

INDAQUA

Water losses - The experience of best performing Portuguese utilities

AdRA – Performance Based Contract

28th of April 2023

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01

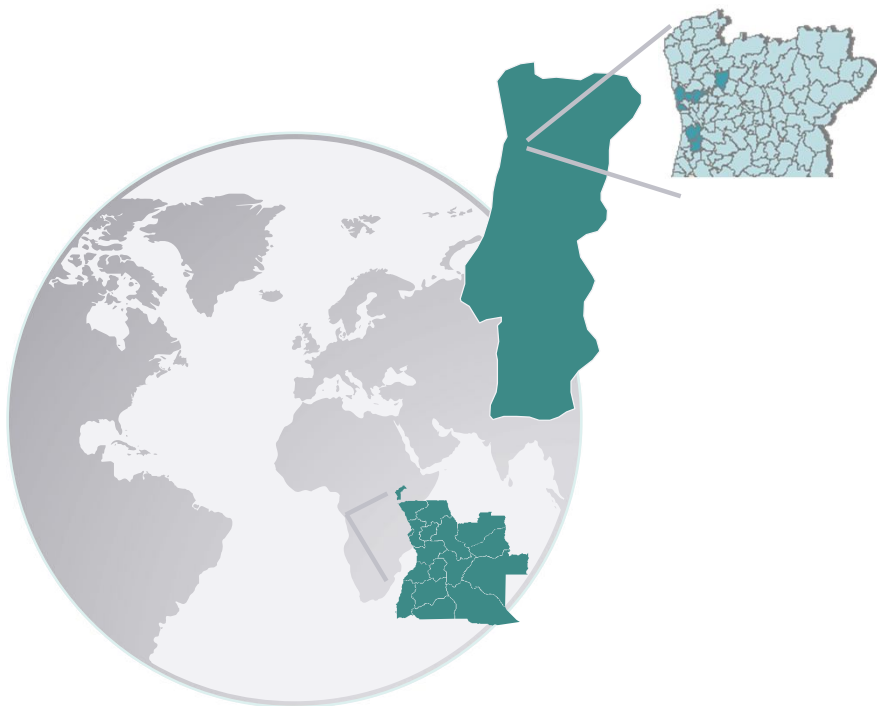
Indaqua

| A first glance

Indaqua a first glance



Founded in 1994, Indaqua is the leading private operator in the Portuguese water sector. It provides water and wastewater services to almost 8% of the Portuguese population in ten different municipalities, mainly through concession contracts.



WATER UTILITIES

| | AREA (KM ²) | POPULATION |
|----------------------|-------------------------|------------|
| Santo Tirso/Trofa | 209 | 106 732 |
| Santa Maria da Feira | 213 | 135 006 |
| Matosinhos | 62 | 169 782 |
| Vila do Conde | 149 | 81 881 |
| São João da Madeira* | 8 | 22 162 |
| Oliveira de Azeméis | 161 | 66 673 |
| Barcelos | 379 | 116 391 |
| Paços de Ferreira | 71 | 55 481 |
| Março de Canavezes | 202 | 49 149 |

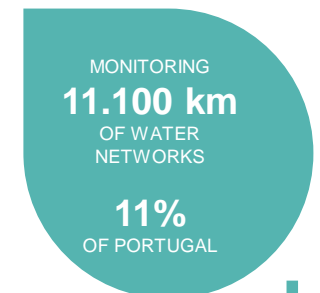
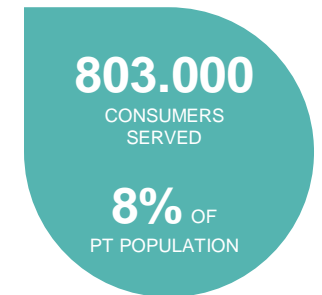
*not a concession (49% PPP)

PERFORMANCE BASED CONTRACTS

| | | |
|-------------------------------------|-------|---------|
| Região Aveiro (9 municipalities) | 1 279 | 262 794 |
| Maia | 83 | 135 678 |
| Gaia | 169 | 302 324 |
| Chaves | 160 | 32 807 |

TECHNICAL ASSISTANCE

| | | |
|----------------------|----|---------|
| Namibe (Angola) | 9 | 397 204 |
| Lunda Norte (Angola) | 25 | 471 552 |



Indaqua a first glance

INDAQUA is an efficiency-oriented solutions operator that addresses the challenges of the sector, offering its clients the combined experience with proven results in Management, Operation and Maintenance of Urban Water and Sewage Systems.



**8,000 KM OF
EFFICIENTLY
MANAGED
NETWORK**

(4,316 km of water network; 3,680 km of sewage network)



**29 MILLION M3
/ YEAR of
drinking water
27 MILLION M3
/ YEAR of**

wastewater treated in
37 WWTP
457 Pumping stations
and 111 reservoirs



**19 BLUE
FLAGS**

in the municipalities of
through the
decontamination of
water lines and
beaches



World-class operating
performance levels:
14% NRW (group
concessions)

Average NRW Reduction
Rate: 63%

Accumulated savings of
ANR (m3): 34545207

Accumulated ANR
savings (€): 16.4 million



National entity most
awarded with the
ERSAR seals,
in **QUALITY,**
EFFICIENCY
AND
EXCELLENCE
by the Public Water
Supply Service

Indaqua awards and distinctions

INDAQUA is the Portuguese water utility with more prizes and recognitions from the regulator (ERSAR). However, it adds other distinctions attributed by several national entities.

Concessions

WATER QUALITY
ERSAR

65
QUALITY
STAMPS

6
EXCELLENCE
PRIZES

EFFICIENT MANAGEMENT
ERSAR

SERVICE EXCELLENCE
ERSAR

**LEADER IN
CUSTOMER
SERVICE
2022**

PORTUGUESE
INSTITUTE OF
CUSTOMER
RELATIONS

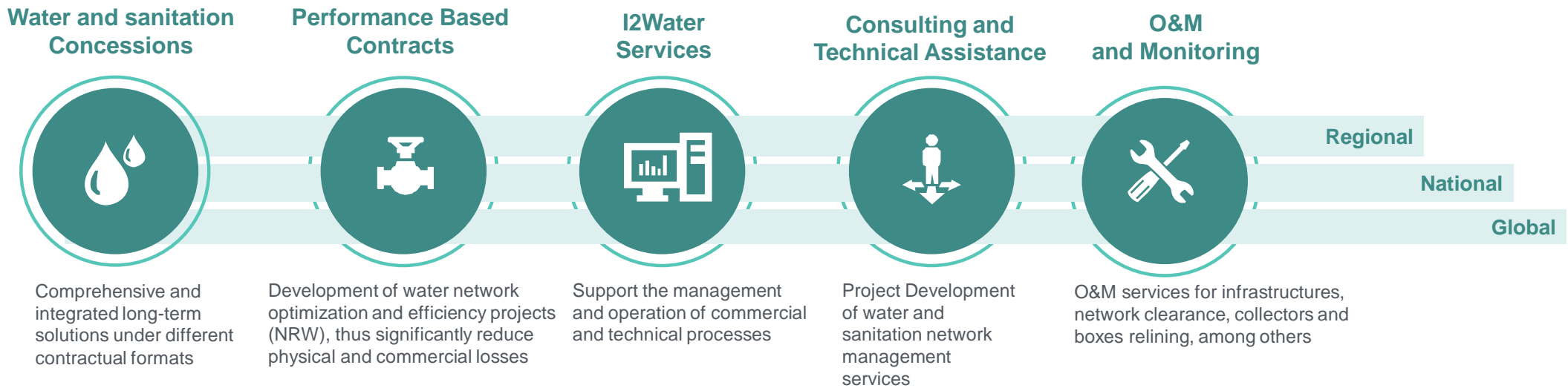
Services

**SUSTAINABLE FINANCE
AWARD 2021**
WITH WATER EFFICIENCY PROJECTS

**PT GLOBAL WATER
AWARD 2022**
WITH SERVICES PROVIDED IN ANGOLA

Services portfolio a first glance

When choosing us, we want our Costumers, not to opt for a water and sanitation service provider, but rather for a reliable and long-term partner for their business, who will jointly contribute to the achievement of their results.



