ECO STP2023

6th IWA International Conference on eco-Technologies for Wastewater Treatment

GIRONA, SPAIN
26th – 29th June

INTEXT Platform: Innovative hybrid INTensive – EXTensive technologies for wastewater treatment in small communities

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Aqualia FCC

Department of Innovation and Technology

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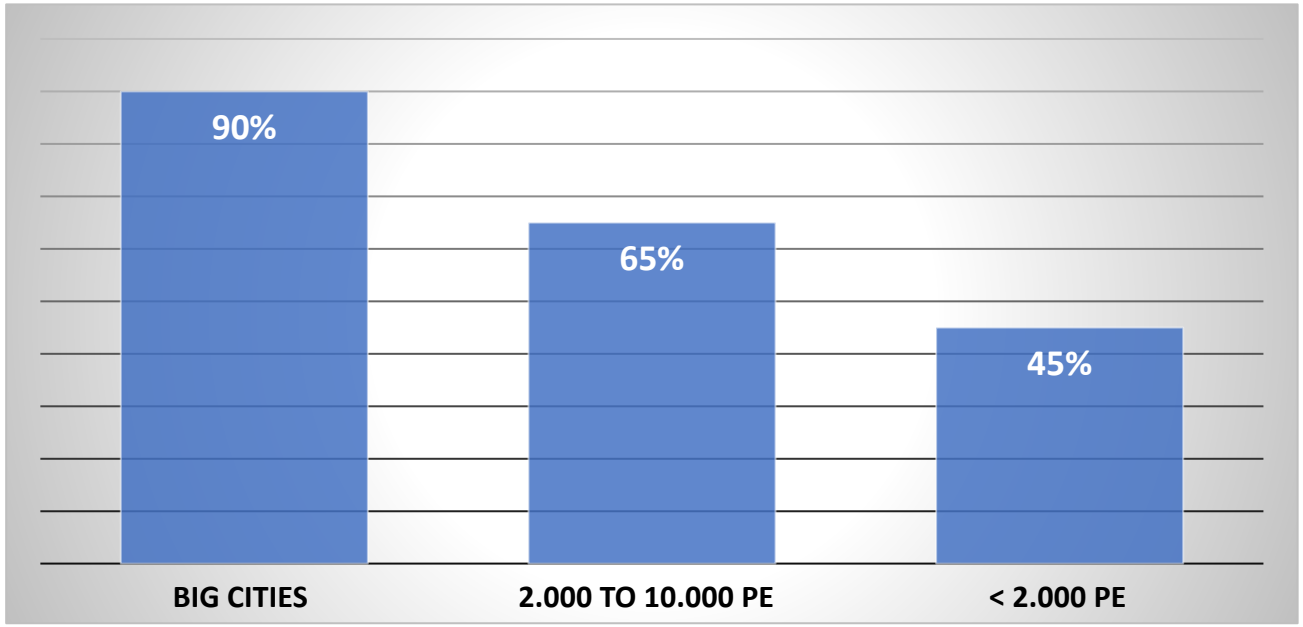
LIFE INTEXT - Why



