



LIFE GREEN
ADAPT

LIFE GREEN ADAPT project: addressing resilience, climate change and infrastructure; project and antecedents

26th May 2022

With the contribution of the LIFE Programme of the European Union under agreement No. LIFE20 CCA/ES/001795



Project overview



LIFE GREEN
ADAPT

Green and
Nature-Based
Solutions for climate
change-resilient waste
infrastructure

Start date: 01/07/2021

End date: 31/12/2024

Total project budget: 3,038,828 €

EU financial contribution requested: 1,671,354 €



Work area: Resilience of infrastructure, including application of blue-green infrastructure and ecosystem-based approaches to adaptation

LIFE Climate Change Adaptation

Project overview – Climate problem

- Landfills can remain operational ≥ 140 years (aftercare and restoration periods) in a context of climate change

Extreme weather events:

- Droughts
- Floods
- Heatwaves
- Pressure on resource availability (water)



Adverse effects on landfills:

- Increase of leachates
- Fires
- Landslides



Climate problema - Fires



Delhi (India) – March-April 2022

@cnn

Extreme Temperature Heatwaves $T > 40^{\circ}\text{C}$



@rtve

Seseña (Spain) – May 2016

High Temperature Heatwave
(Tyre landfill)

Climate problem - Floods - Landslides



@rtve

Asunción (Paraguay) – July 2014
Extreme rainfall - Floods



@rtve

Zaldibar (Spain) – February 2020
Hazardous Waste landfill - Landslide

Project overview – Main objective

LIFE GREEN ADAPT aims to *increase the resilience of EU waste infrastructures* (focused on landfills as potential source of severe pollution episodes when impacted by extreme events) against Climate Change by demonstrating *blue-green infrastructures (BGI) and ecosystem-based approaches potential*.

LIFE GREEN ADAPT will demonstrate BGI ability to manage *flush flooding and run-off* caused by heavy rainfall and *prevent fires and explosions* caused by droughts and unusual heatwaves



Objectives



To demonstrate an innovative and widely replicable approach based on the use of BGI



To reduce the risk of landfill landslides associated with floods and extreme rainfall events (due to climate change)



To efficiently manage new green areas by reducing water consumption and storm water runoff



To store and treat the landfill leachate and the temporarily contaminated run-off water using treatment wetlands (TW)



To avoid the external treatment of polluted run-off waters



To improve the knowledge base for the development, assessment and monitoring of adaptation actions at the landfill level



To boost the development and implementation of climate change adaptation measures

Main outcomes



50 %

Increase landfill infrastructure life span



1,065 m³/year
of polluted water spill overs avoided



21,300 m³/year
of freshwater consumption savings



116,702 tCO₂eq
saved per year



21,300 m³/year
of water available to natural courses
to improve resilience to flooding



21,300 m³/year
of water available to decrease
landfill temperature and improve
resilience to spontaneous fires

