SOLUÇÕES DE BASE NATURAL no CICLO URBANO DA ÁGUA
CONFERÊNCIA INTERNACIONAL
22 MAIO 2025
Alcacena, Portugal

NBS in the domain of water reuse to increase available water resources

Joan Garcia

UNIVERSITAT POLITÈCNICA DE CATALUNYA
BARCELONATECH
Group of Environmental Engineering and Microbiology

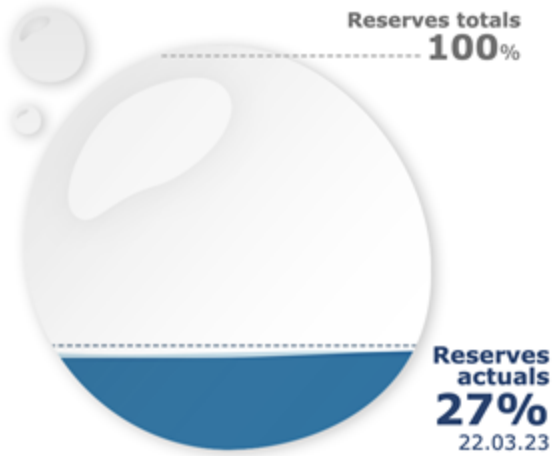
Water scarcity is a recurring feature of the Mediterranean region, but its frequency has been exacerbated by the effects of climate change

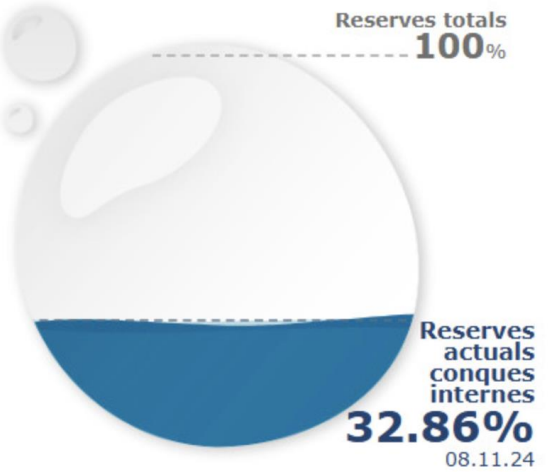
Ebro basin

1. Oliana
2. Rialb
3. Sallent
4. Talarn
5. Terradets
6. Camarassa
7. Sant Llorenç
8. Cavallers
9. Baserca
10. Escales
11. Canelles
12. Santa Anna
13. Riba-roja
14. Flix
15. Margalef
16. Siurana
17. Guiamets

Internal basins

1. Portbou
2. Darnius - Boadella
3. Colomers
4. Núria
5. Sau
6. Susqueda
7. Pasteral
8. Seva
9. Vallforners
10. Santa Fe
11. Baells
12. Llosa del Cavall
13. Sant Ponç
14. Sant Martí de Tous
15. Foix
16. Gaià
17. Riudecanyes