Spain: 8.131 municipalities
Population less than 2.000 PE → 5.855 municipalities

Some areas in Spain (CLM) more than **56%** of WWTP < 2.000 inhabitants

Spain: 3-4 millions PE (<2.000 PE) without wastewater treatment

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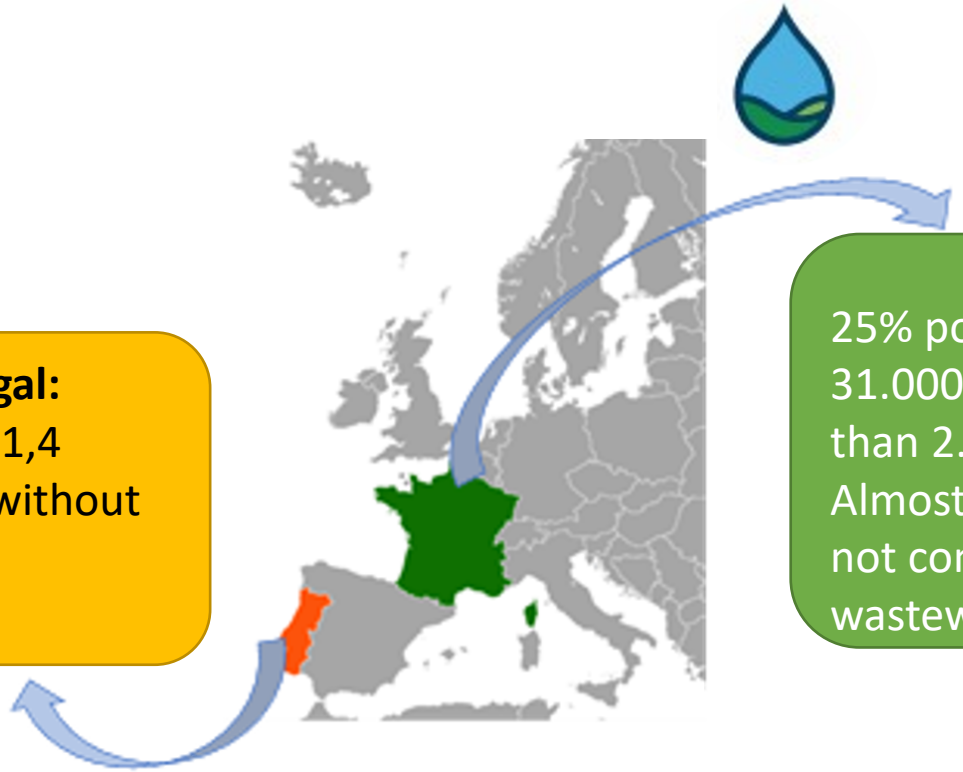
LIFE INTEXT - Why



Portugal:
In 2019 still 1,4 millions PE without wastewater treatment

France:
25% population in 31.000 districts of less than 2.000 PE
Almost 20% population not connected to wastewater network

Colombia:
1.122 total municipalities, almost 410 has any wastewater treatment. Only 42,8% of wastewater is treated.

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LIFE INTEXT - Concept

INTensive **processes**

High operational costs
High investment costs
Greater process complexity

Abandoned or never commissioned

EXTensive **processes**

Undersized
Limited operational flexibility
100% lack of maintenance

Abandoned

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LIFE INTEXT - Concept

INT EXT

Hybrid intensive-extensive technologies development:

- ❑ Robust treatments
- ❑ CAPEX and OPEX reduction
- ❑ Surface < 1 m2/PE

Moral behavior is the mean between two extremes
(Aristóteles 384 b.C)

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LIFE INTEXT - Objetives

Small comunities wastewater treatment

=

New generation demonstrative plant

Decision support system

Existing plants diagnosis and improvement

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LIFE INTEXT - Project

Coordinator

aqualia

3 I&T centres

FUNDACIÓN PÚBLICA ANDALUZA CENTRO DE LAS NUEVAS TECNOLOGÍAS DEL AGUA (CENTA) Consejería de Agricultura, Ganadería, Pesca y Desarrollo Sostenible

aimen CENTRO TECNOLÓGICO

AARHUS UNIVERSITY

4 Technology companies

projar Group

syntea

AUTARCON

Future Intelligence TELECOM ENGINEERING COMPANY

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LIFE INTEXT - Project

Carrión de los Céspedes WWTP (CENTA)
Constructed wetland retrofit; Mediterranean climate

Talavera de la Reina WWTP (Aqualia)
New platform; Continental climate

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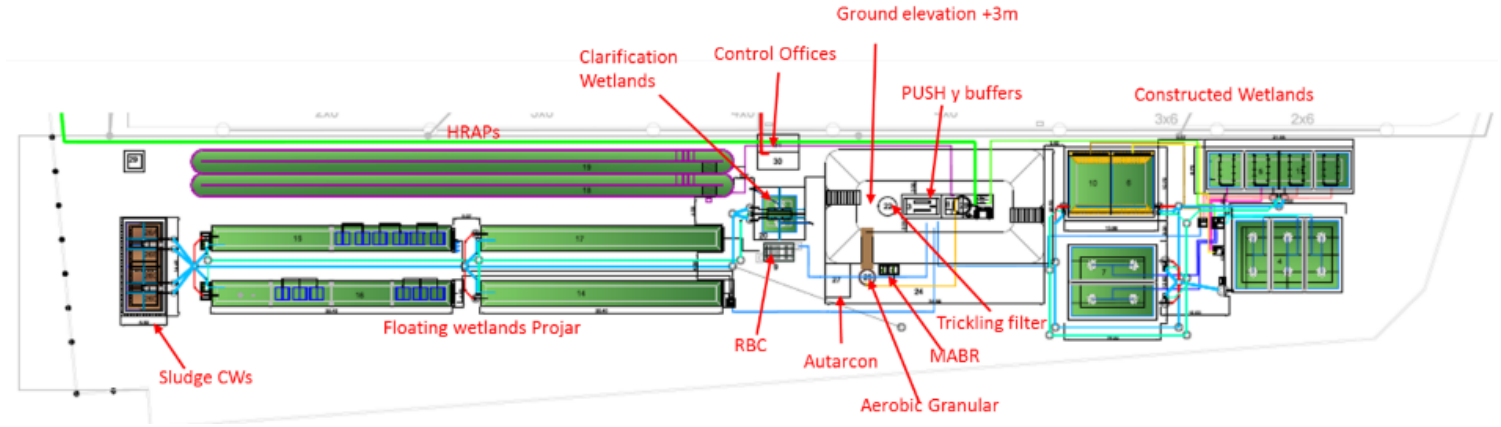
INTEXT Platform

