PROMISCES

The H2020 project PROMISCES to help establish a zero PFAS pollution circular economy?

Le projet H2020 PROMISCES : pour une économie circulaire exempte de PFAS ?

PROMISCES: PREVENTING RECALCITRANT ORGANIC MOBILE INDUSTRIAL CHEMICALS FOR CIRCULAR ECONOMY IN THE SOIL-SEDIMENT-WATER SYSTEM

JULIE LIONS & CORINNE MERLY, BRGM (FRANCE); PIERRE BOUCARD, INERIS (FRANCE)

CONGRÈS INTERNATIONAL – GESTION DES POLLUTIONS ET DES RISQUES SANITAIRES - 20 OCTOBRE 2022 PARIS

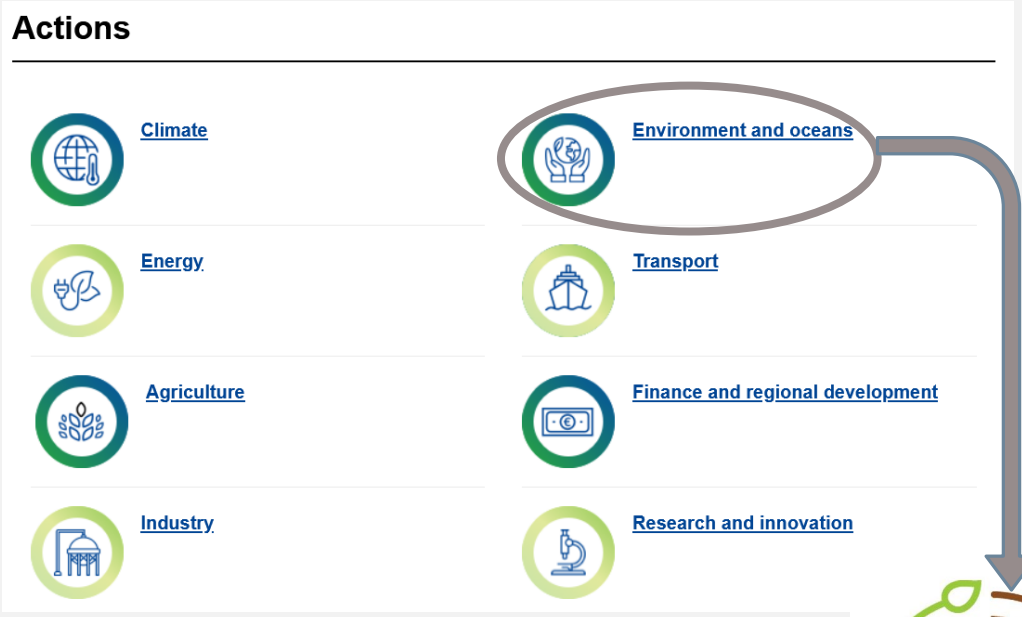
The PROMISCES project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No 101036449

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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PROMISCES - ID Card

Title: **Preventing Recalcitrant Organic Mobile Industrial chemicalS for Circular Economy in the soil-sediment-water System**

Coordinator: Philippe Negrel (BRGM) & Julie Lions (BRGM)
Beneficiaries: 27 partners
EU contribution: 12 M€
Duration: 01.11.2021 – 30.04.2025

Call: **H2020-LC-GD-2020-3**

Topic: **LC-GD-8-1-2020** - Innovative, systemic zero-pollution solutions to protect health, environment, and natural resources from persistent and mobile chemicals