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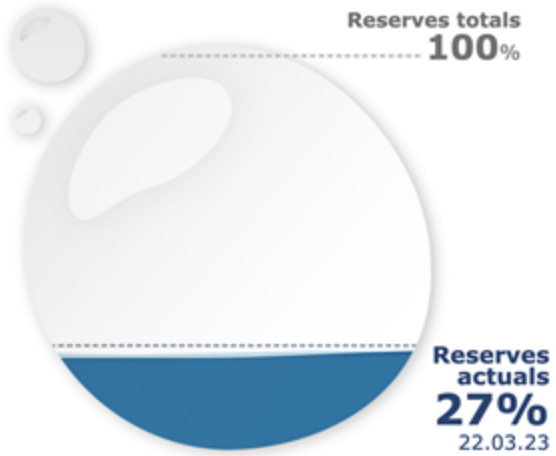
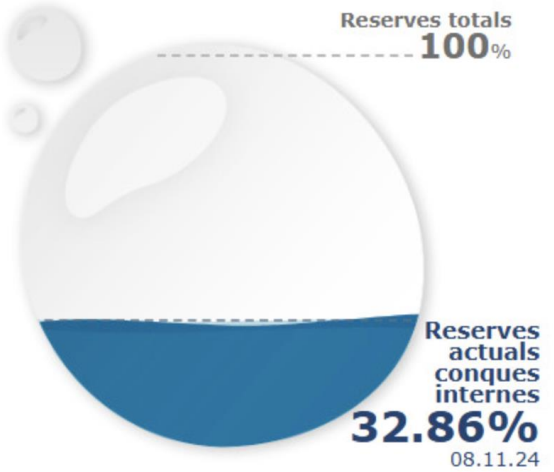
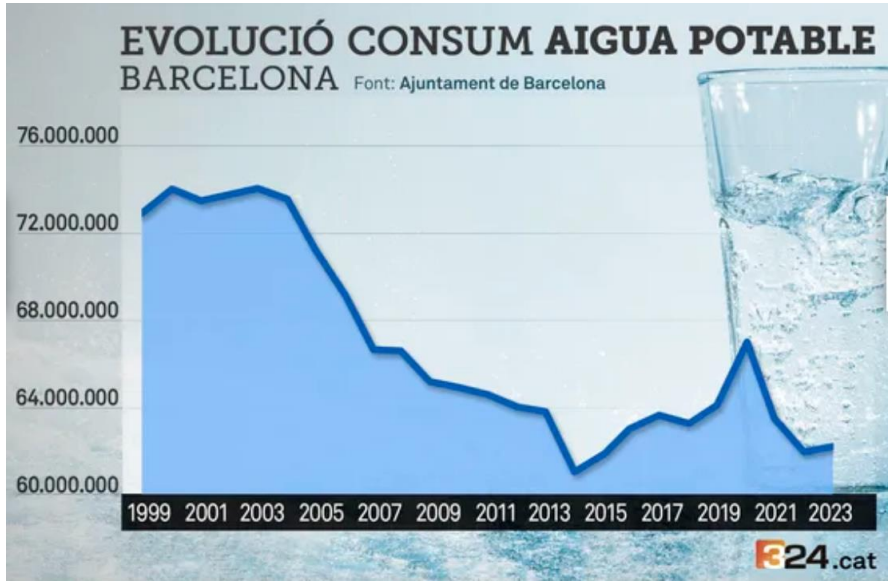
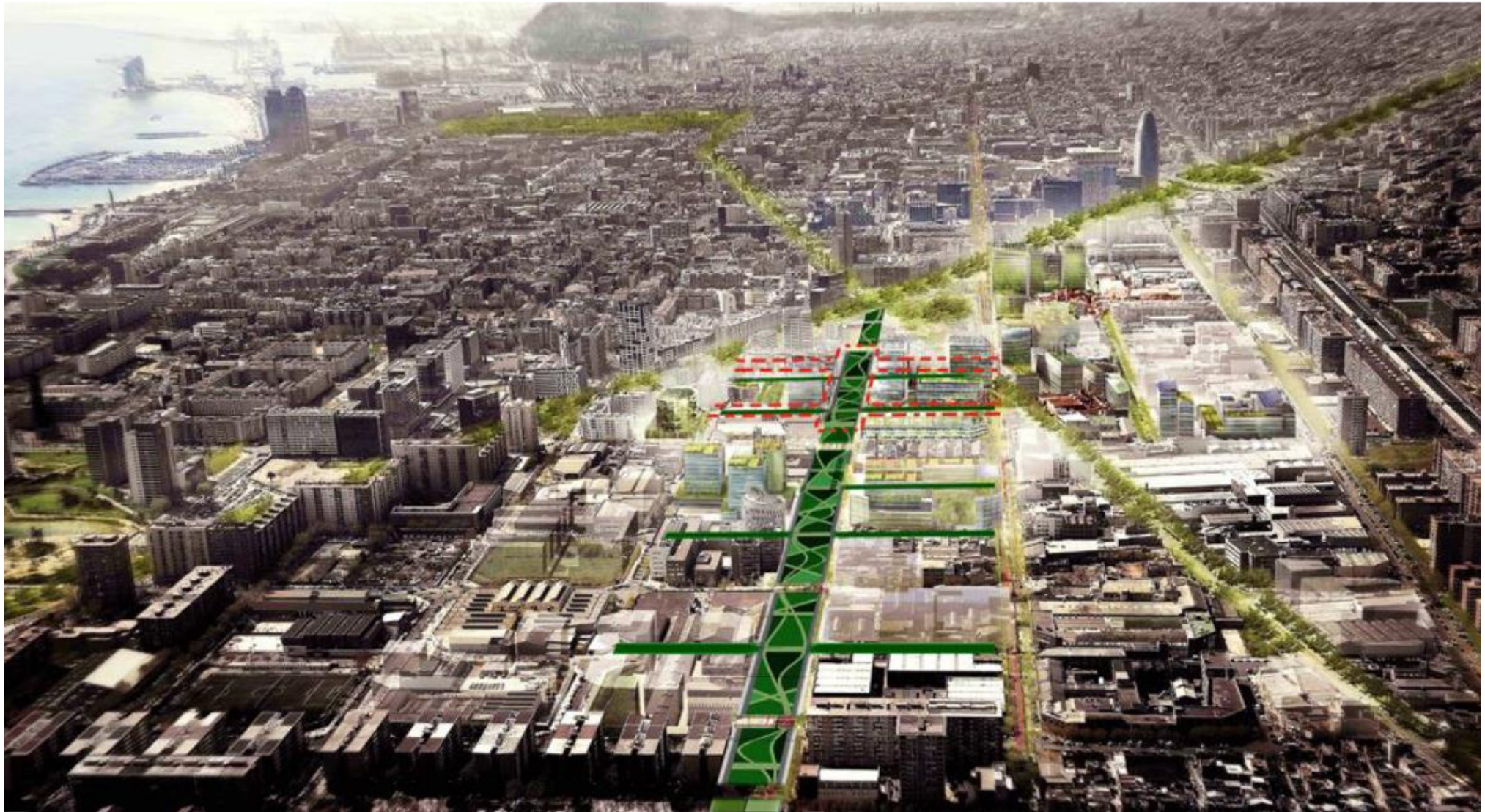