#hub INText

Platform for sustainable wastewater treatment in small urban agglomerations



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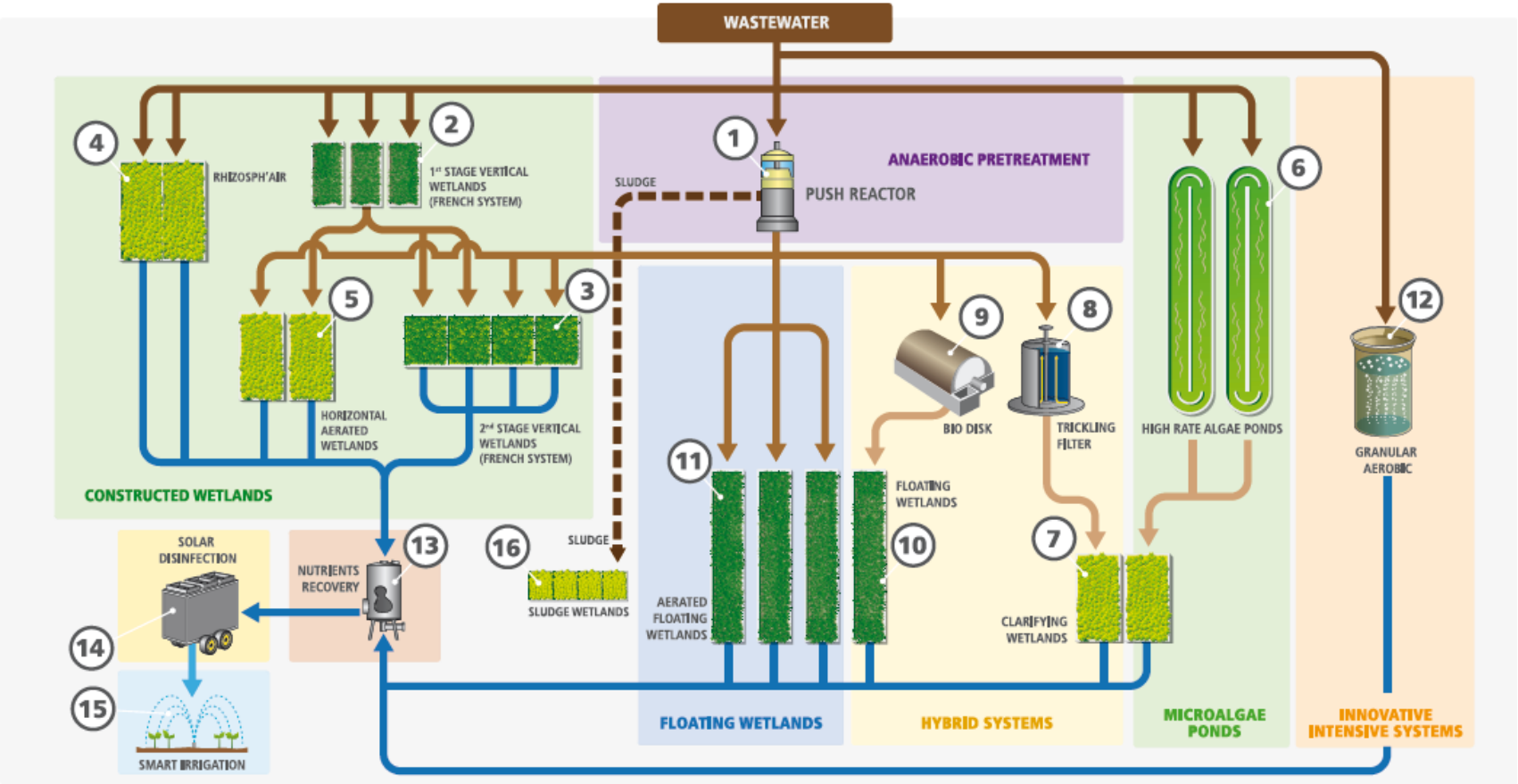
INTEXT Platform

