PROMISCES

ESTABLISHING A ZERO-POLLUTION CIRCULAR ECONOMY: AN OVERVIEW OF THE H2020 PROJECT PROMISCES:

Preventing **R**ecalcitrant **O**rganic **M**obile **I**ndustrial chemical**S** for **C**ircular **E**conomy in the **S**oil-sediment-water system

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Julie Lions, BRGM, France

Miehe, U., Zhiteneva, V., Togola, A., Groot, H., Bakker, M., van Hullebusch, E. D., Dulio, V., Zjip, M., Heine, N., Track, T., Sperlich, A., Zessner, M., Bosch, C., Fatone, F., Colombano, S., Fernandez-Rojo, L., and Negrel, P.

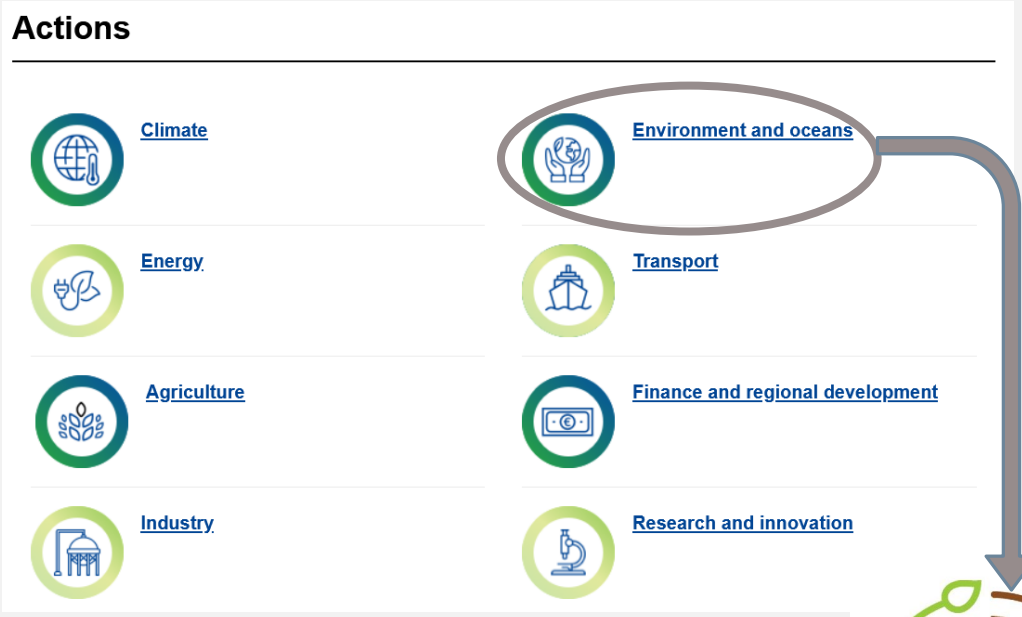
The PROMISCES project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No 101036449

H2020 – GREEN DEAL Goals

Climate change and environmental degradation are an existential threat to Europe and the world.

To overcome these challenges, the European Green Deal will transform the EU into a modern, resource-efficient and competitive economy, ensuring:

- no net emissions of greenhouse gases by 2050
- economic growth decoupled from resource use
- no person and no place left behind



Among priorities, European Green Deal include:

- **protecting our biodiversity and ecosystems**
- **reducing air, water and soil pollution**
- **moving towards a circular economy**
- **improving waste management**