Many people speak about Nature-Based Solutions exclusively thinking in urban environments



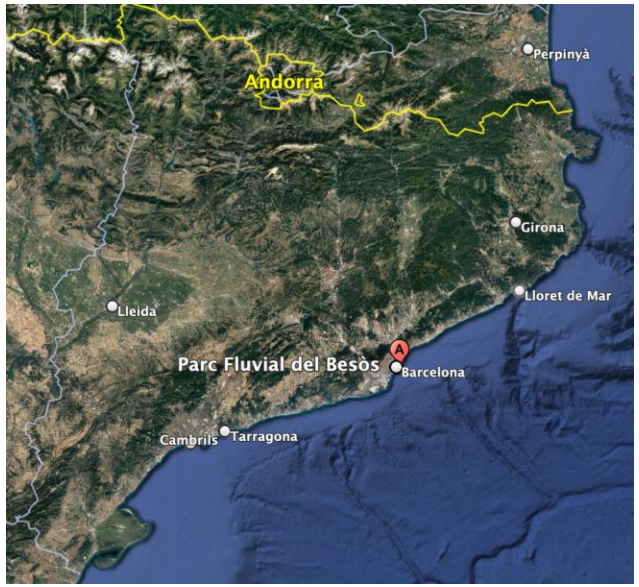
Linear Park
Barcelona

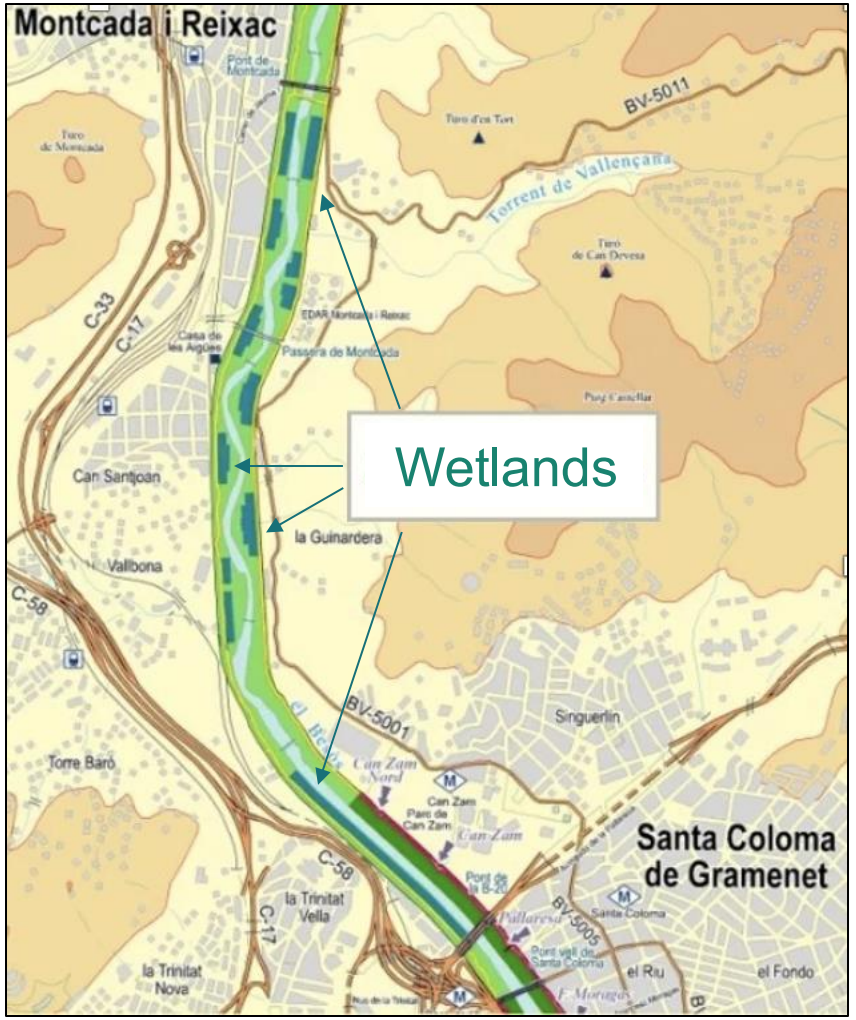
Many people speak about Nature-Based Solutions exclusively thinking in urban environments

Source: R. Soto
IMU

Subsurface flow wetlands can be used for the improvement of the environmental quality