#hub INText

More than 16 technologies and “endless” combinations

125 PE



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INTEXT Platform

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LIFE INTEXT – Solutions

Push® Pre-treatment

Aqualia's patented pre-treatment

UASB reactor

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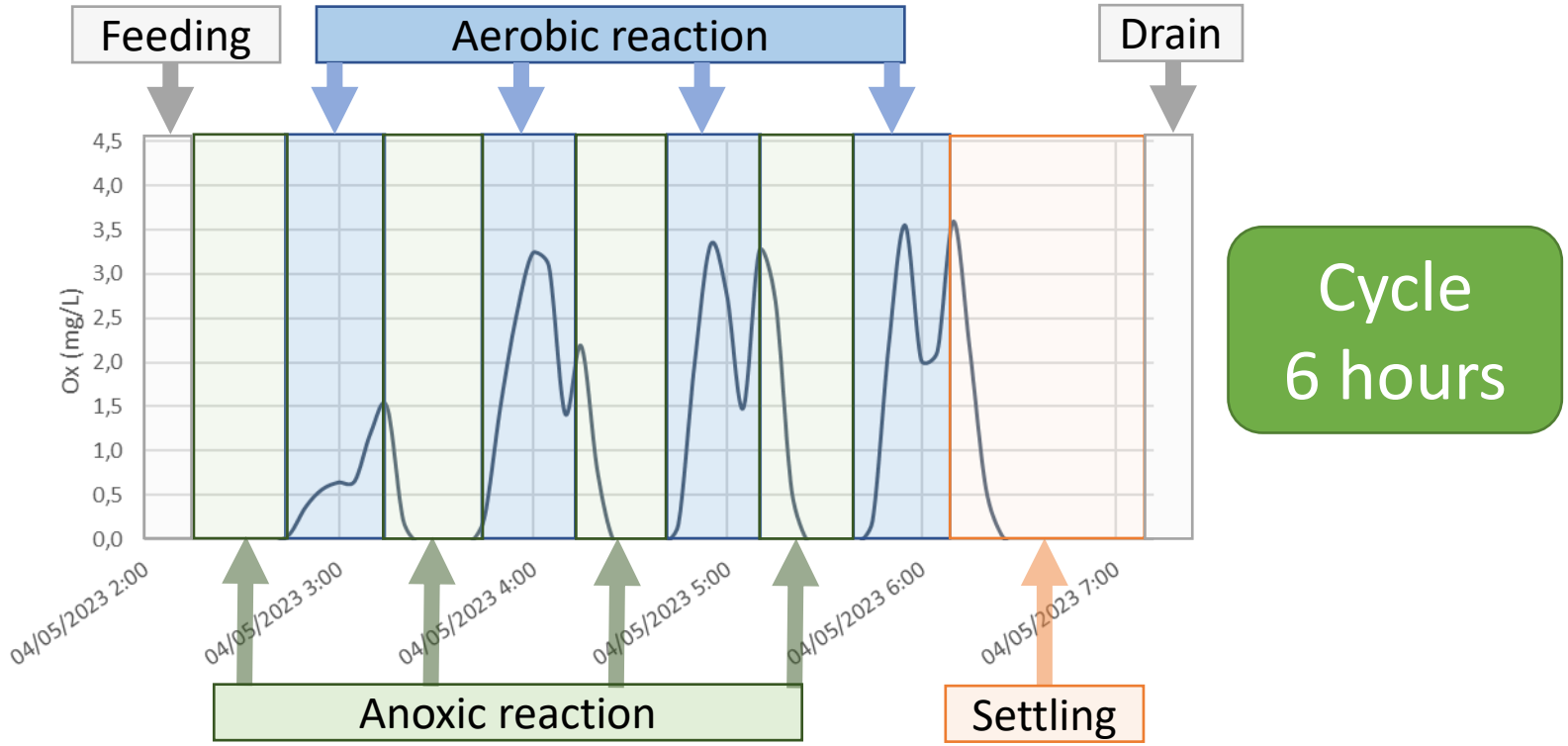
LIFE INTEXT – Solutions