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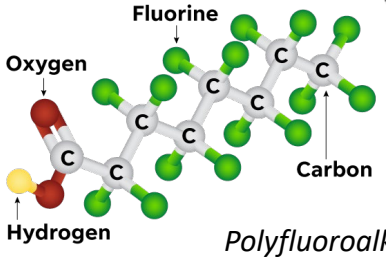
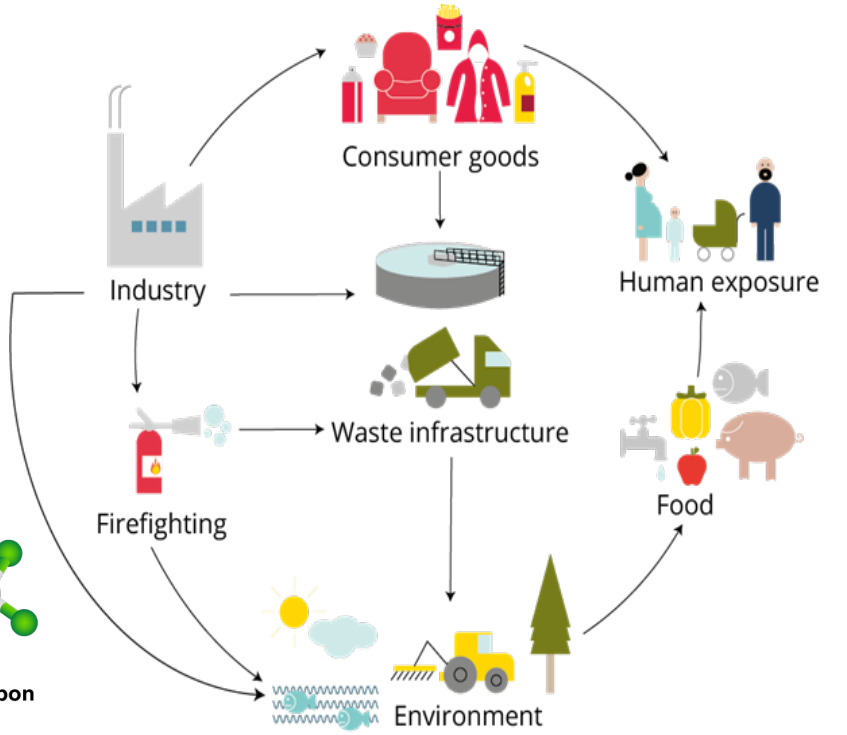
Soil-sediment-water system exposure to industrial PM(T) pollutants

Sustainable and safe circular economy

source: *Géosciences 25 : l'anthropocène, quand l'Homme imprime sa marque (BRGM, 2021)*



Polyfluoroalkyl substances



Typical PFAS exposure pathways

***source:** European Environment Agency EEA)*

Sustainable and safe circular economy

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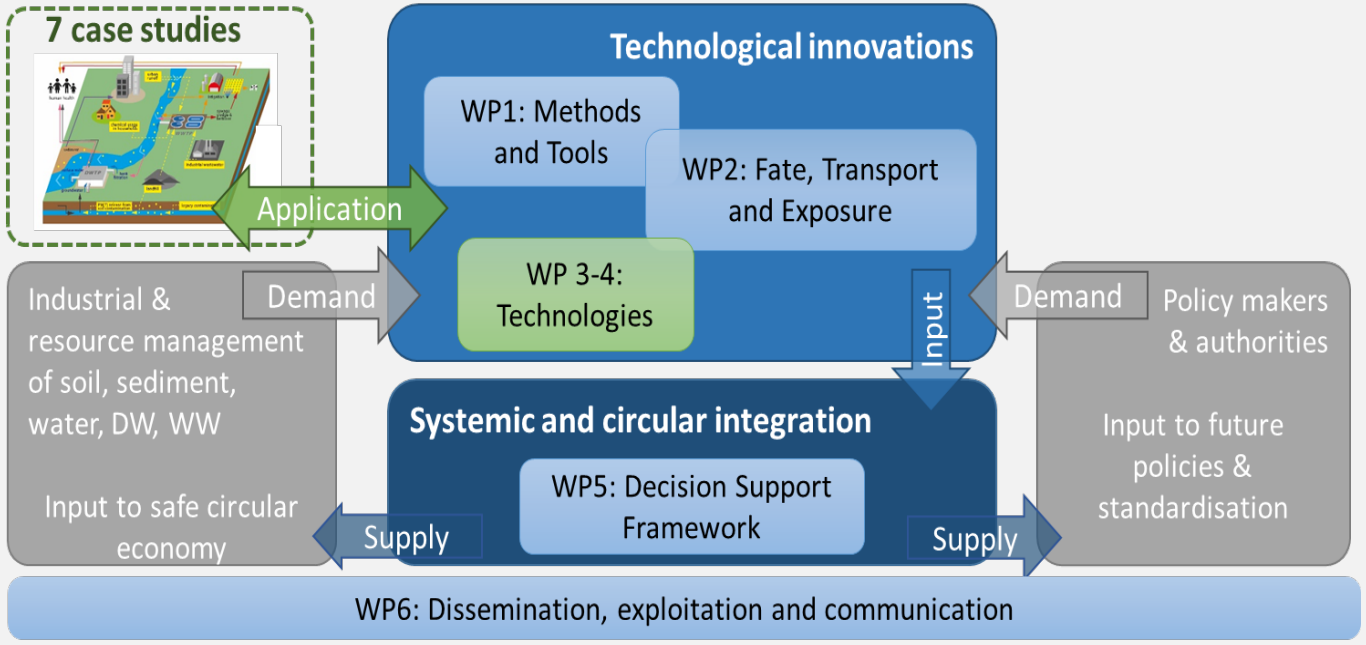
Project objectives

Aims: Identify how **very Persistent, very Mobile and potentially Toxic substances** (PM(T)/vPvM) in the **soil-sediment-water system** (e.g. PFAS) prevent the deployment of the circular economy and which strategies help overcome key bottlenecks.