VALUE PROPOSAL

01/ WE HAVE IN-DEPTH KNOWLEDGE OF THE MARKET

02/ WE HAVE A MULTIDISCIPLINARY TEAM

03/ WE ASSUME A STRONG ENGAGEMENT IN OBTAINING RESULTS

04/ WE PERFORM A PROFESSIONAL PROJECT MANAGEMENT

Services portfolio a first glance

Performance-Based Contracts are part of Indaqua´s portfolio of services that goes from O&M contracts to Water and sanitation concessions.



Performance-Based Contracts

- Remuneration according to the results obtained, in view of the objectives
- The definition of each objective and the evaluation periodicity of the respective performance will take place at the stage of preparation of the proposal and according to variables perfectly known and controllable by the parties involved in the Project



02

Performance-Based Contracts

- | Global concept
- | Examples – NRW reduction

From linear to circular

Private characteristics and contribution

The private sector already contributes, in a distinctive and integrated way, to a more circular, green sector that promotes a sustainable society.

Inovative solutions
 Techonolgy and services

Taking risk (e.g. Concession and Performance Based Contracts)

Private capital financing and capex execution capacity

Contribution to GDP
 Export of Know How and management capacity and **Sharing international experience**

Efficiency driven
 Reduced water losses
 Reduced Infiltrations
 Energy Efficiency
 Commercial Effectiveness



Performance-Based Contracts

Indaqua's perspective

Performance-Based Contracts should be understood as contracts where private partners bring extra means (financial, human resources, software,...) and know-how and assume economic risk that can only be covered by the sharing of savings that the project brings to the water utilities.

Performance-Based Contracts may be defined as:

- Efficiency oriented contracts, where compensation is indexed to the certified achieved performance with assured pre-contractual economical benefits for the client.
- Contracts are designed to generate savings that can cover investment (CAPEX) and operational costs (OPEX) of the project and release future additional cashflow through the reduction of OPEX and CAPEX needs.



Performance-Based Contracts an holistic Methodology

This contractual model can be deployed in all the water utility areas where efficiencies are available, or results can be measured.

Performance-Based Contracts



01. Fixed Fee
Related to staff load allocation and other fixed costs (may not cover 100% costs)

FIXED (optional)

02. Variable Compensation: unit prices per service
Active leakage control, Construction of DMAs and PRVs, Meters Replacement

VARIABLE

03. Performance Based Compensation
Indexed to the certified achieved performance goals (savings)

PERFORMANCE

**04. MINIMUM EFFICIENCY GUARANTEE
MINIMUM SAVINGS GUARANTEE**

Non-revenue water
Non-revenue wastewater



Commercial Services
with or w/o
Meter Management



Energy efficiency



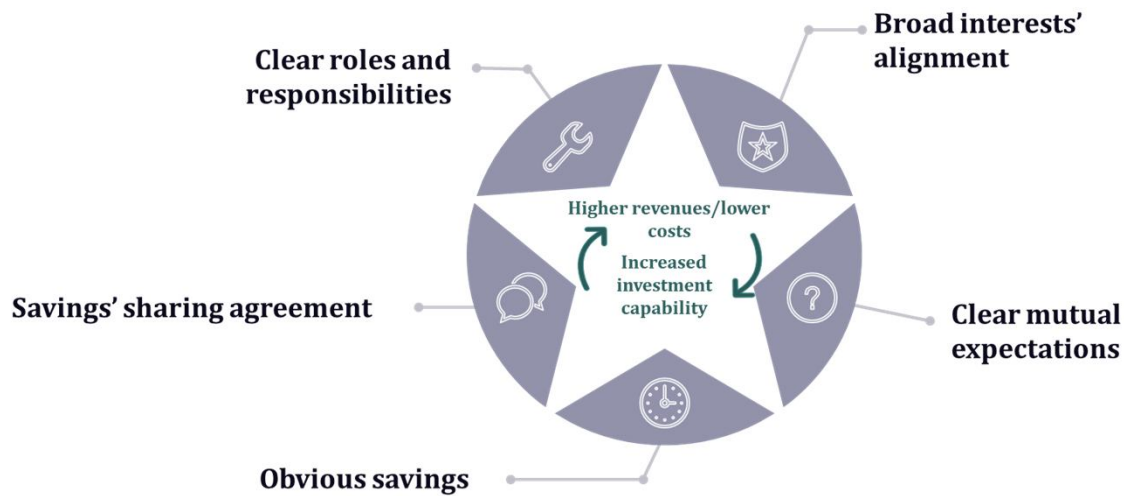
River basins depollution



Performance-Based Contracts

Partnership reinforcement

This contractual model aligns the service provider's targets and intentions with the ones of the water utility, opening space for a quick and effective NRW reduction and a vast know-how transfer.



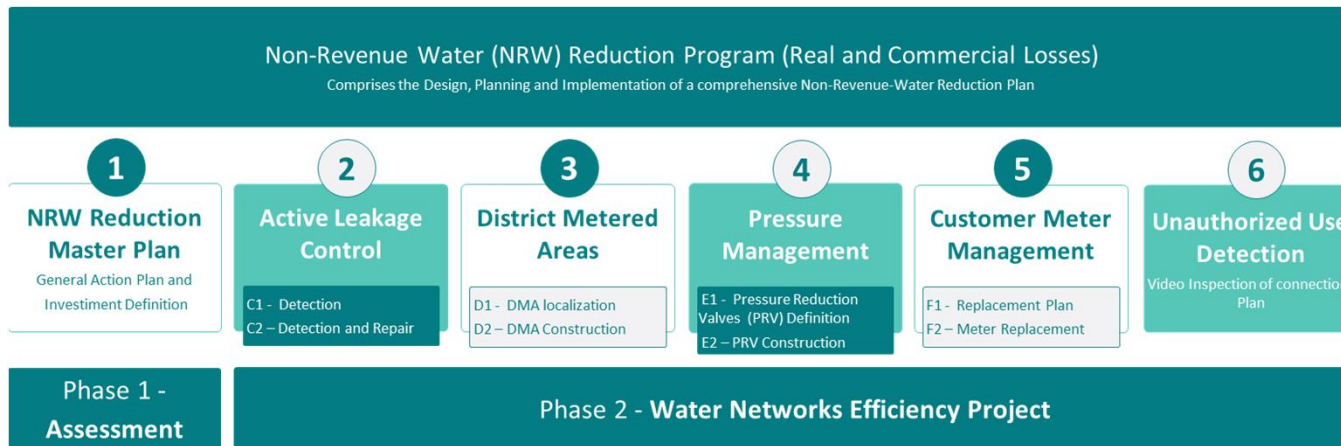
| | | |
|------------------------------------|--|----|
| Minimum savings/earnings guarantee | High risk for the operator Low relevance for the Performance Fee Strong control on the plan implementation | 0% |
| | Balanced Performance Contract Low risk for the operator High relevance for the Performance Fee Operator can assume a bigger share of the implementation costs | |
| 0% 100% | shared savings/earnings agreement | 0% |

Products & Solutions

NRW reduction Performance-based Contracts

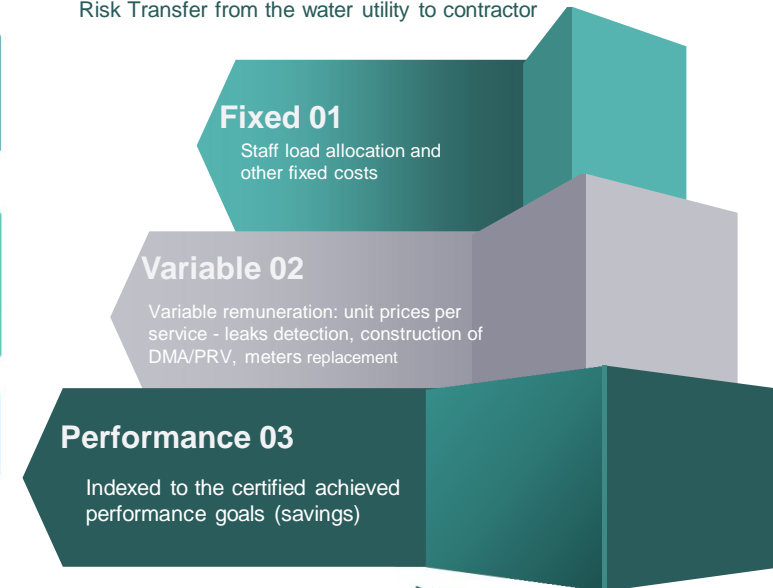
NRW reduction performance-based-contracts are designed to achieve an optimal risk/benefit contractual structure that maximizes private operators' incentive to achieve performance targets and generate economic value to be shared with water utilities.

