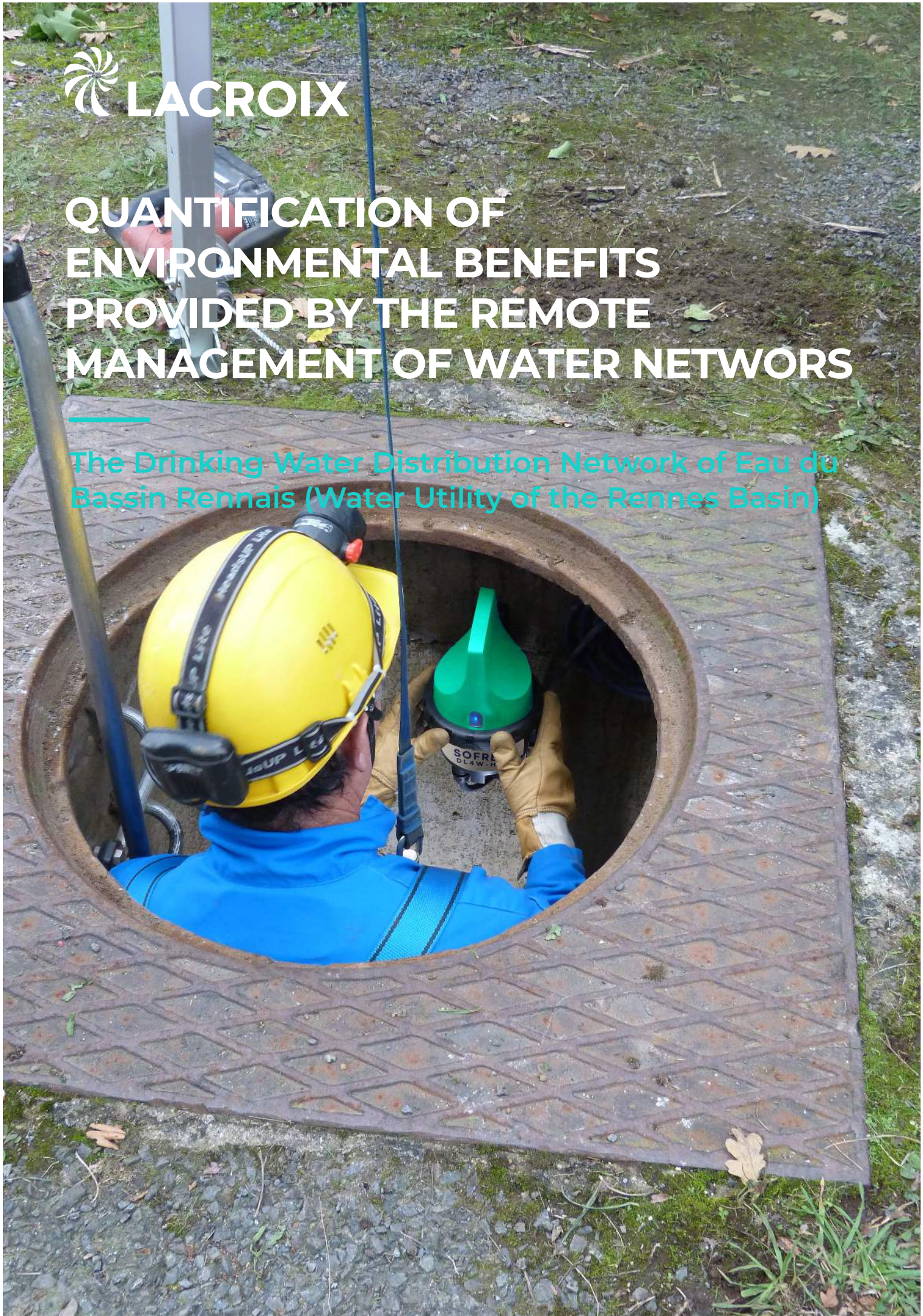




# QUANTIFICATION OF ENVIRONMENTAL BENEFITS PROVIDED BY THE REMOTE MANAGEMENT OF WATER NETWORKS

The Drinking Water Distribution Network of Eau du Bassin Rennais (Water Utility of the Rennes Basin)