Fluvial Park
of Besòs
River





Source: M. Vila, DIBA

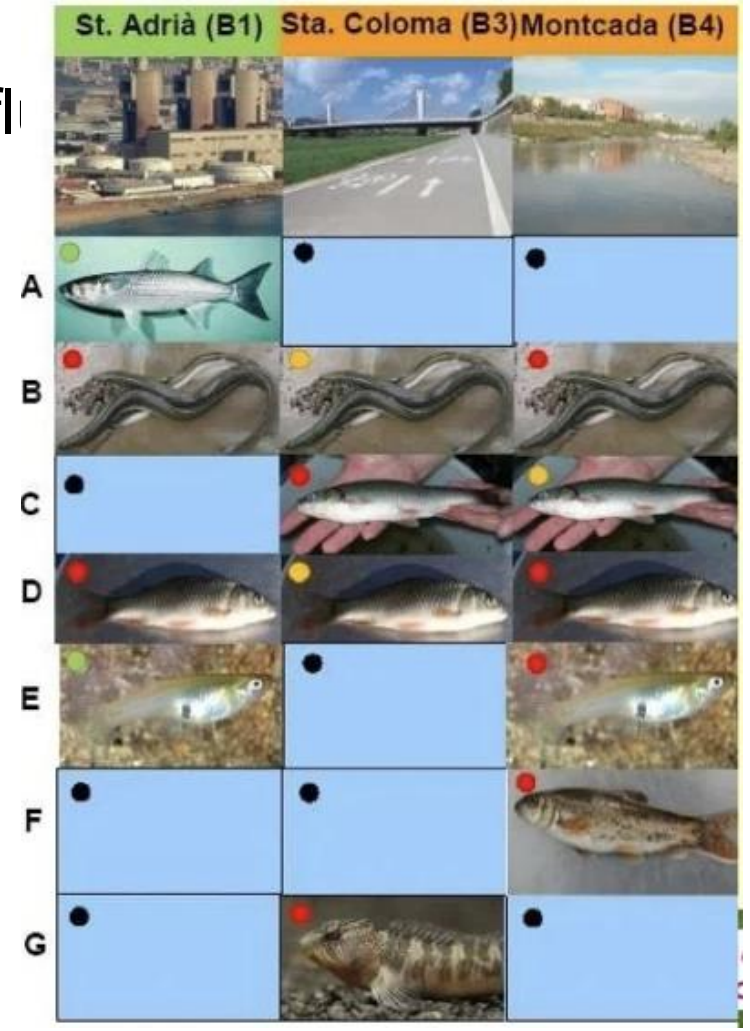
What are the properties and the benefits of the Besòs River Fluvial Park wetlands?

Properties

- Constructed in 2004
- Inside 3.7 km of river bed, secondary effl
- Surface: 7.7 ha (60 cells)
- Flow: 15,000 m^3/d
- <5 mg TSS/L, <50 mg COD/L

Benefits

- Environmental restoration
- Increase in biodiversity
- Landscape improvement
- Water quality improvement
- Increase in water resources amount



Source: M. Vila, DIBA

A subsurface-surface flow wetland for environmental quality improvement

Tancat de Milia wetland

1. Subsurface flow zone, 4.5 ha, 18 cells
2. Surface flow zone, 18 ha, 6 cells
3. Artificial lake, 10 ha

Source: F. Juan Acuamed

What are the properties and the benefits of the Tancat de Milia wetland?

Properties

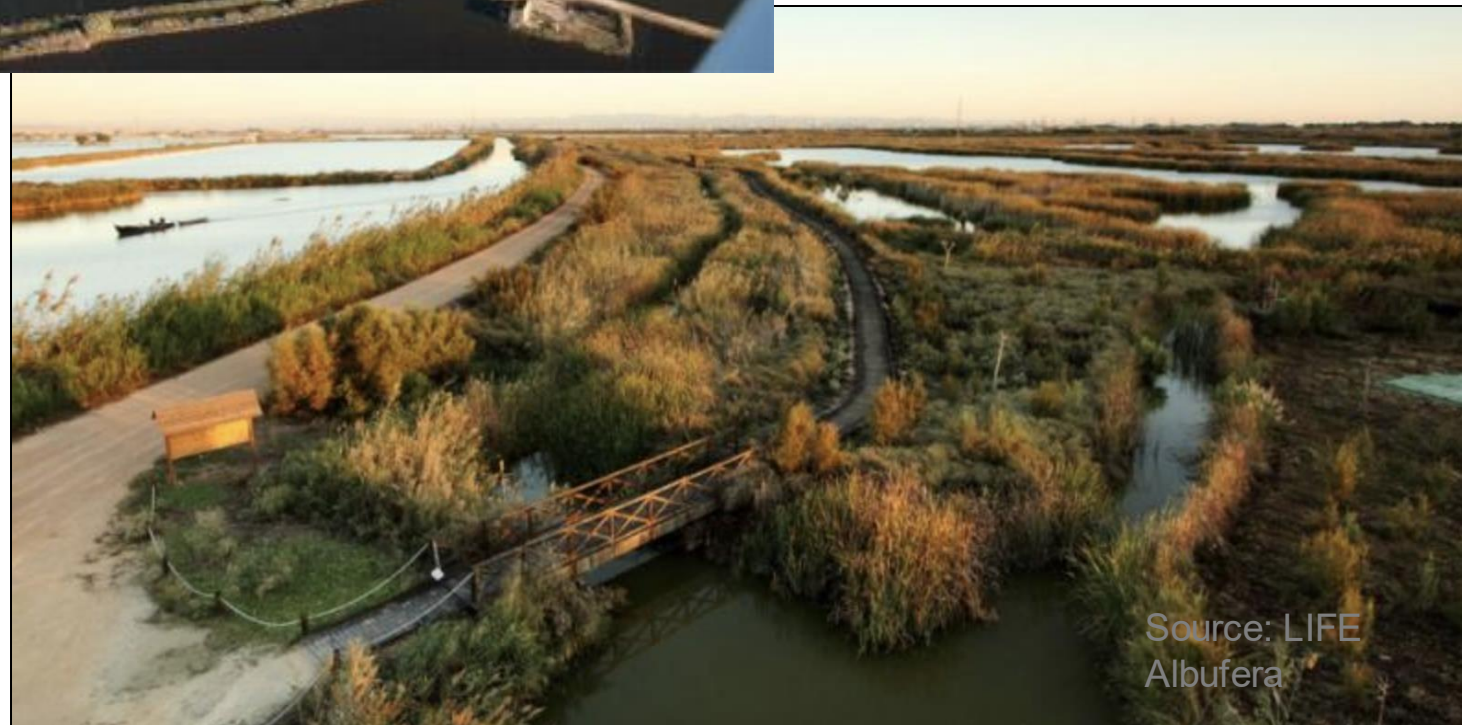
- Constructed in 2011, Investment 5.5 M€, operation 110m/year
- Inside old rice fields, secondary effluent
- Surface: 33 ha
- Flow: 1,500 up to 4,500 m^3/day
- Efficiency→ N: 40-60%, P: 40-70%