By: i) Integrating PROMISCES results into a **decision support framework** which considers resource recovery and water reuse and supports chemical management decisions

ii) translating PROMISCES results into **guidance** for efficient and feasible management of PM substances and **recommendations for the implementation of relevant EU policy strategies and directives.**

For: Stakeholders (chemical industry, society, waste and resource managers, regulatory bodies, risk managers, water managers, environmental authorities)



PROMISCES develops an Integrative and trans-disciplinary approach

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Circular economy routes

Contribute to **safe and sustainable Circular Economy**

5 circular economy routes and chemical emissions pathways from the soil-sediment-water systems addressed :

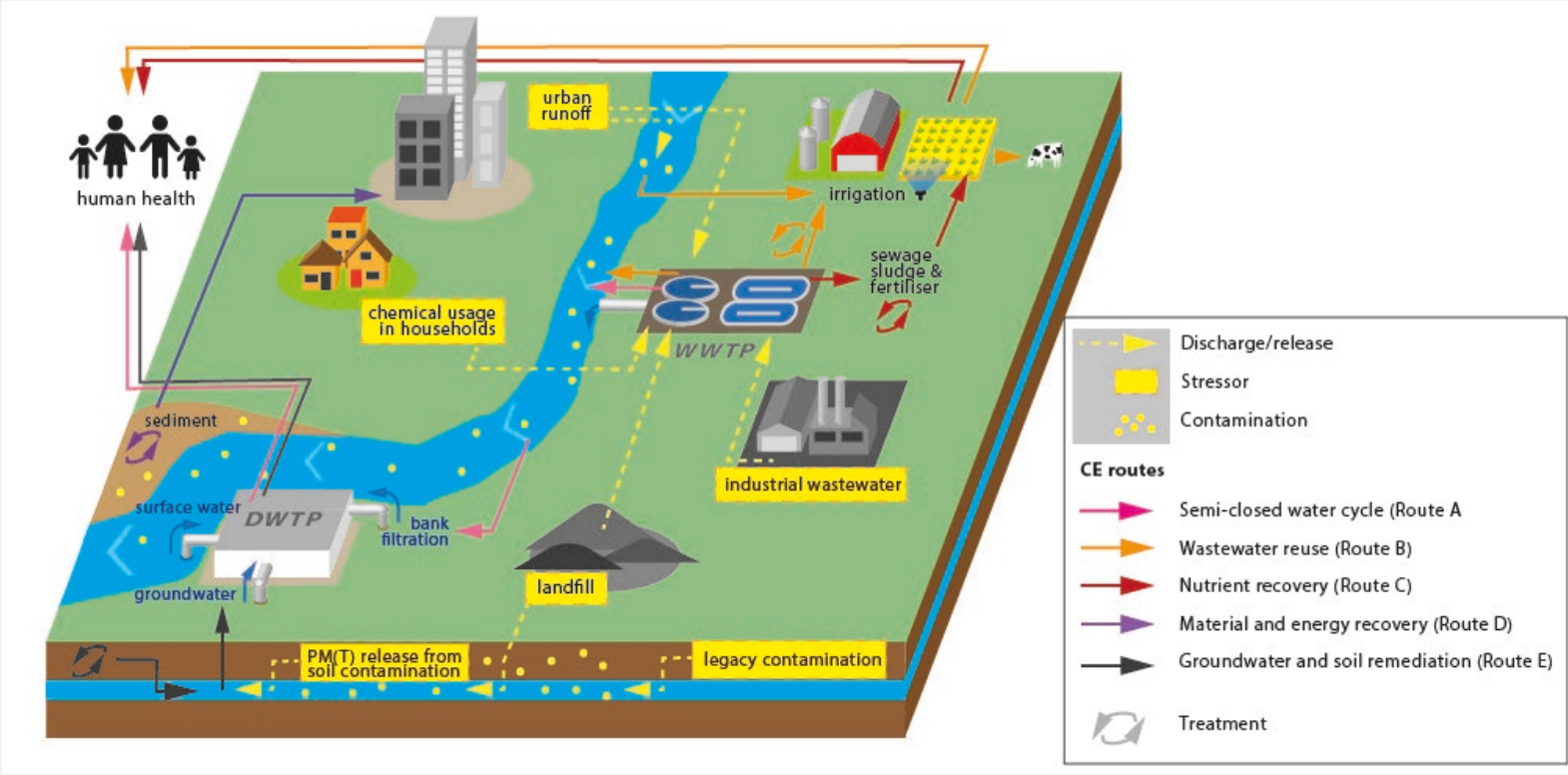
(i) semi-closed water cycles for drinking water supply at urban and catchment scale;