## The Drinking Water Distribution Network of Eau du Bassin Rennais (Water Utility of the Rennes Basin)

Since 2015, the public company Eau du Bassin Rennais, mandated by Rennes Métropole, has been responsible for distributing drinking water to residents of 21 municipalities in the metropolitan area, as well as operating, monitoring, and maintaining 1,800 km of the network.

For several years, it has deployed LACROIX SOFREL remote management solutions to more quickly detect leaks in its sectorized network.

### Study scope in figures

**339,782**  
INHABITANTS

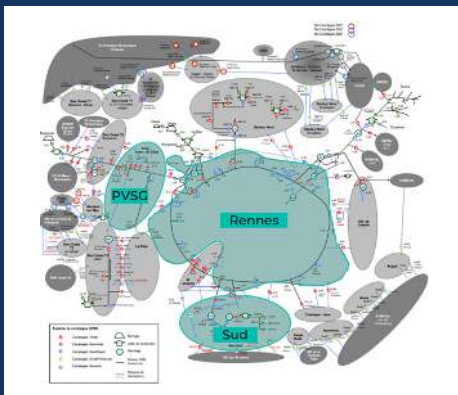
**1,400 km**  
OF NETWORK

**14.9 million m<sup>3</sup>**  
DISTRIBUTED  
PER YEAR

**1.2 million m<sup>3</sup>**  
LOST IN LEAKS  
PER YEAR

**16**  
MUNICIPALITIES  
ACROSS 3 SECTORS

**92%**  
NETWORK  
EFFICIENCY



### Installed solutions

Eau du Bassin Rennais equipped itself with LS-Flow data loggers from LACROIX SOFREL to mesh the drinking water distribution network and automatically transmit essential operating data: average flow, peak flow, night flow, etc.

Daily analysis of sectorization reports allows leak detection by identifying inconsistencies in nighttime distributed water volumes.

Installed solution :

**SOFREL**

**144 data loggers** SOFREL LS-FLOW

## Objectives and challenges of remote management



**Significantly reduce** water losses caused by detectable leaks.



**Improve** the network's efficiency and fight against its aging.



**Provide** a high level of service quality to users thanks to continuous network monitoring and optimal responsiveness in case of leak detection.



**Reduce** volumes of unbilled water



# MEASUREMENT OF WATER, ENERGY SAVINGS AND AVOIDED GHG EMISSIONS

THANKS TO LACROIX SMART MANAGEMENT SOLUTIONS

## Reference scenario

To isolate the benefits linked to the installation of LACROIX remote management solutions, we chose as a reference scenario a weakly sectorized and non-remote-managed network.

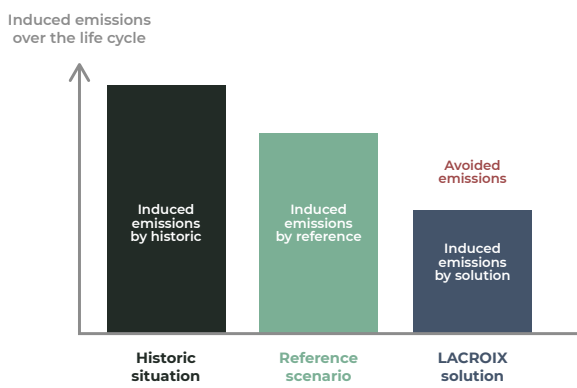
### Reference scenario used here:

A 1,400 km drinking water distribution network divided into 20 sectors, with manual sector flowmeter readings every month and annual acoustic leak detection.

## A quantification method inspired by Empreinte Projet (ADEME)

This method, designed in 2021, makes it possible to precisely quantify the environmental benefits of a project and compare them with its footprint to determine whether its net impact is positive or negative.