A Holistic Methodology to reduce NRW



Compensation Model

Risk Transfer from the water utility to contractor



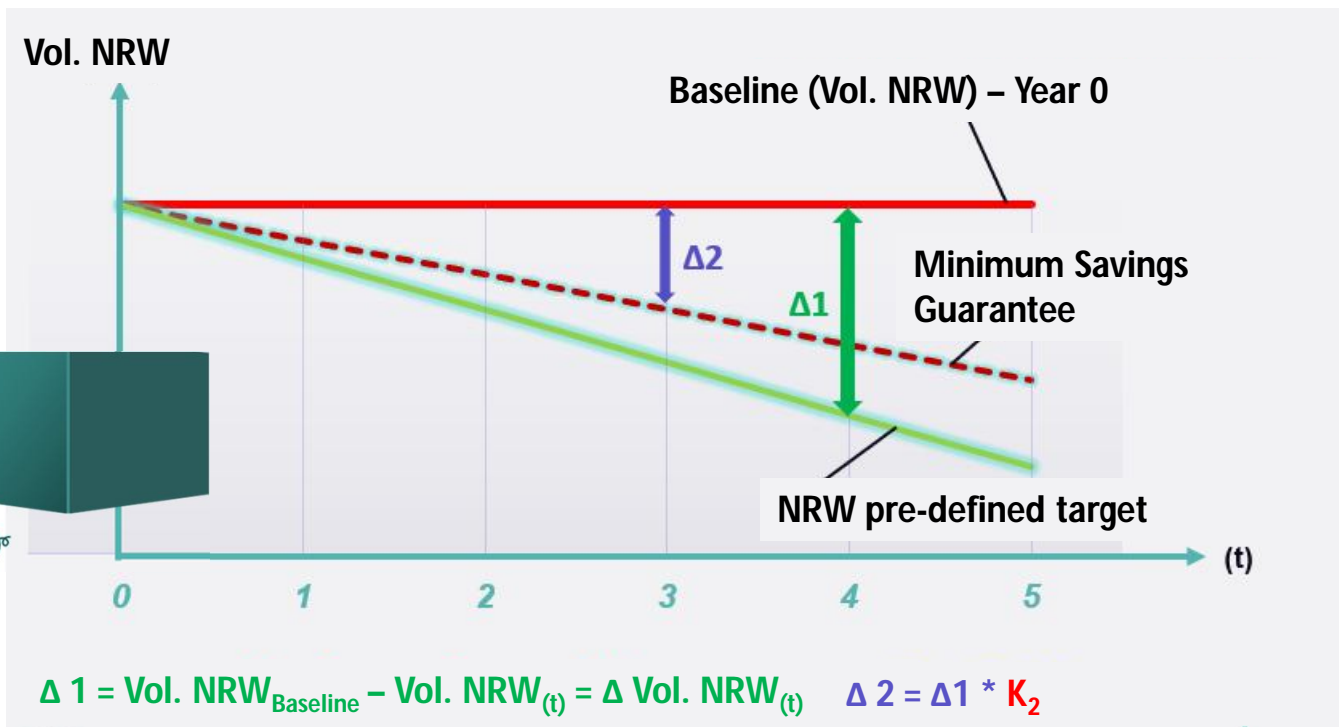
MINIMUM EFFICIENCY GUARANTEE
MINIMUM SAVINGS GUARANTEE



Performance-Based Contracts

e.g. NRW – Indaqua solution

INDAQUA, through its proven successful experience in NRW reduction in concession and performance-based contracts in utilities worldwide, has developed a proven methodology to reduce NRW based on the International Water Association (IWA) approach.



K1 - % NRW savings share

K2 - Percentage of the Minimum Savings Guarantee

$$CV2 \text{ year } t = \Delta 1 * \text{Cost of Real Losses} \times K1$$

PERFORMANCE
Risk Transfer from the Utility to the Contractor

MINIMUM EFFICIENCY GUARANTEE

MINIMUM SAVINGS GUARANTEE



03



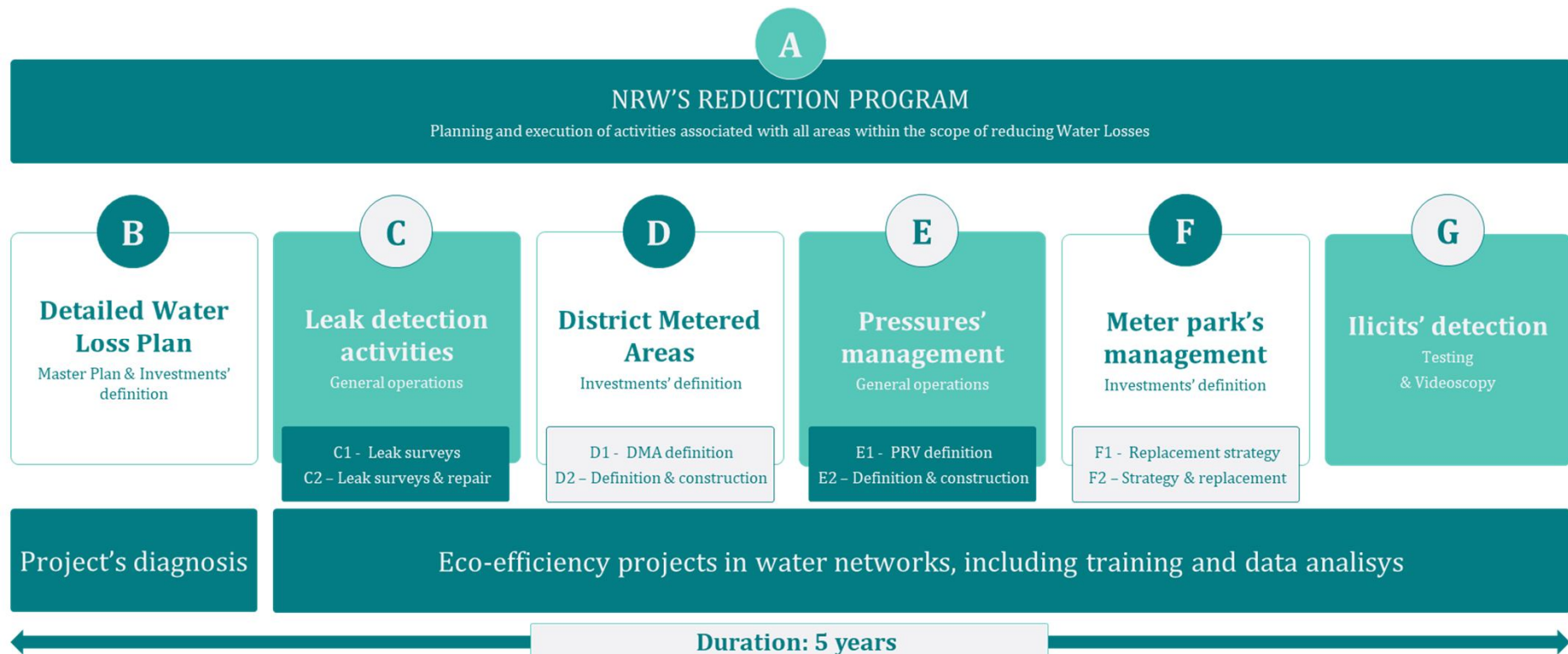
Proven Success – Case Studies

- | Global concept
- | Examples – NRW reduction

Performance-Based Contracts

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Performance-Based Contracts Project Management