Benefits

- Water quality improvement (nutrients)
- Environmental restoration

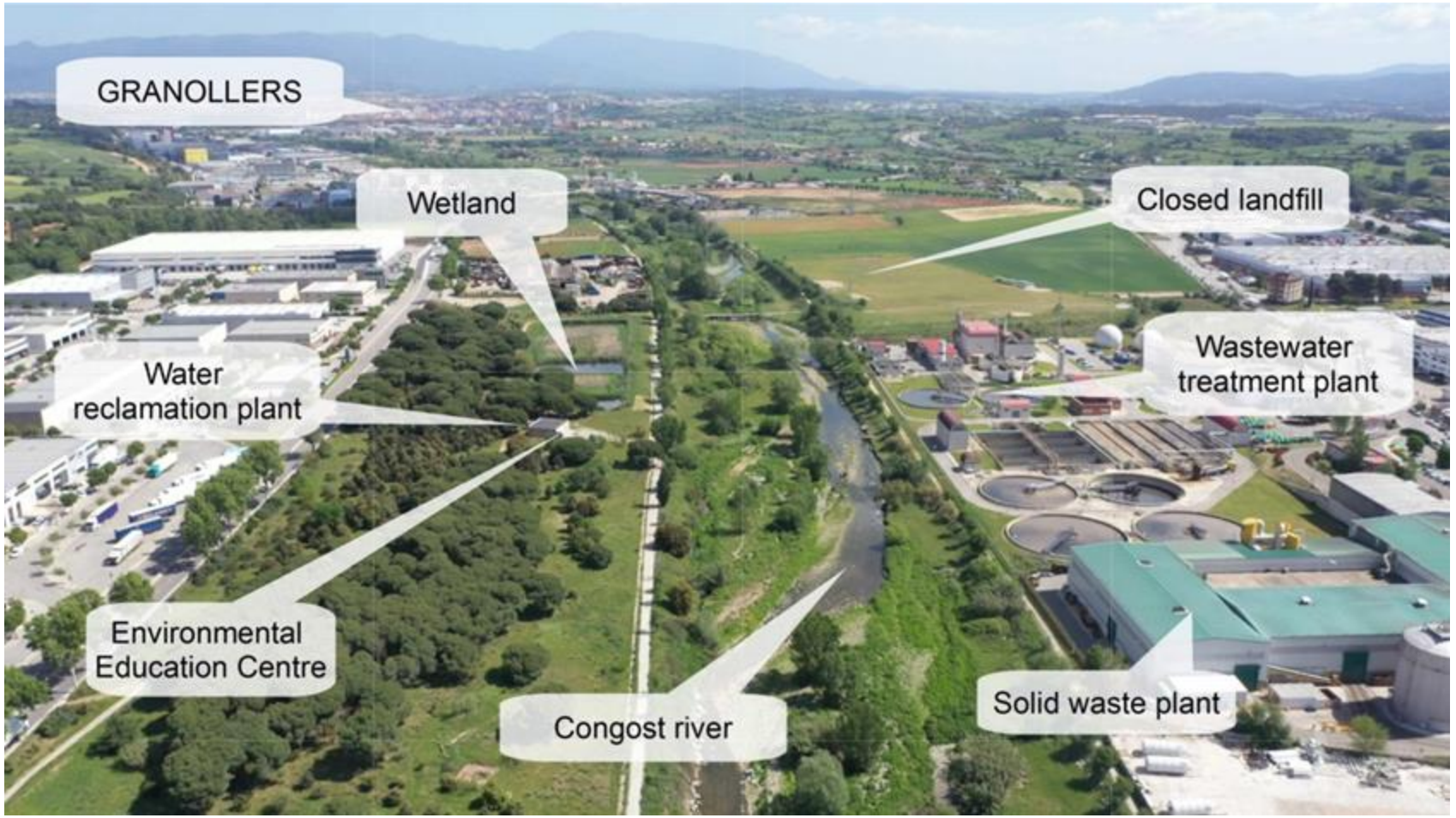
Tancat de
Milia wetland

Tancat de
l’Illa wetland



Environmental restoration in Can Cabanyes Park (Granollers) and creation of a wetland