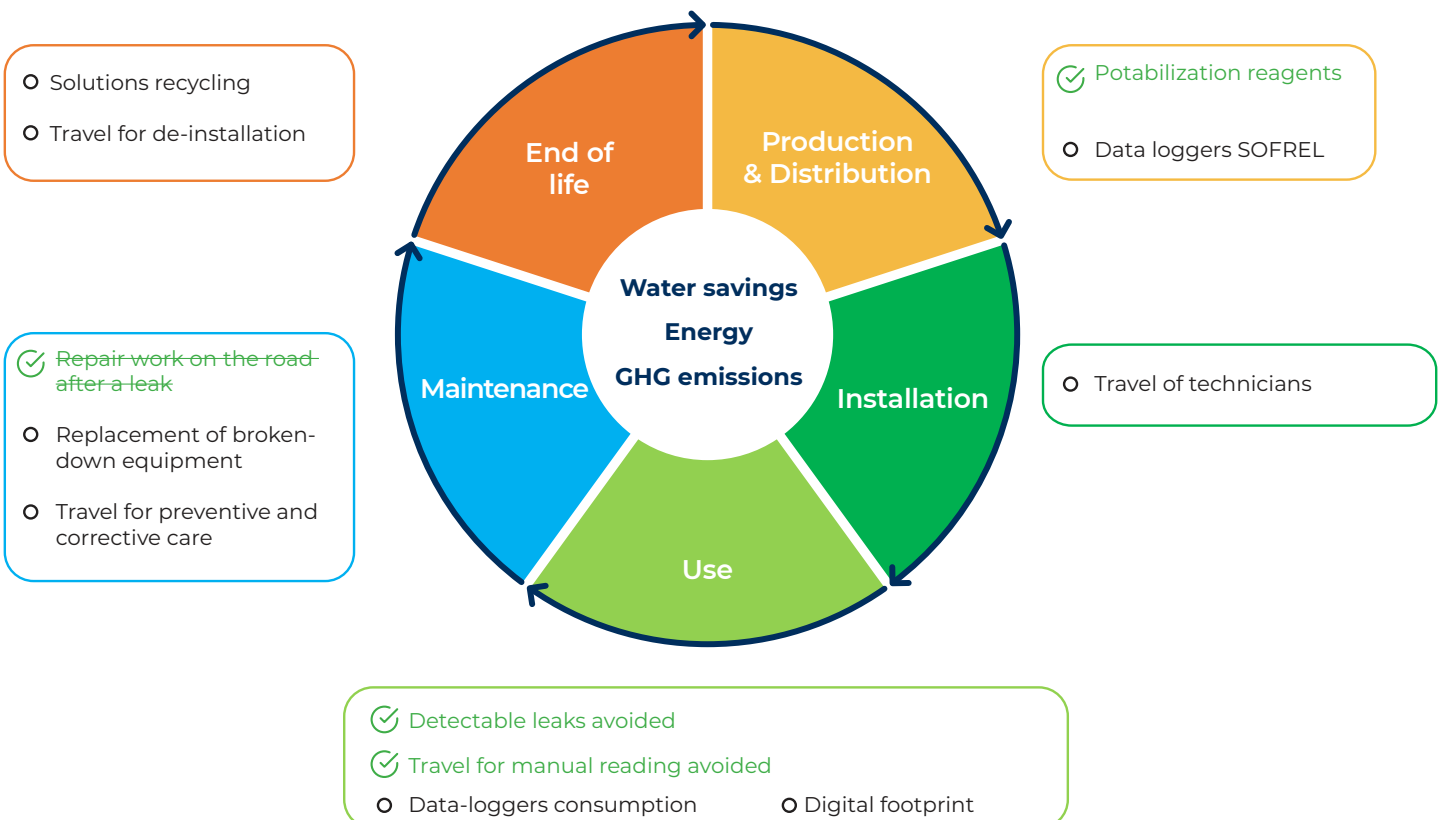
With its five levels of approach, from the most qualitative to the most quantitative, Empreinte Projet enables progressive and iterative implementation, through 12 steps divided into 4 phases.