(ii) wastewater reuse for irrigation in agriculture;

(iii) nutrient recovery from sewage sludge;

(iv) material recovery from dredged sediment;

(v) groundwater and land remediation for safe reuse in urban areas.



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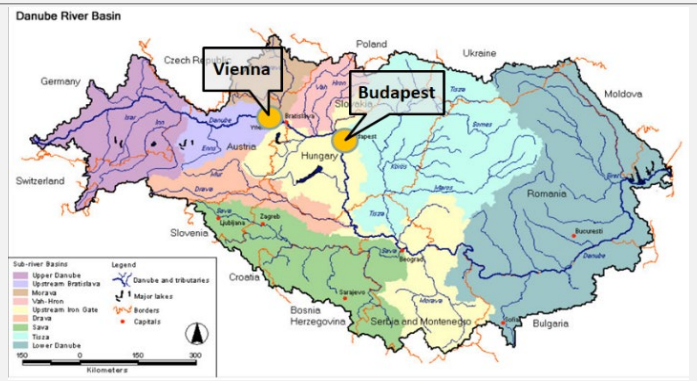
7 case studies

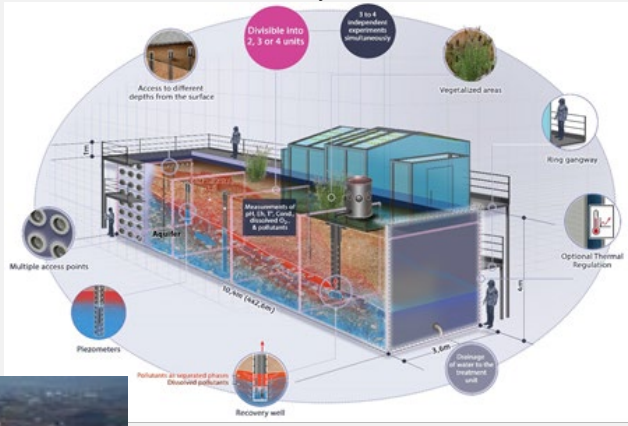
Urban water and drinking water
Urban area Berlin



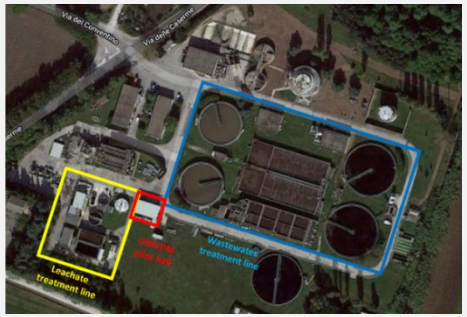
Large water catchment
Danube water basin