From Intelligent to SMART
Make the water utilities Smarter

i-SMART
Water Management



Sensor and information system

Monitor key variables
transforming data into information

Performance indicators
Accuracy, timely, holistic, benchmarking

Analytical capability

Balanced scorecard
Strategy and performance management

Resources and means to
implement decisions

Timely corrective actions

Systematic process approach
Process, risk based and PDCA thinking

Use sensors, transform data into information, decide faster and execute better

Performance-Based Contracts

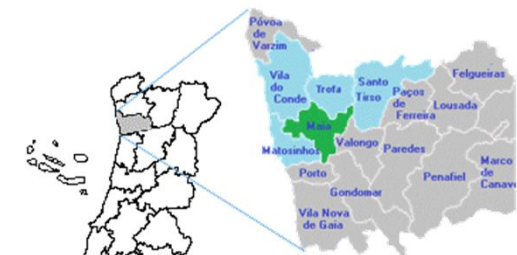
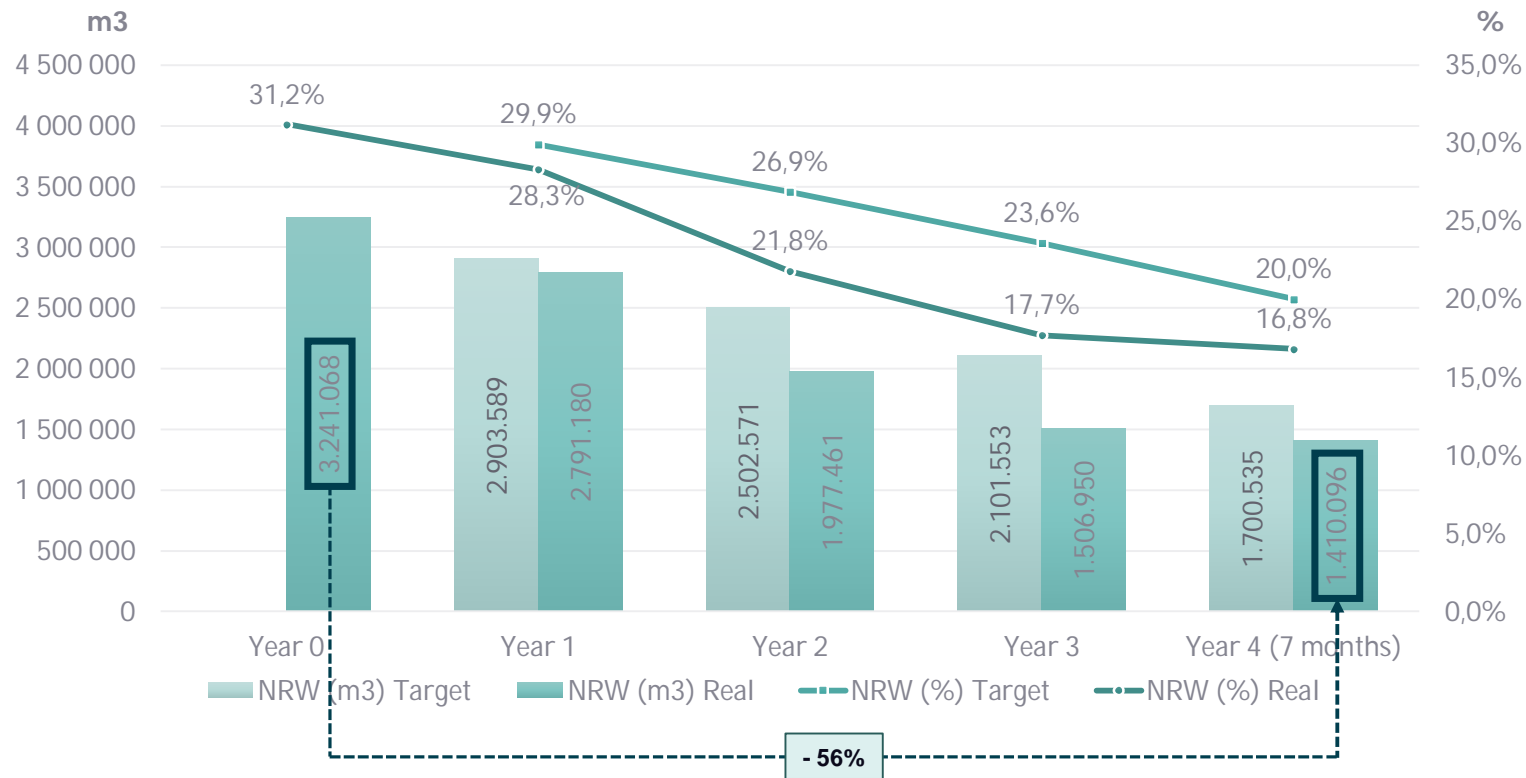
Proven success – Case Studies

- Flexible contractual models may address all issues related to water efficiency, no matter the dimension or complexity of a water utility.
- It is possible its implementation within the **European Union**, respecting all the directives and restrictive legislation that rules the EU countries' public procurement.
- Fast and **impressive results** prove that this model conceives a very effective and low-cost way of reducing NRW.

Performance-Based Contracts

Maia NRW reduction project

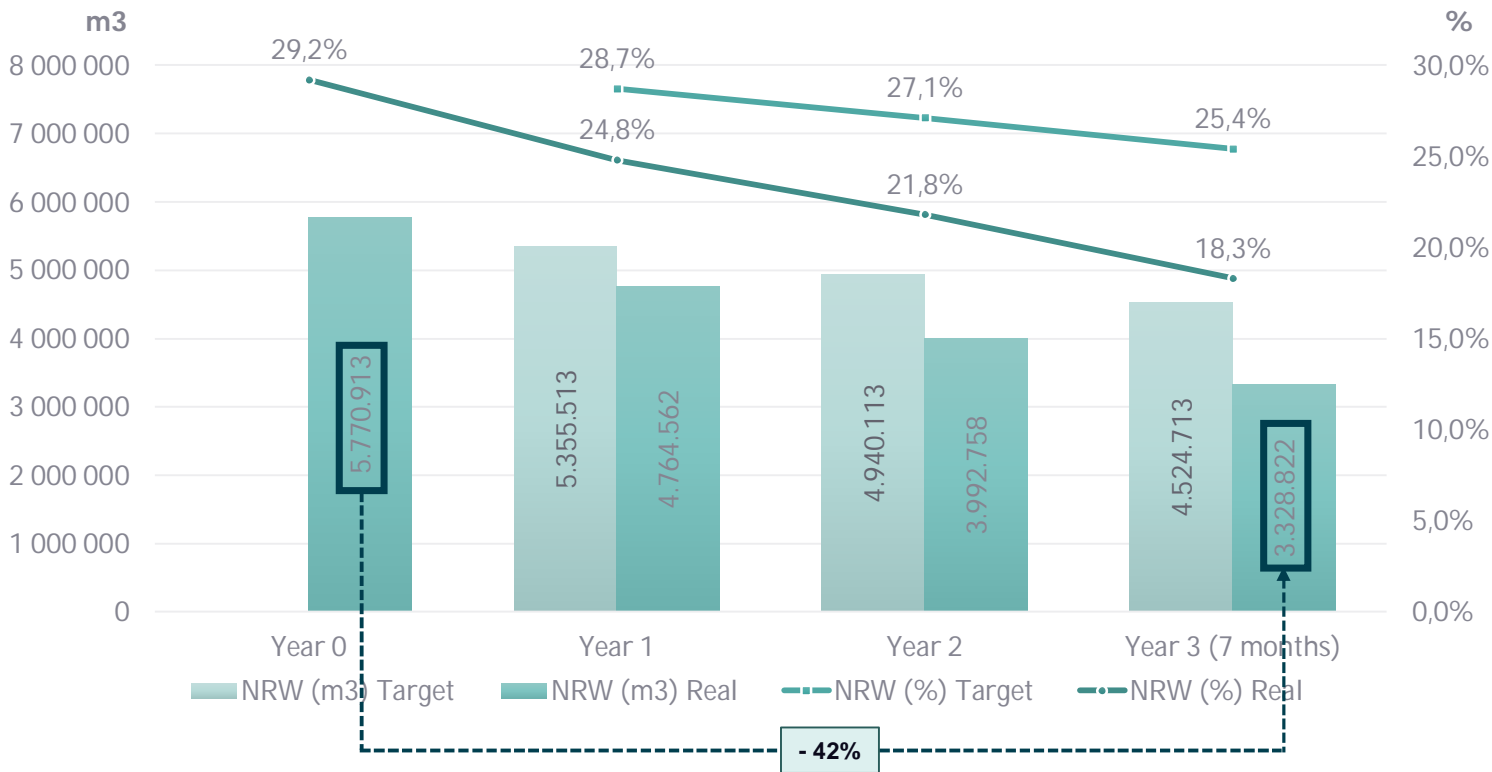
In less than four years, this PBC saved a total of 4,5 million m³ of water, which would be enough to supply Maia municipality for 7 months. In addition, we exceeded the initial contractual expectations, predicting an annual saving equivalent to **3,6 months** of supply after finishing the contract.