Can Cabanyes Park
Granollers



The water reuse system in Granollers

Different restoration actions started in 2002

Wetland operation

2004

2010

Start operation

Reclamation plant constructed in 2008

Reclaimed water network with storage tanks

Reuse is started

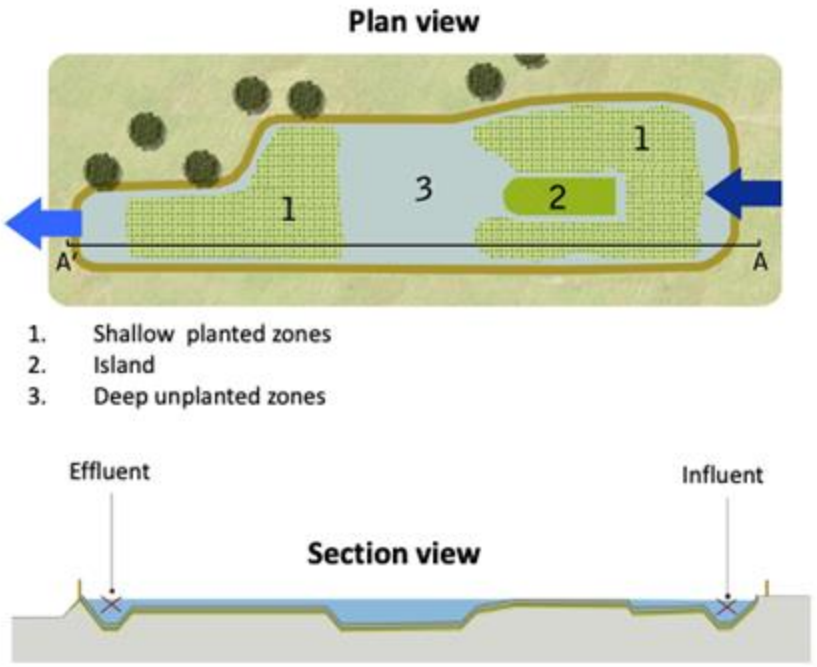
2010-15

2020

Truck connection

Water storage tanks provided with pipes and valves

The wetland in Granollers



2003

2006

The wetland in Granollers: a changing system

2015

2019

What are the properties and the benefits of the wetland of Can Cabanyes?

Properties

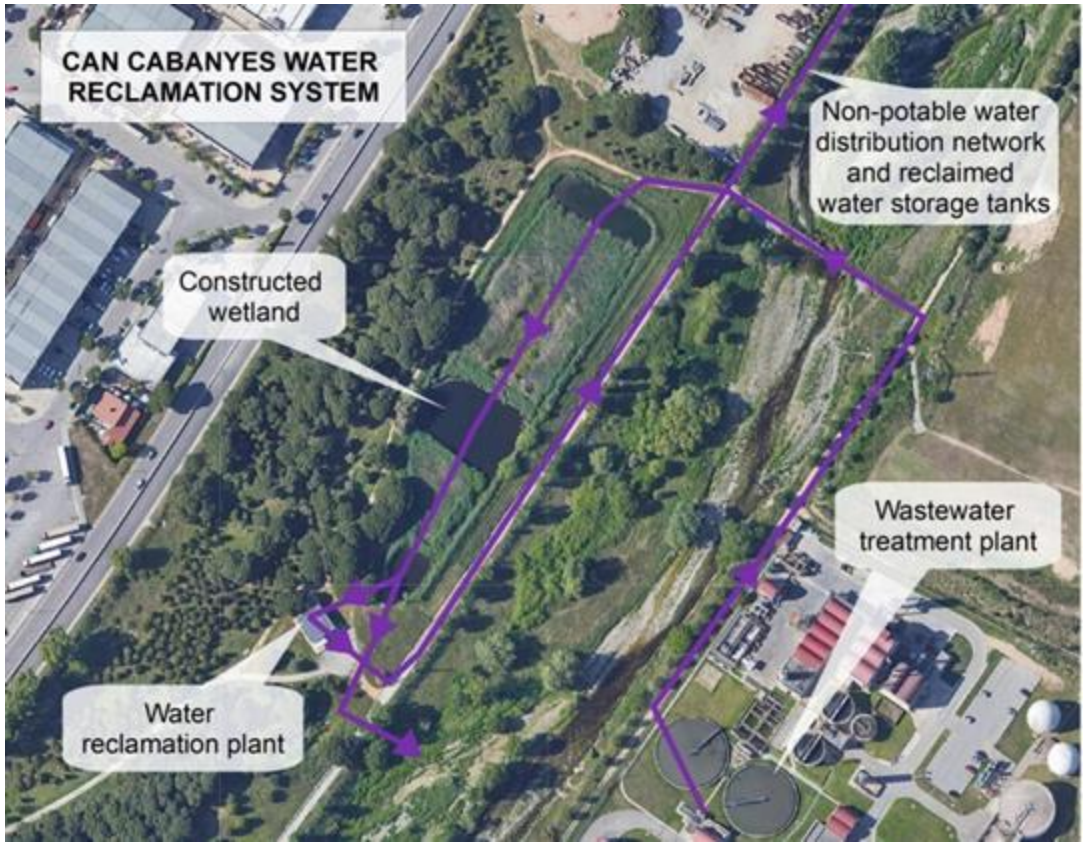
- Constructed in 2002-03, Investment 72 m€
- Secondary effluent
- Surface: 1 ha
- Flow: 300 m^3/d
- <2 logs CFU/100 mL (*E. coli*)
- <15 mg TSS/L, <60 mg COD/L, <10 mg N/L