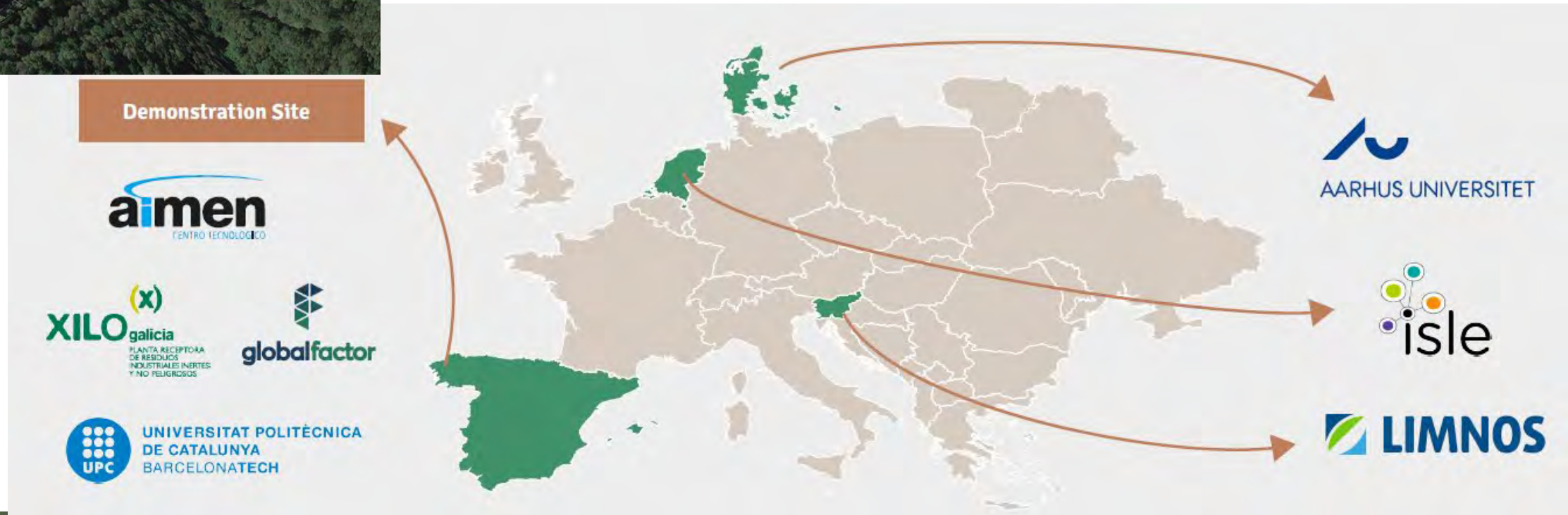


27,507 tonnes
of waste recovered per year



200 - 500K € / year
saved in leachates external
treatment costs

Demo case - Consortium



Project overview – Demo case

Landfill infrastructures need *to anticipate, assess the vulnerability and risks to adapt to climate variations* and be *resilient* to any possible hazards or disruptions in line with the EU Strategy on Adaptation to Climate Change to make Europe more climate-resilient



Rainfall: 1,000
mm/year:

- 37% Dec–Feb
- 34% Sep–Nov
- 27% Mar–May



Summer (Jun –Sep):

- Hot and dry
- NW winds

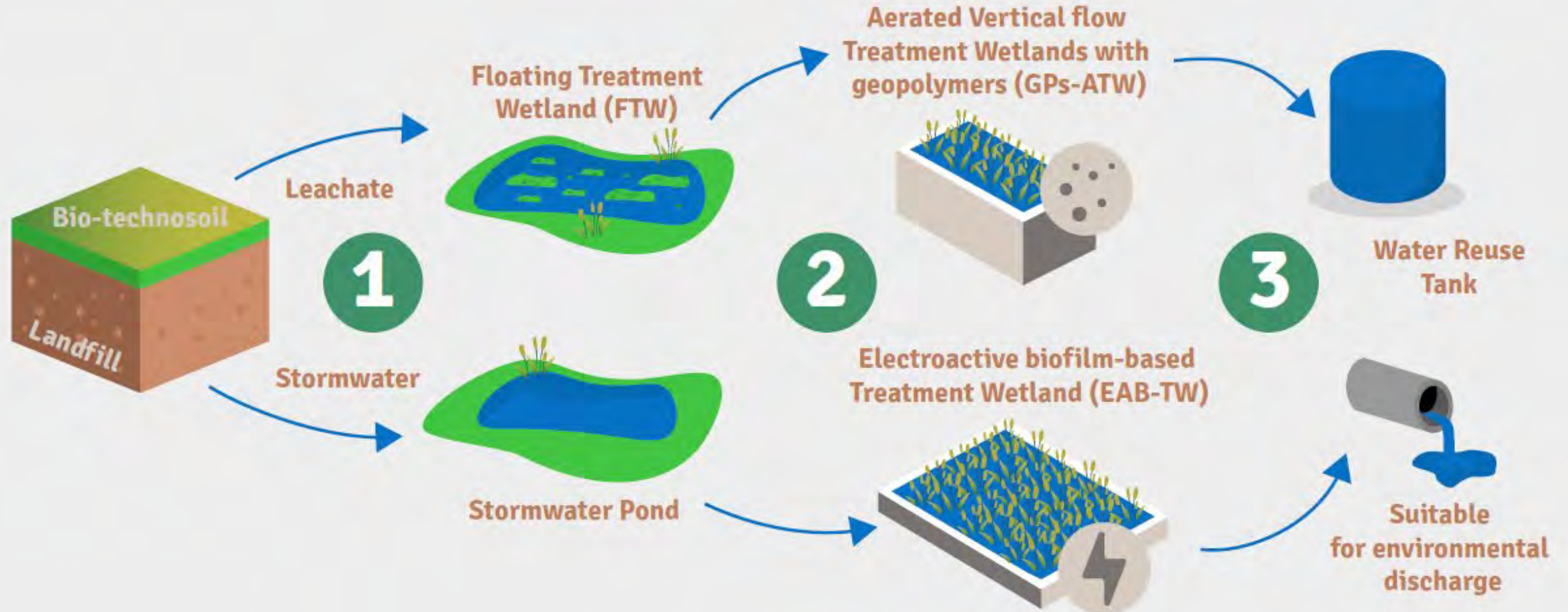
January: T ~10 °C

August: T ~20 °C



XILOGA Landfill: Operational since 1999
24,700 m³ of waste in cell 1 (closed March 2010)
58,000 m³ of waste in cell 2 (Restoration)

Concept (Blue & Green infrastructures)



Green infrastructures - Biotechnosoil



Biotechnosoil:

- Mixture of organic and mineral waste (Maturation process)
- Similar properties of a soil

Green infrastructures - Biotechnosoil

BEFORE.....



Green infrastructures - Biotechnosoil

During the process ...



Green infrastructures - Biotechnosoil



Green infrastructures - Biotechnosoil



Thanks for your attention!