Performance-Based Contracts

Gaia NRW reduction project

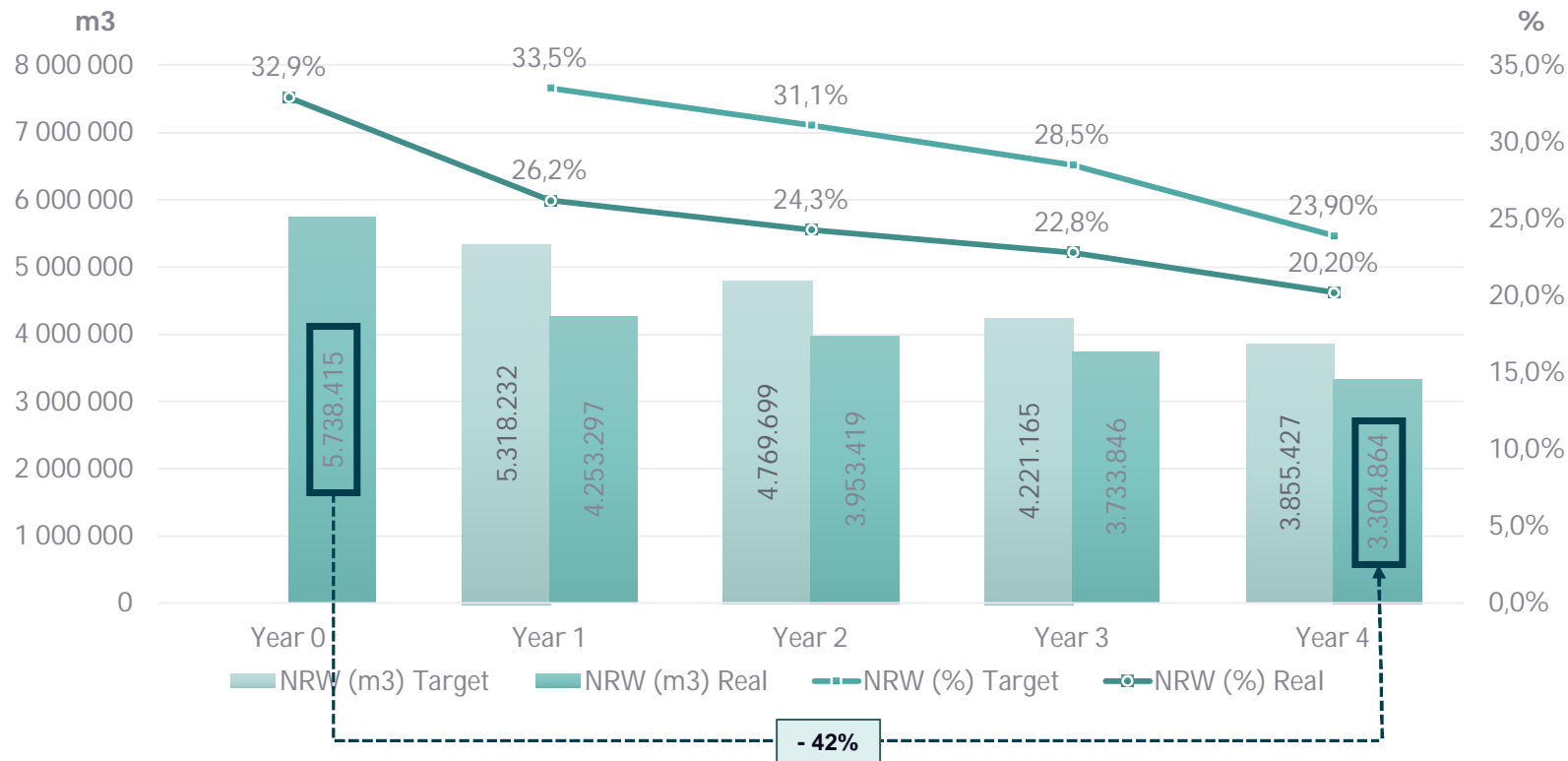
In less than three years, this PBC saved a total of 4,2 million m³ of water, which would be enough to supply Gaia municipality for 3 months. In addition, we exceeded the initial contractual expectations, predicting an annual saving equivalent to **1,7 months** of supply after finishing the contract.



Performance-Based Contracts

AdRA NRW reduction project - RESULTS

In four years, this PBC saved a total of 7,7 million m³ of water, which would be enough to supply these municipalities for 7 months. In addition, we exceeded the initial contractual expectations, predicting an annual saving equivalent to **2,4 months** of supply after finishing the contract.



04

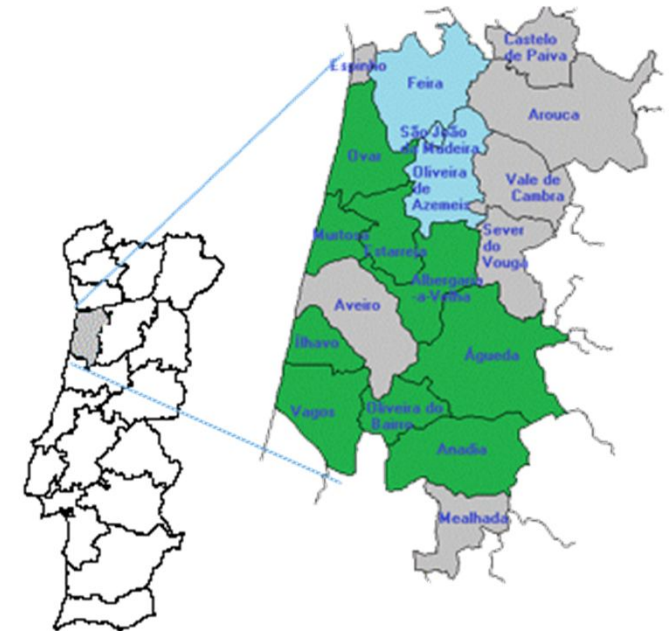
AdRA NRW Reduction project

| Activities and results

Performance-Based Contracts

AdRA NRW reduction project

| Water Utility | Number of Municipalities | Consumers | Starting year | Duration |
|---------------|--------------------------|----------------------------------|--|----------|
| | 9* | 262.794 | 2019 | 5yr |
| | Management Model | Payments Scheme | Scope | |
| | pEM | Fixed Variable Performance | <ul style="list-style-type: none"> • Master-plan • Leak detection • Illicit detection • DMZ and PRV construction | |