Dredged sediment
Ancona, Italy

AFFF remediation in soil/groundwater
Plateforme Prime, France, Orléans



WW reuse
Besos Tordera, Spain



Landfill leachate treatment
Bulgaria & Ancona, Italy

AFFF remediation in groundwater
Besos Tordera, Spain

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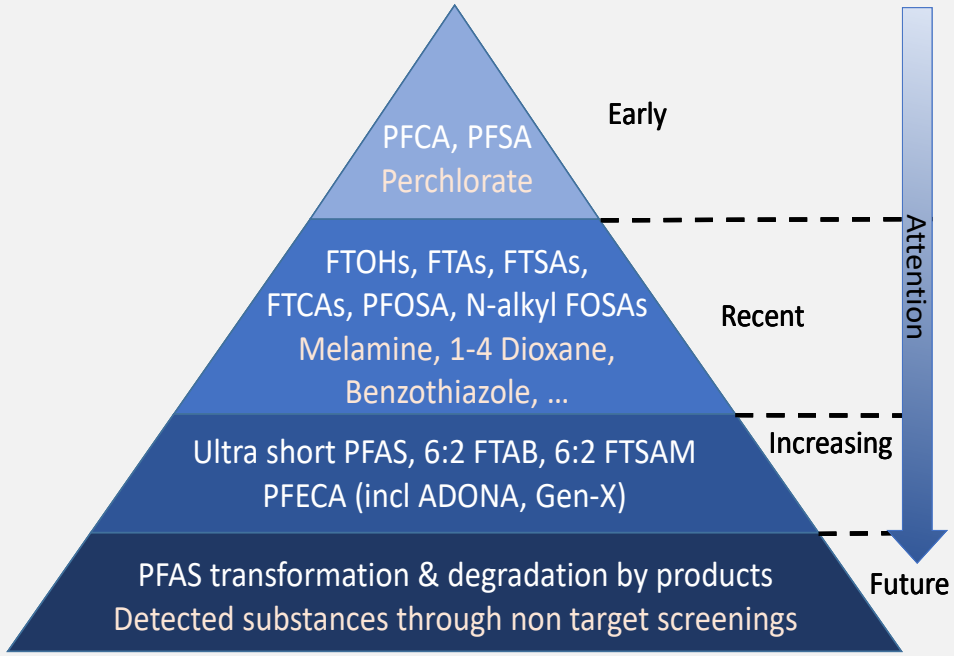
Expected key results

- ✓ **New analytical methods and toxicological tools** to detect and quantify PFAS and iPM(T) in water and complex matrices (soil, sediment, sewage sludge…) and monitoring strategy frameworks
- ✓ Toolboxes to assess the **fate & transport modelling in soil, surface and groundwater of PFAS/iPM(T)** at different scale and a guidance
- ✓ **Improve toxicity assessments for single substances, groups of PFAS and other PM(T)s** and update derivation of health-related indicator values
- ✓ New approaches for **environmental exposure and risk assessment for five different circular economy routes**
- ✓ Cost-efficient and sustainable technologies for **remediation of PFAS in soil and groundwater**
- ✓ Innovative technologies for PM(T) free **material and nutrient recovery**
- ✓ Innovative technologies for the **treatment of drinking water sources, wastewater and landfill leachate** contaminated with PFAS & PM(T)s
- ✓ Deliver a multi-stakeholder **decision support framework**



iPM(T)s/PFAS considered in PROMISCES

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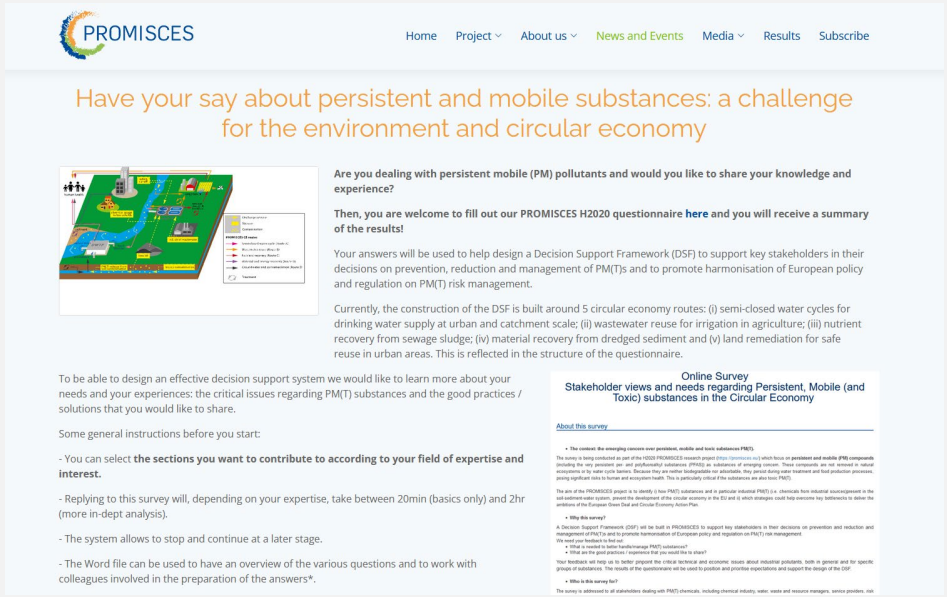
Upcoming events

- **Online Survey** - Stakeholder views and needs regarding Persistent, Mobile (and Toxic) substances in the Circular Economy (**until 20 June 2022**)
  - Link available on www.promisces.eu
  - Survey : https://ec.europa.eu/eusurvey/runner/PROMISCESSurvey



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Thank you for your attention

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https://www.linkedin.com/company/promisces/
www.promisces.eu
Julie Lions : j.lions@brgm.fr

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