AGS reactor



Cycle
6 hours

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LIFE INTEXT – Solutions

Rotating Biological Contactor (RBC)

Feed: PUSH® effluent
Post-treatment: Floating wetland

Internal recirculation

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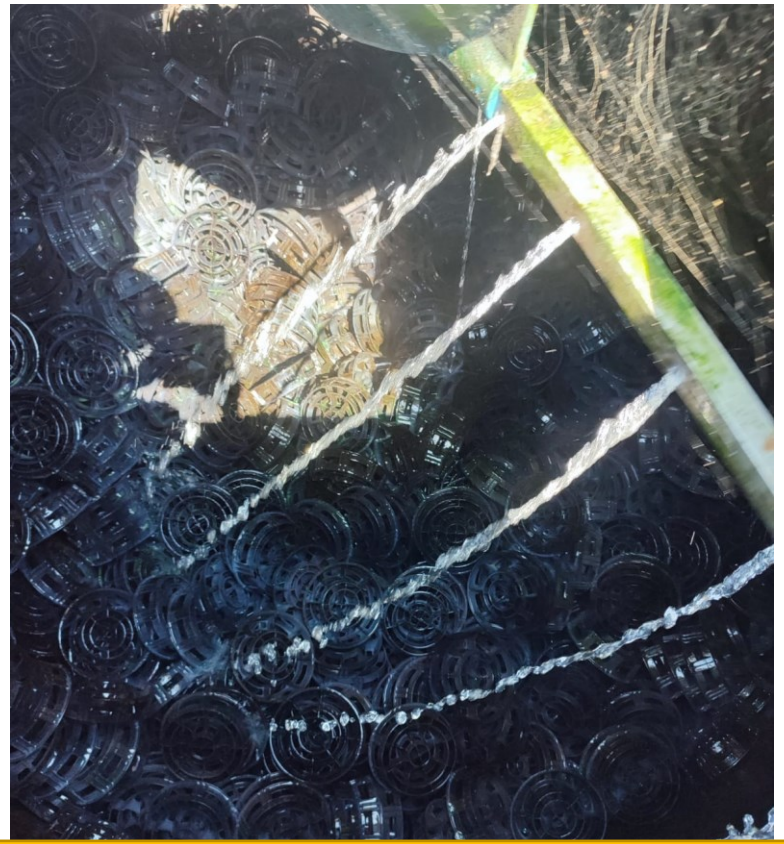
LIFE INTEXT – Solutions

Trickling Filter (TF)



