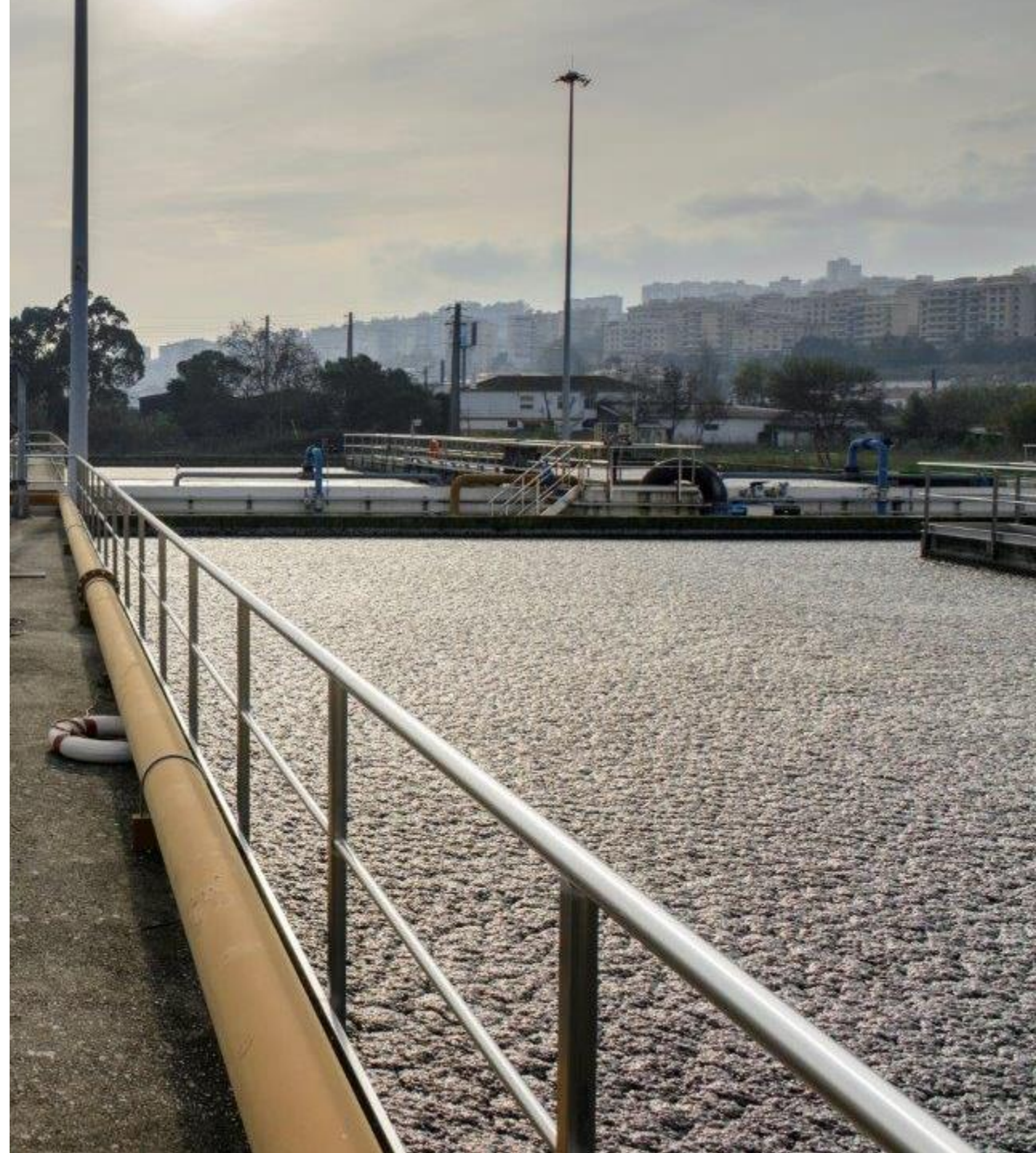


The background image shows an industrial facility, likely a water treatment plant. It features large, light-colored pipes running horizontally across the top. Below the pipes, there are several large, rectangular pieces of machinery or control panels with many small components. The floor is made of metal grating, and there are metal railings in the foreground. The overall scene is brightly lit, and the colors are somewhat muted, with a purple overlay on the text area.

**Do you want to
innovate?**

WISHLIST

- Recover iron or phosphorous from primary sludge
- Low cost upgrading biological treatment
- Biosolids reuse
- Nutrient recovery: plug and play, legal barriers





WISHLIST

- Water value
- Water reuse: sensors and risk minimization;
- Disinfection alternative methods: probiotics?

WISHLIST

- Biomethane: biogas purification
- Neutrality task: primary treatment, biotechnology for conventional intensive energy systems

But don't forget people and wastewater drainage system