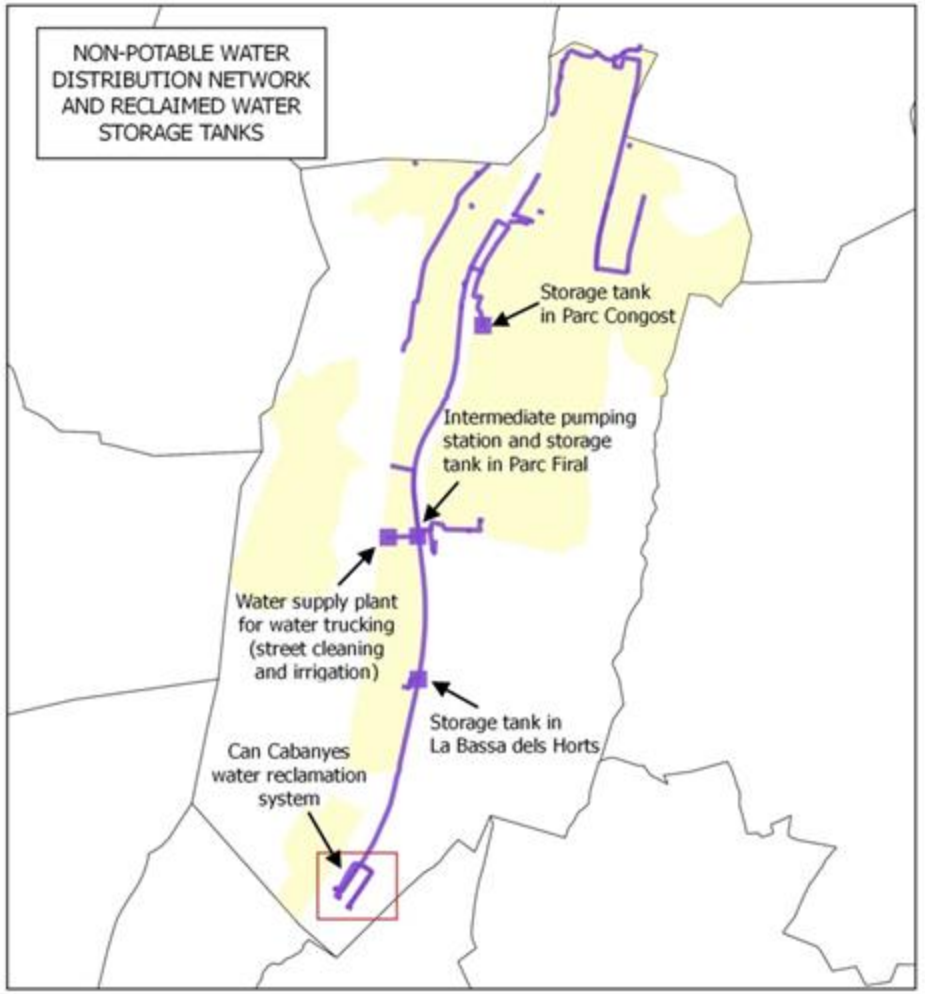
Benefits

- Environmental quality
- Increase in biodiversity
- Water quality improvement (microbiology)
- Increase in water resources
- Gardening, street cleaning