Forced aeration
Big supports for raw wastewater

Feed: PUSH® effluent
Post-treatment: Clarifying wetland

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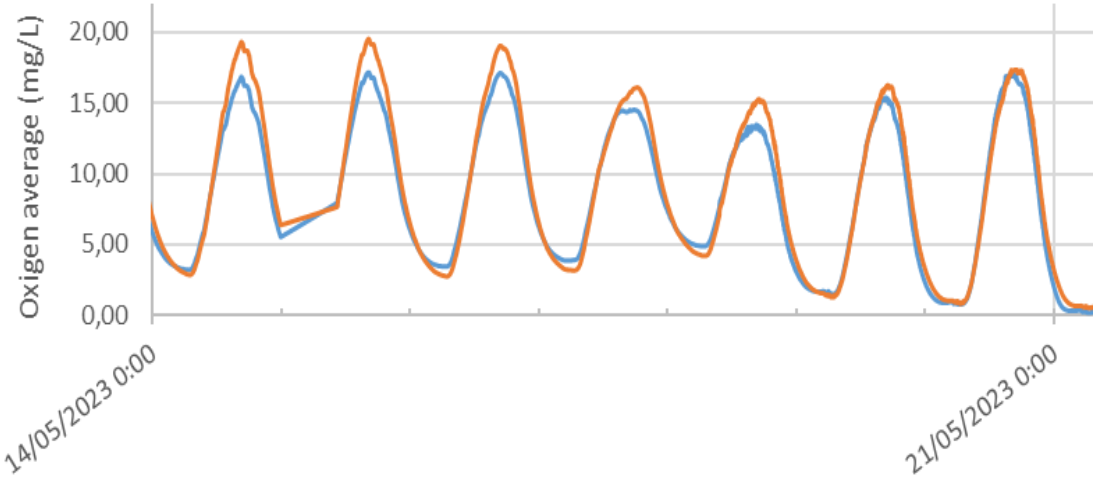
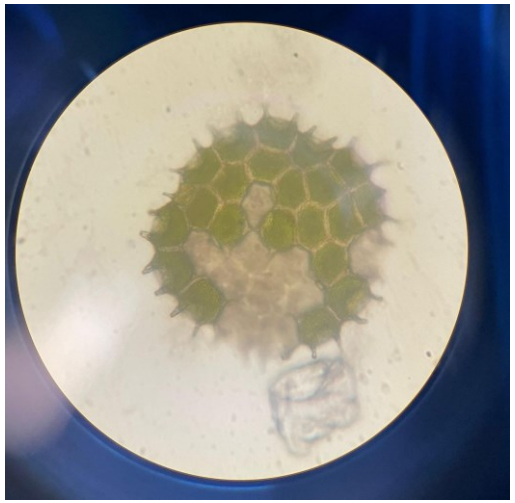
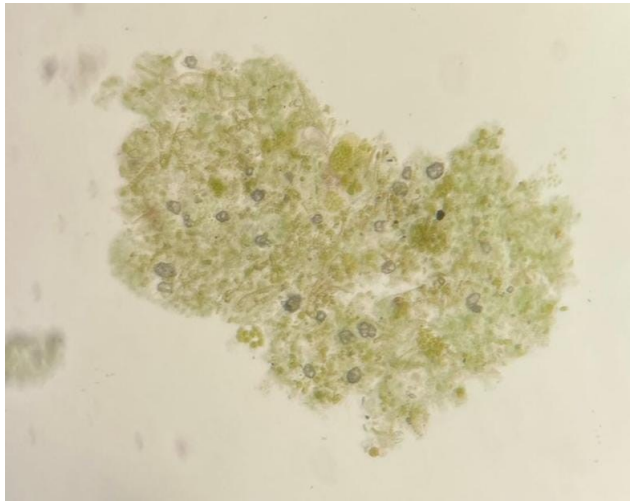
LIFE INTEXT – Solutions

High Rate Algal Ponds (HRAPs)







Feed: Raw water
Post-treatment: Clarifying wetland

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LIFE INTEXT – Solutions

Floating Wetlands (FWs)

LIFE INTEXT – Solutions

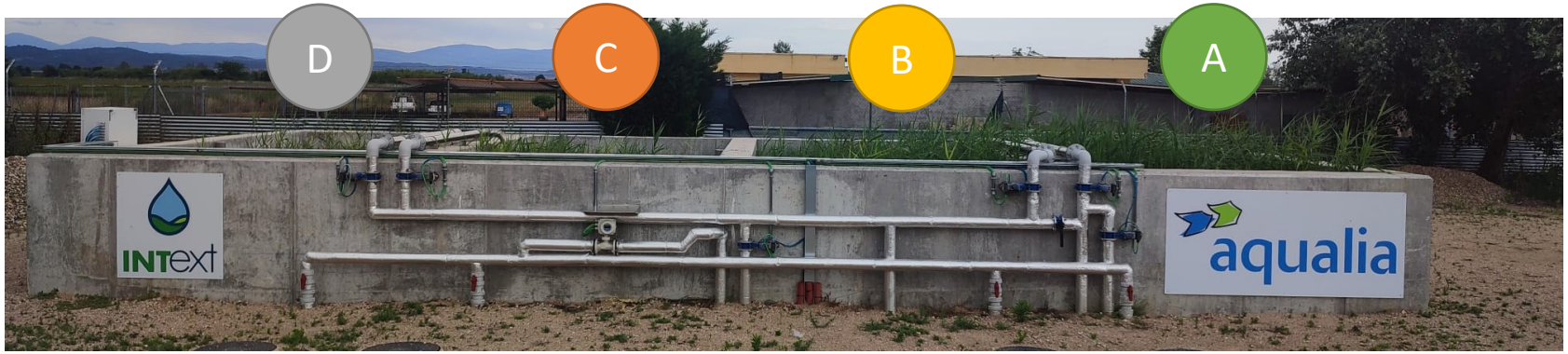
Clarifying Wetlands (CSDRBs)