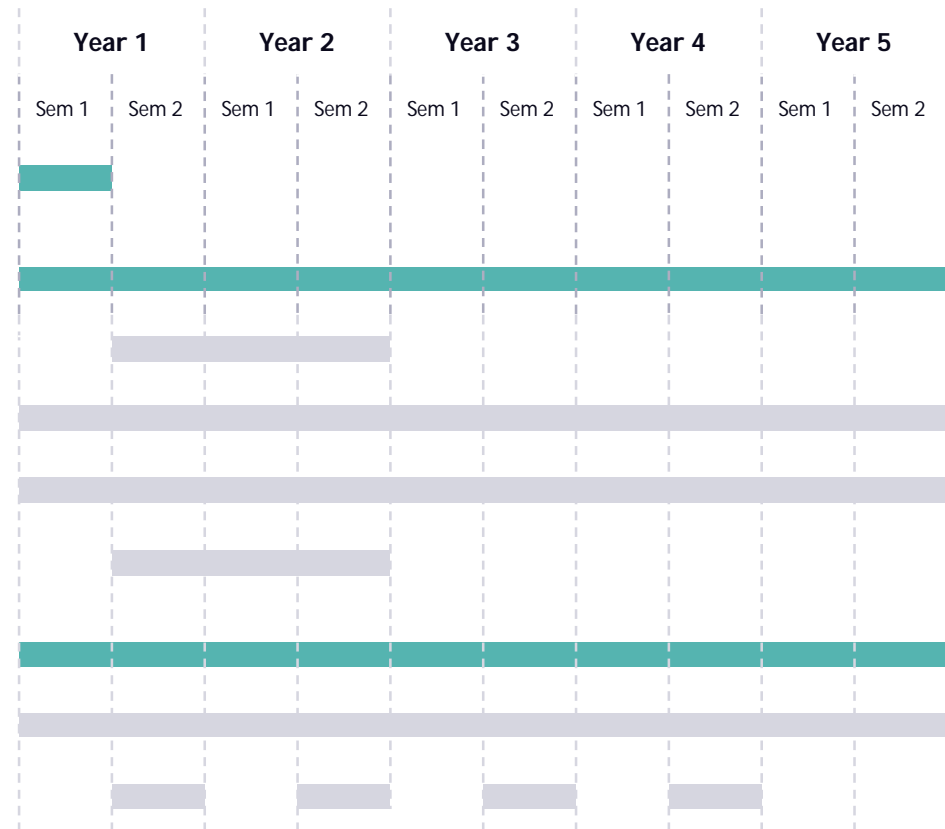
* Excludes Aveiro Municipality

Performance-Based Contracts

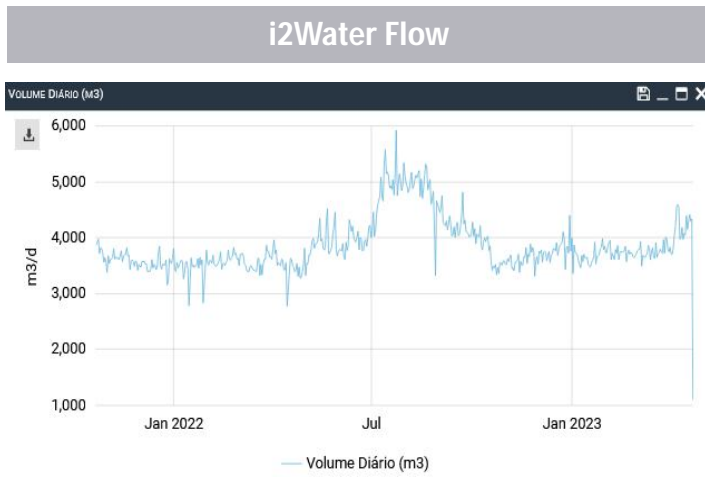
AdRA NRW reduction project

Activity Schedule

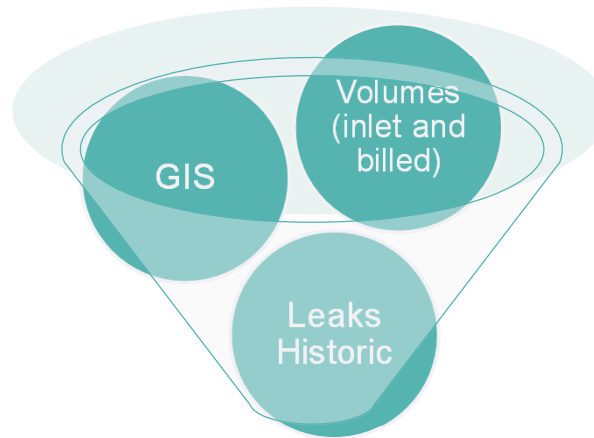
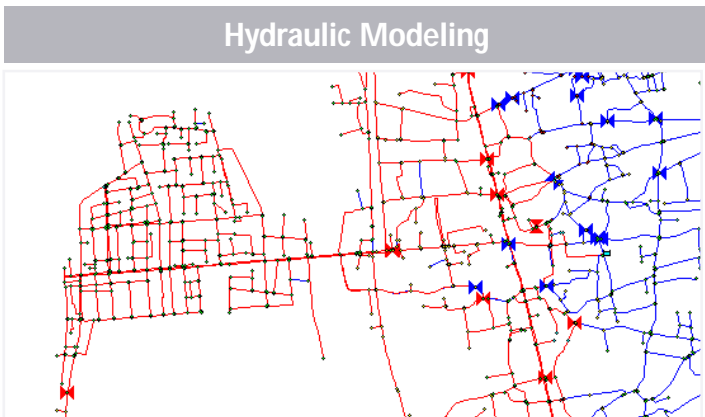
- 1 – Master-Plan Development**
- 2 – Implementation of Master-Plan**
 - 2.1 – DMA and PZ Construction
 - 2.2 – Active Leak Detection
 - 2.3 – Illegal connections survey
 - 2.4 – Meter Replacement
- 3 – Consolidation of efficiency measures**
 - 3.1 – Monitoring
 - 3.2 – Reformulation of measures to be implemented



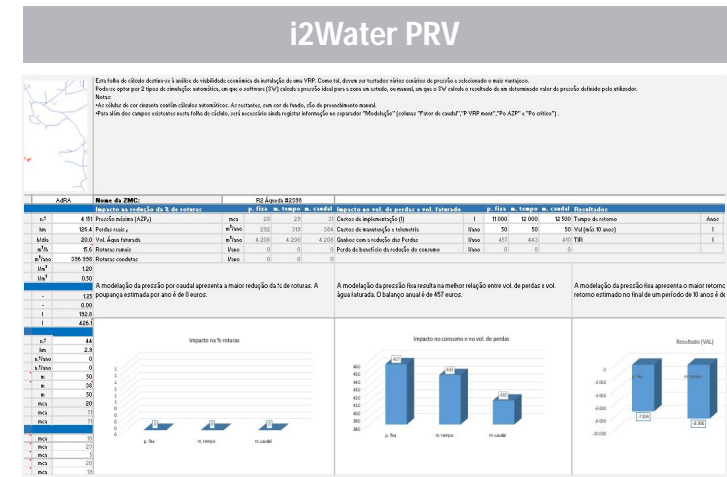
Performance-Based Contracts Master-Plan Development



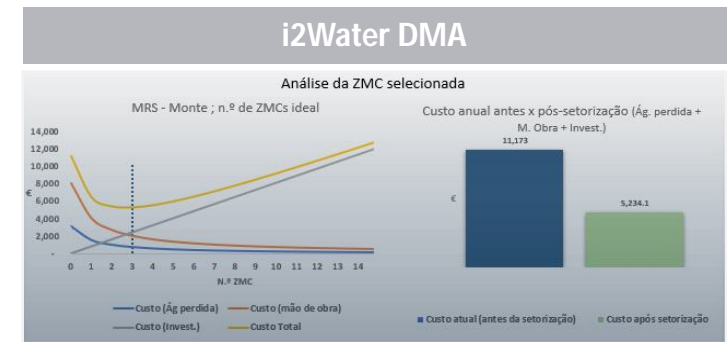
Distribution of inlet and billed water by systems and DMA