The mechanical reclamation treatment plant

The non-potable distribution network and the storage tanks





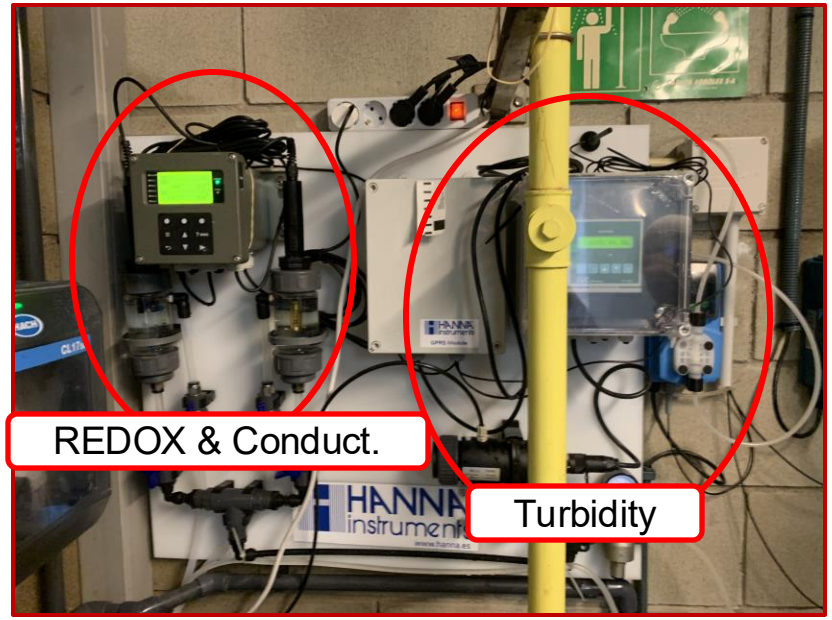
Water supply for trucks

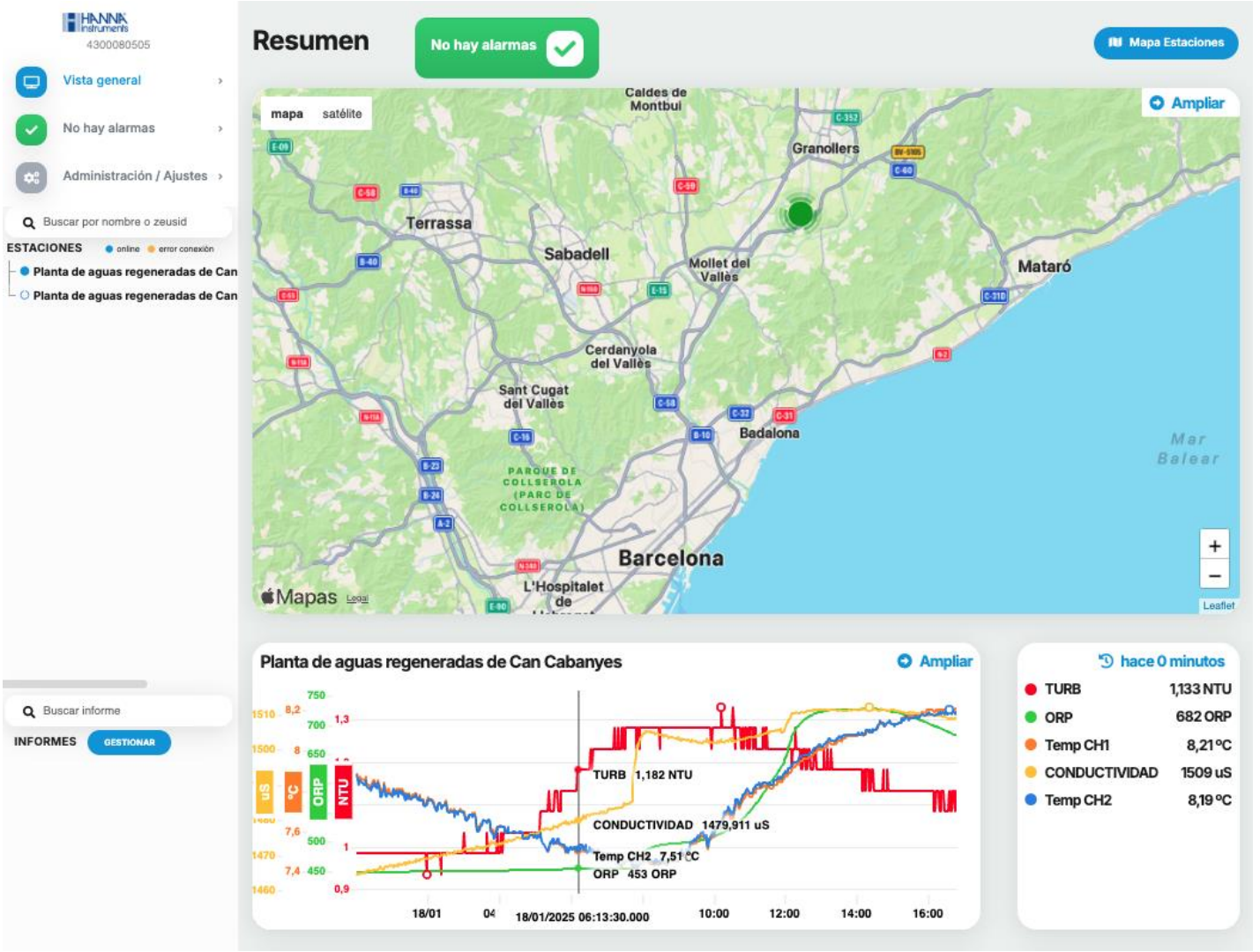
Interreg Sudoe

Co-funded by the European Union

TARGET

Online monitoring in collaboration with Granollers city council





Final Remarks

1. NBS projects in the context of water reuse have been very successful providing multiple benefits

2. Experience gained in the past 20 years has paved a solid background knowledge ensuring new projects and extrapolations to other countries/regions

3. NBS as a pre-step to reclamation plants seems to be a good strategy