Feed: HRAPs
1 real wetland
3 virtual wetlands

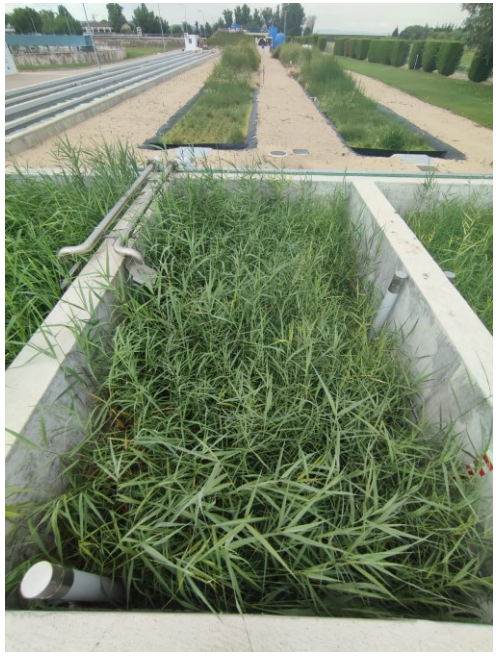
Feed: Trickling Filter
1 real wetland
3 virtual wetlands

LIFE INTEXT – Solutions

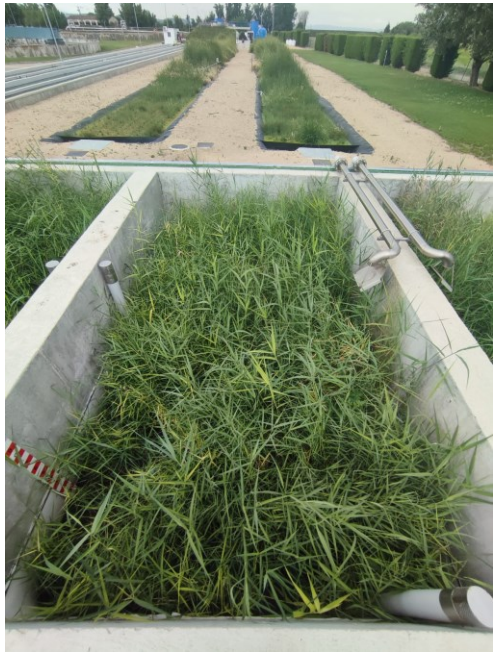
Sludge Wetlands



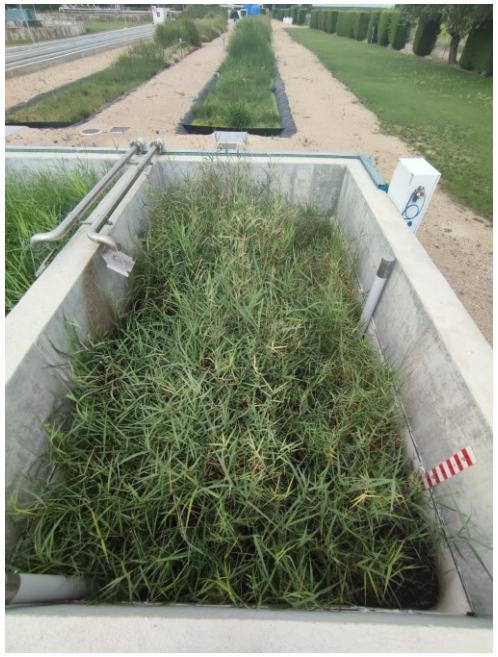
Feed: PUSH® sludge
40 Kg/m2/year



Feed: Activated sludge
40 Kg/m2/year



Feed: Activated sludge
50 Kg/m2/year



Feed: Activated sludge
60 Kg/m2/year

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LIFE INTEXT – Solutions

Rhizosph'Air®

Syntea's patent

Feed: Raw water
2 beds
Forced aeration (blower)
Hybrid vertical-horizontal

Nitrification-denitrification processes

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LIFE INTEXT – Solutions

Vertical Flow Constructed Wetland (1º stage)

Feed: Raw water
3 beds
Feed by pulses
Natural aeration

Nitrification process
No denitrification process

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LIFE INTEXT – Solutions

Vertical Flow Constructed Wetland (2º stage)

2 beds
Feed by pulses
Natural force aeration

Feed: 1º stage effluent

Feed: UASB effluent

Nitrification process
No denitrification process

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LIFE INTEXT – Solutions

Horizontal Flow Constructed Wetland

1 bed
Possible to feed continuously
Forced aeration (blower)