Master-Plan



Pressure Management: Cost Benefit analysis



Definition of the appropriate sectors, minimizing operating costs

Performance-Based Contracts DMA and PZ Construction

| | DMA | PZ |
|--------------|-----------|-----------|
| Phase 1 | 36 | 25 |
| Phase 2 | 17 | 2 |
| Phase 3 | 11 | |
| TOTAL | 64 | 27 |



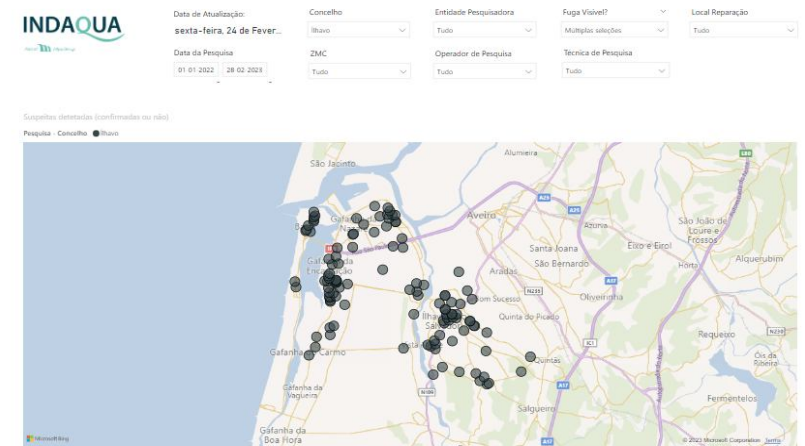
Performance-Based Contracts

Leak detection

Conversion and structuring of operational data à Optimize leakage control activities

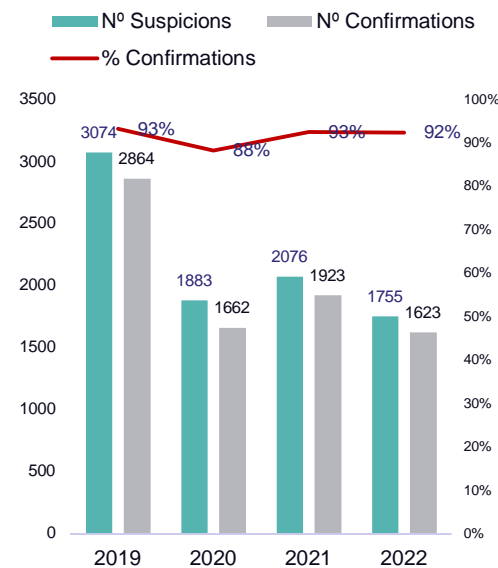
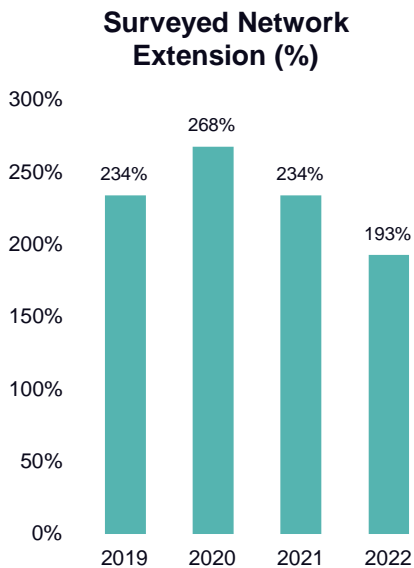


BI in leak detection management



Performance-Based Contracts

Leak detection



- About 200% leak detection per year
- Leak detection effectiveness remains at high levels
- Confirmation rate above 90%

Performance-Based Contracts

Illegal connections survey

Selection of suspected places

GIS



Tool support



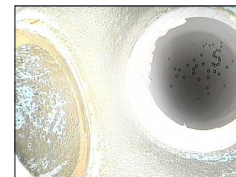
Specific search techniques



Meter verification



Inspection of the building network



Videoscopy

Performance-Based Contracts

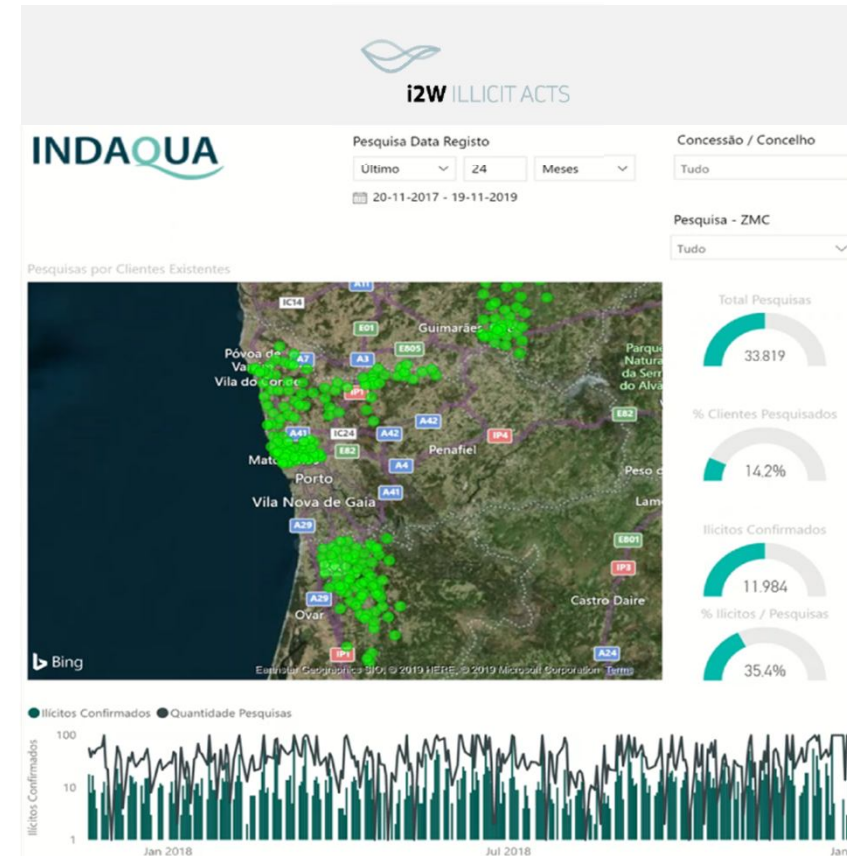
Illegal connections survey

Within the scope of the leak detection activity

| Year | Broken Meter | | Undue Connections | | Total |
|--------------|--------------|-----------|-------------------|------------|------------|
| | Yes | No | Yes | No | |
| 2019 | 20 | 7 | 54 | 202 | 283 |
| 2020 | 48 | 12 | 50 | 62 | 172 |
| 2021 | 19 | 17 | 69 | 68 | 173 |
| 2022 | 61 | 38 | 71 | 49 | 220 |
| Total | 148 | 74 | 244 | 381 | 848 |