Source : ADEME, Empreinte projet : Assessing the Environmental Footprint of a Project, September 2021

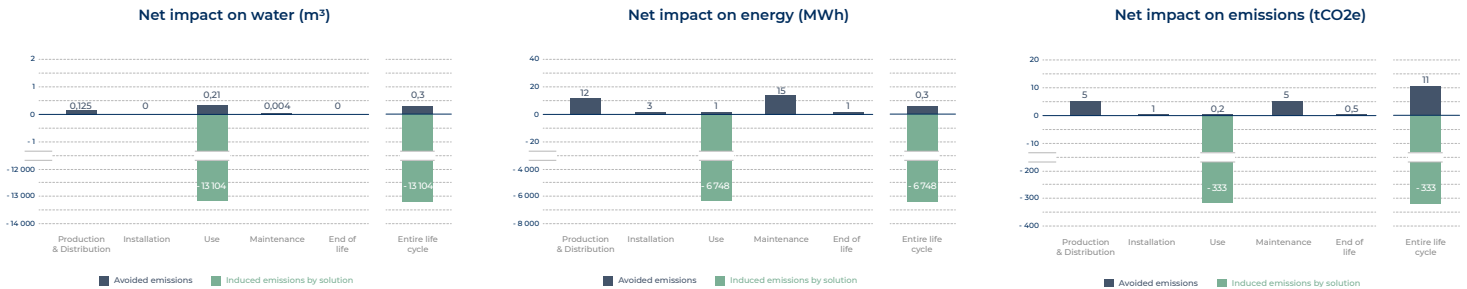
## Inventory of consequences taken into account

Légend:  benefits     footprint  
Benefits excluded from the study



## Results:

### Savings over the full life cycle linked to the reduction of detectable leaks



**-13.1 millions m<sup>3</sup> (-43%)**

(NET IMPACT over 15 years)

**-6 715 MWh (-43%)**

(NET IMPACT over 15 years)

**-321 tCO<sub>2</sub>e (-43%)**

(NET IMPACT over 15 years)

## Savings on the production and distribution of potabilization reagents:

In addition to these environmental benefits comes the positive impact of avoiding the production of potabilization reagents for the water lost through detectable leaks. Over 15 years, this represents **8.2 million m<sup>3</sup>** of water saved, **5.1 GWh** of energy saved, and **4,966 tCO<sub>2</sub>e** avoided.

## Cost analysis:

The water and energy savings achieved also translate into significant financial savings.

For the use case of the Eau du Bassin Rennais network, we calculated a **gain of €270,000 per year** provided by remote management compared with a weakly sectorized and non-remote-managed network.\*

\* with an annual inflation rate of 3%

## Lessons learned:

- Considering the entire life cycle, the net impact of the data loggers is very positive: **5.9% of the distributed drinking water volume is saved thanks to early detection of detectable leaks.**
- The environmental benefits are **30 times greater than the greenhouse gas (GHG) emissions footprint, and 200 times greater in terms of energy.**
- In addition to this positive impact, there are benefits related to potabilization reagents, whose impact is reduced by **43% (energy) to 55% (water).**
- Installation and maintenance account for **50% of the carbon footprint of the data loggers, hence the importance of choosing installers carefully (distance, thermal vs. electric vehicle, etc.).**

## CLIENT TESTIMONIAL

**Jean-Yves GAUBERT**  
R&D Manager  
(SPL Eau du Bassin Rennais)

« Our water resource is very precious, and as water managers, we must integrate all technologies that improve leak detection, such as remote management. By quantifying the losses of an operation not oriented toward leak detection, this project validates Eau du Bassin Rennais's proactive resource protection policy. »