Feed: 1º stage effluent

Feed: PUSH® effluent

Nitrification-denitrification processes

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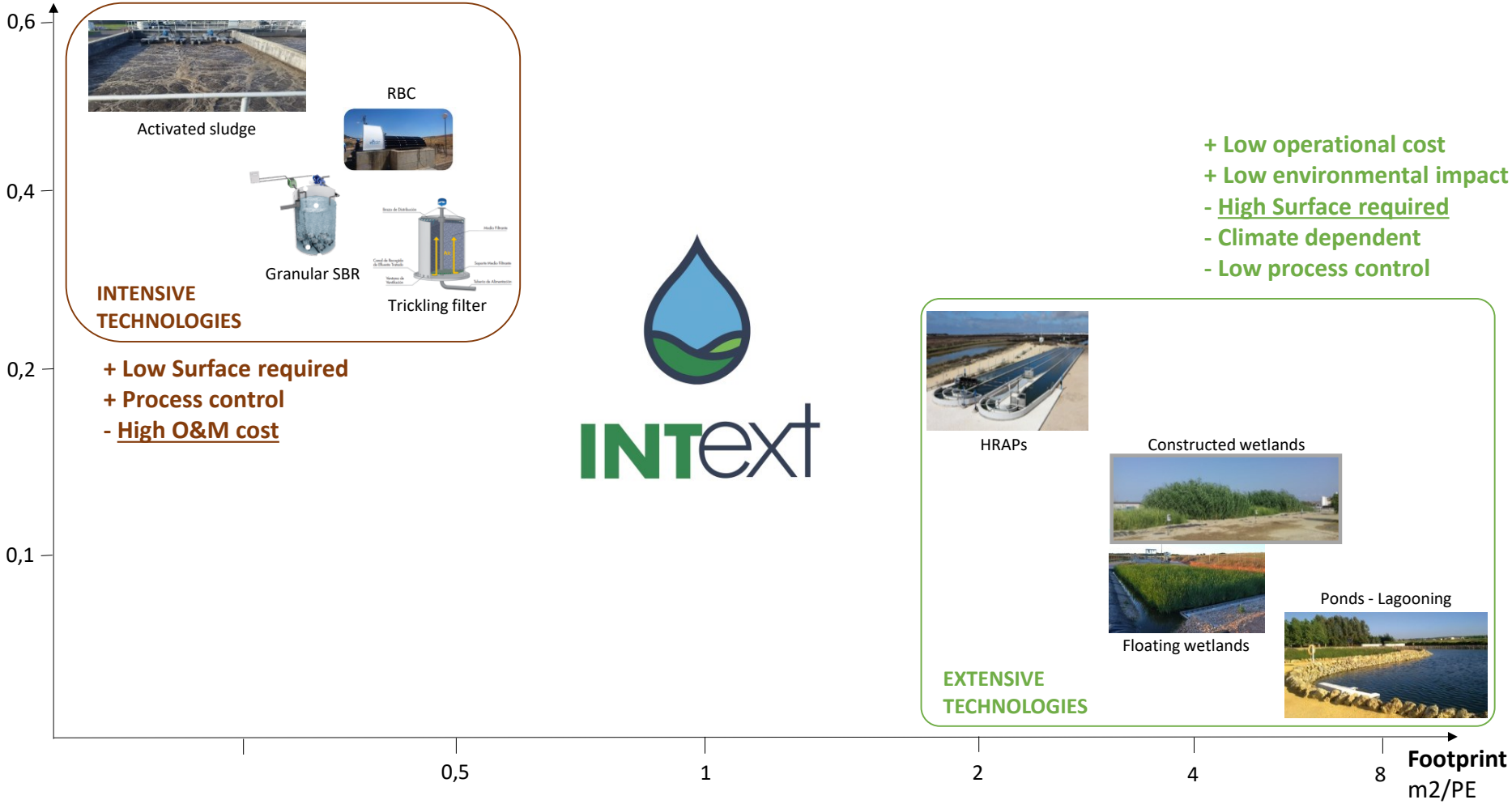
LIFE INTEXT - Energy

Energy consumption
kWh/m3 WW

INTENSIVE vs. EXTENSIVE WWT TECHNOLOGIES FOR SMALL COMMUNITIES



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¡Thank you for your attention!

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