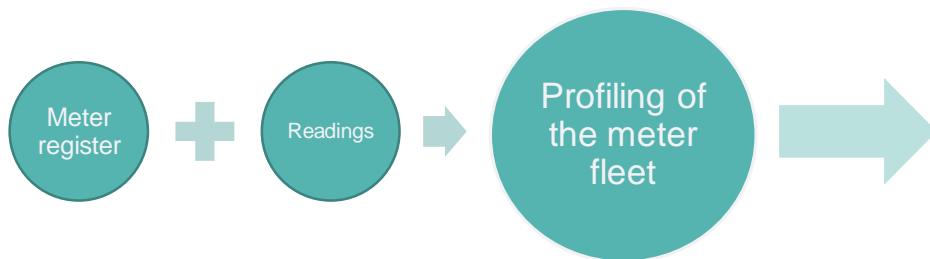
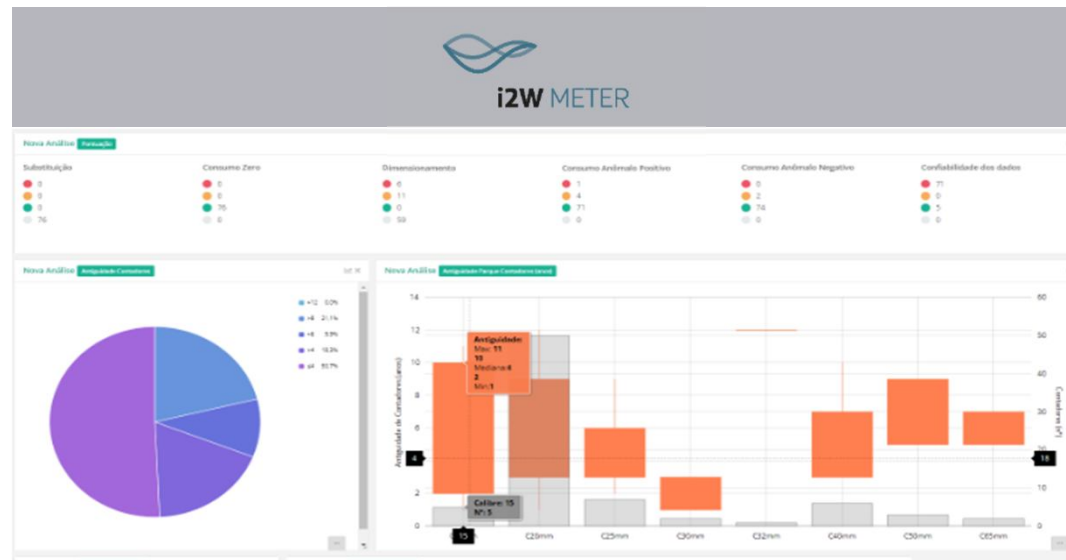
In public gardens

| Description | Broken Meter | Undue Connections | No Anomaly | Total Geral |
|---------------|--------------|-------------------|--------------|--------------|
| Confirmed | 85 | 56 | | 141 |
| Not Confirmed | 11 | 54 | 2396 | 2461 |
| Total | 96 | 110 | 2.396 | 2.602 |



Performance-Based Contracts

Meters replacement



- Define the meters to be replaced (age and degradation)
- Identify meter for resizing
- Identify meters with zero consumption
- Identify high consumption clients

Performance-Based Contracts

Meters replacement

| | DN | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Total |
|------------------------|--------------|---------------|--------------|--------------|---------------|--------------|---------------|
| Meter Replacement Plan | 15 | 904 | 2 963 | 3 641 | 560 | 2 316 | 10 384 |
| | 20 | 7 633 | 3 985 | 5 420 | 1 158 | 2 718 | 20 914 |
| | 25 | 791 | 92 | 78 | 116 | 144 | 1 221 |
| | 30 | 86 | 13 | 35 | 26 | 20 | 180 |
| | 40 | 222 | 42 | 96 | 102 | 60 | 522 |
| | 50 | 63 | 9 | 16 | 4 | 63 | 155 |
| | 65 | 13 | 2 | 2 | 0 | 13 | 30 |
| | 80 | 50 | 16 | 10 | 4 | 50 | 130 |
| | 100 | 9 | 1 | 9 | 1 | 9 | 29 |
| | Total | | 9 771 | 7 123 | 9 307 | 1 971 | 5 393 |
| Replaced | | 13 461 | 4 050 | 1 800 | 11 135 | 2 662 | 33 108 |



Performance-Based Contracts

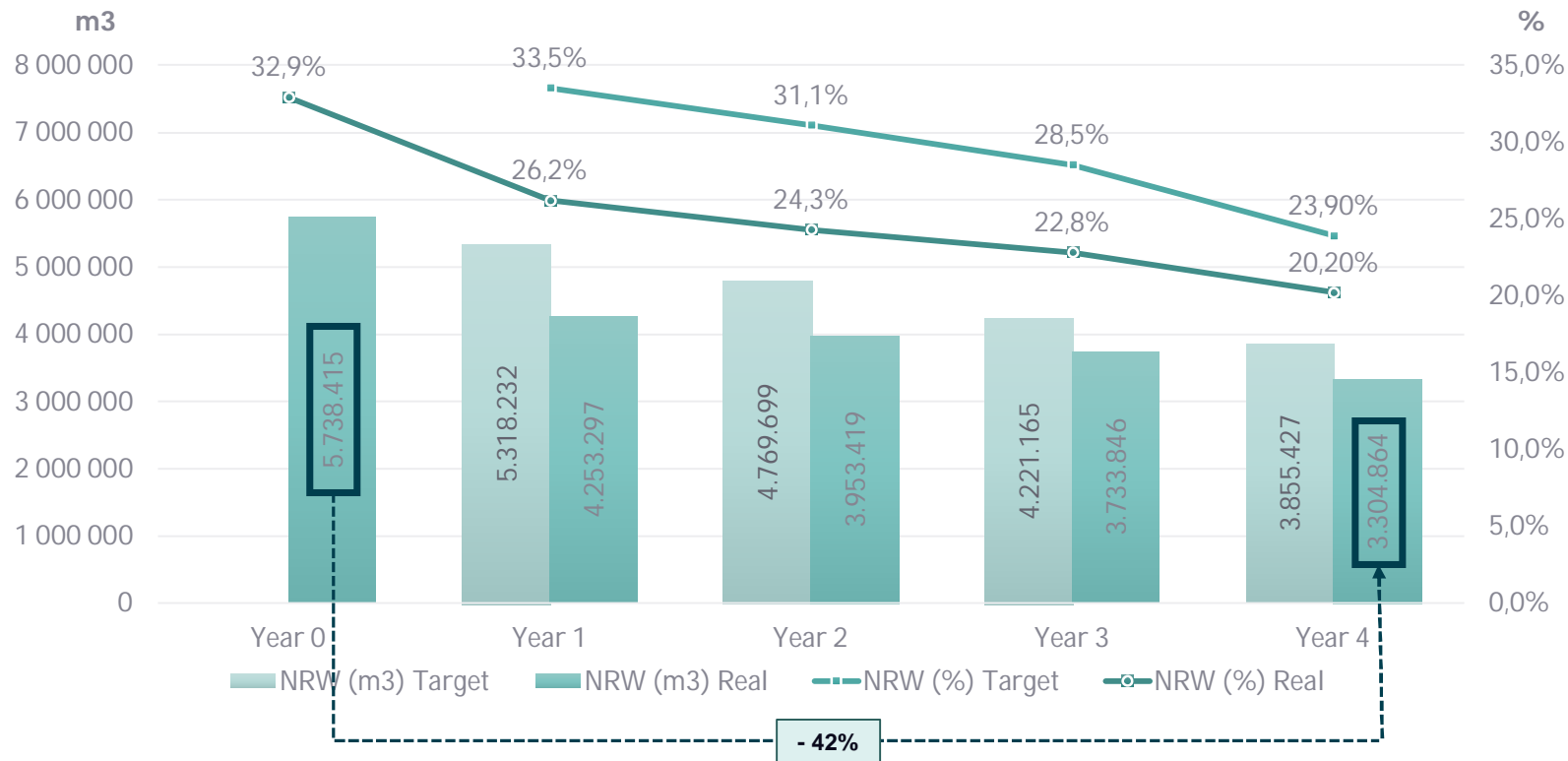
Additional Activities

- Inlet water flowmeter verification
- Tightness test in reservoirs
- Operational optimization of water pumping station
- Rehabilitation of water network
- Training in illegal connections detection to commercial team (readers team)
- Training in operation and maintenance of PRV
- Optimization of network operation

Performance-Based Contracts

AdRA NRW reduction project - RESULTS

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Water Efficiency Leaders

WWW.INDAQUA.PT

