



# EN ADAPT

ed Solutions for climate  
aste infrastructure

## 7 Partners 4 Countries

A team of 7 international and multidisciplinary partners will work together to ensure the success of the project over 42 months (July 2021 – December 2024). The partners are based in Spain, Denmark, the Netherlands and Slovenia.



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# LIFE GREEN

Green and Nature-Based  
change- resilient w

# Concept

Waste infrastructure is vulnerable to the impacts of climate change and may contribute to severe pollution events if impacted by extreme weather. Even after closure, a landfill continues to produce leachate for up to 25 years; the longevity of the infrastructure therefore poses a higher risk of it being affected by climate change.

A number of climate impacts threaten waste infrastructure including:

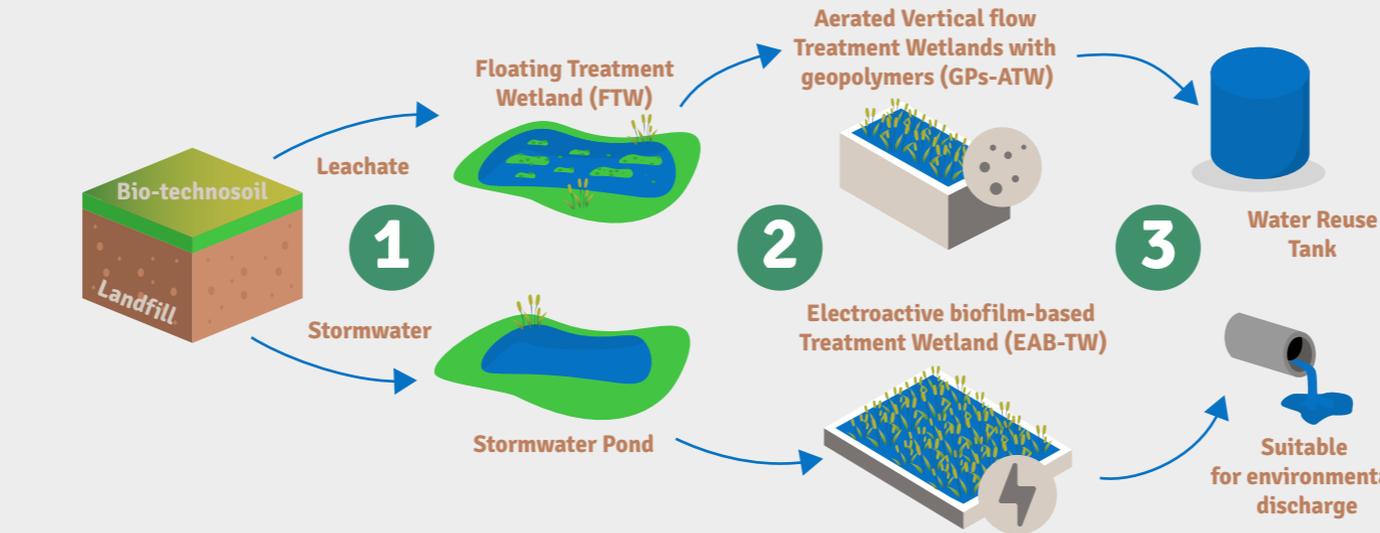
1. Increased risk of flooding affecting soil stabilization and increasing rates of waste decomposition
2. Reduced water availability for wet processes and site management (particularly during summer)
3. Increased risk of fires and explosions caused by drought periods and unusual heatwaves

LIFE GREEN ADAPT aims to increase the resilience of EU waste infrastructures against climate change. This will be achieved by demonstrating the potential of blue-green infrastructures (BGI) and ecosystem-based approaches to manage flush flooding and run-off caused by heavy rainfall and prevent fires and explosions caused by droughts and unusual heatwaves.



# LIFE GREEN ADAPT Process

An industrial demonstration site in As Somozas (Galicia, Spain) will be used to validate the blue-green infrastructure (BGI) and ecosystem-based approaches potential and verify the performance under a real-scale landfill scenario. The following process has been developed for the LIFE GREEN ADAPT project:



1. The development of novel bio-technosols made of different wastes from the landfill to stabilise, recover and increase the soil quality. This will prevent landslides caused by extreme rain and floods
2. The engineering and construction of a set of innovative treatment wetlands for landfill polluted leachate and highly contaminated runoff water:
  - Leachate runoff to pass through Floating Treatment Wetlands (FTW) and Aerated Vertical flow Treatment Wetlands with geopolymers developed from metakaolin waste (GPs-ATW)
  - Stormwater runoff to pass through a stormwater pond and treated via Electroactive biofilm-based Treatment Wetland (EAB-TW)
3. The treated wastewater will be reused on site to mitigate the effects of high temperatures, preventing fires or explosions and contributing to water availability on the landfill site. Treated wastewater will also be suitable for environmental discharge



# Outcomes

<p><b>50 %</b> Increase landfill infrastructure life span</p>	<p><b>1,065 m<sup>3</sup>/year</b> of polluted water spill overs avoided</p>
<p><b>21,300 m<sup>3</sup>/year</b> of water available to natural courses to improve resilience to flooding</p>	<p><b>21,300 m<sup>3</sup>/year</b> of water available to decrease landfill temperature and improve resilience to spontaneous fires</p>
<p><b>21,300 m<sup>3</sup>/year</b> of freshwater consumption savings</p>	<p><b>116,702 tCO<sub>2</sub>eq</b> saved per year</p>
<p><b>27,507 tonnes</b> of waste recovered per year</p>	<p><b>200 - 500K € / year</b> saved in leachates external treatment costs</p>

## LIFE GREEN ADAPT also has the following benefits:

- **Analysis and assessment tools:** Multi-level governance analysis and specific vulnerability assessment tools for developing and adapting resilient waste infrastructures, engaging stakeholders and presenting LIFE GREEN ADAPT benefits
- **Transferability:** A detailed exploitation strategy and commercialisation roadmap, transferability studies and opportunities analysis to ensure replicability of the project for the waste industry and other infrastructure-related sectors contributing to the circular economy
- **Knowledge Sharing:** Creation of a network of contacts to foster collaboration and knowledge sharing, dissemination of the results to the general public to raise awareness and promote the benefits and advantages of LIFE GREEN ADAPT solutions