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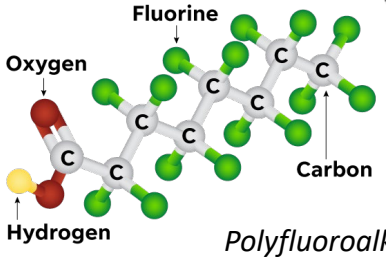
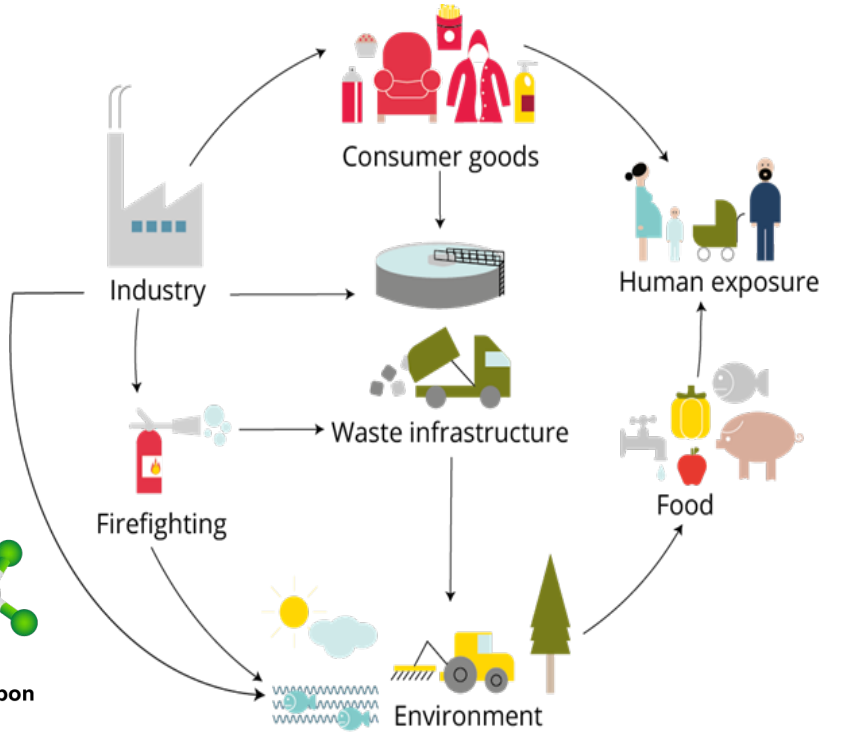
Soil-sediment-water system exposure to industrial PM(T) pollutants

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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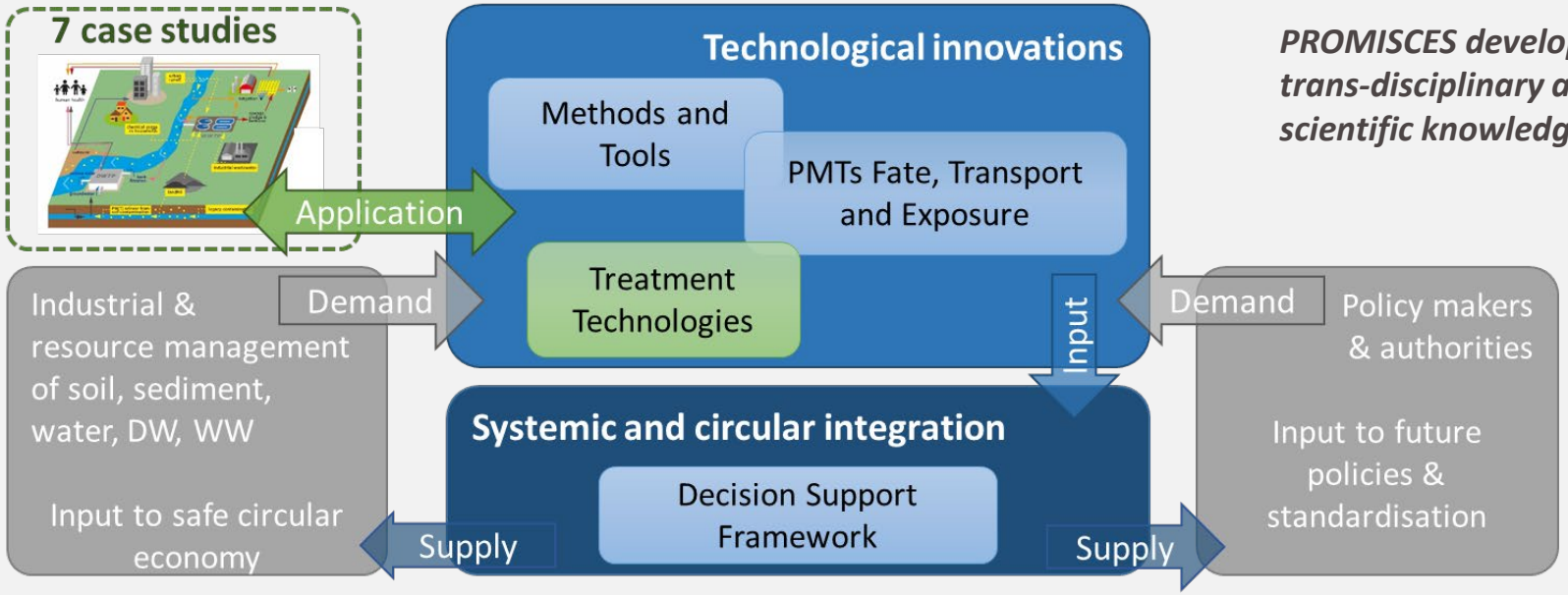
Project objective

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.



PROMISCES develops an Integrative and trans-disciplinary approach to transfer scientific knowledge to societal use

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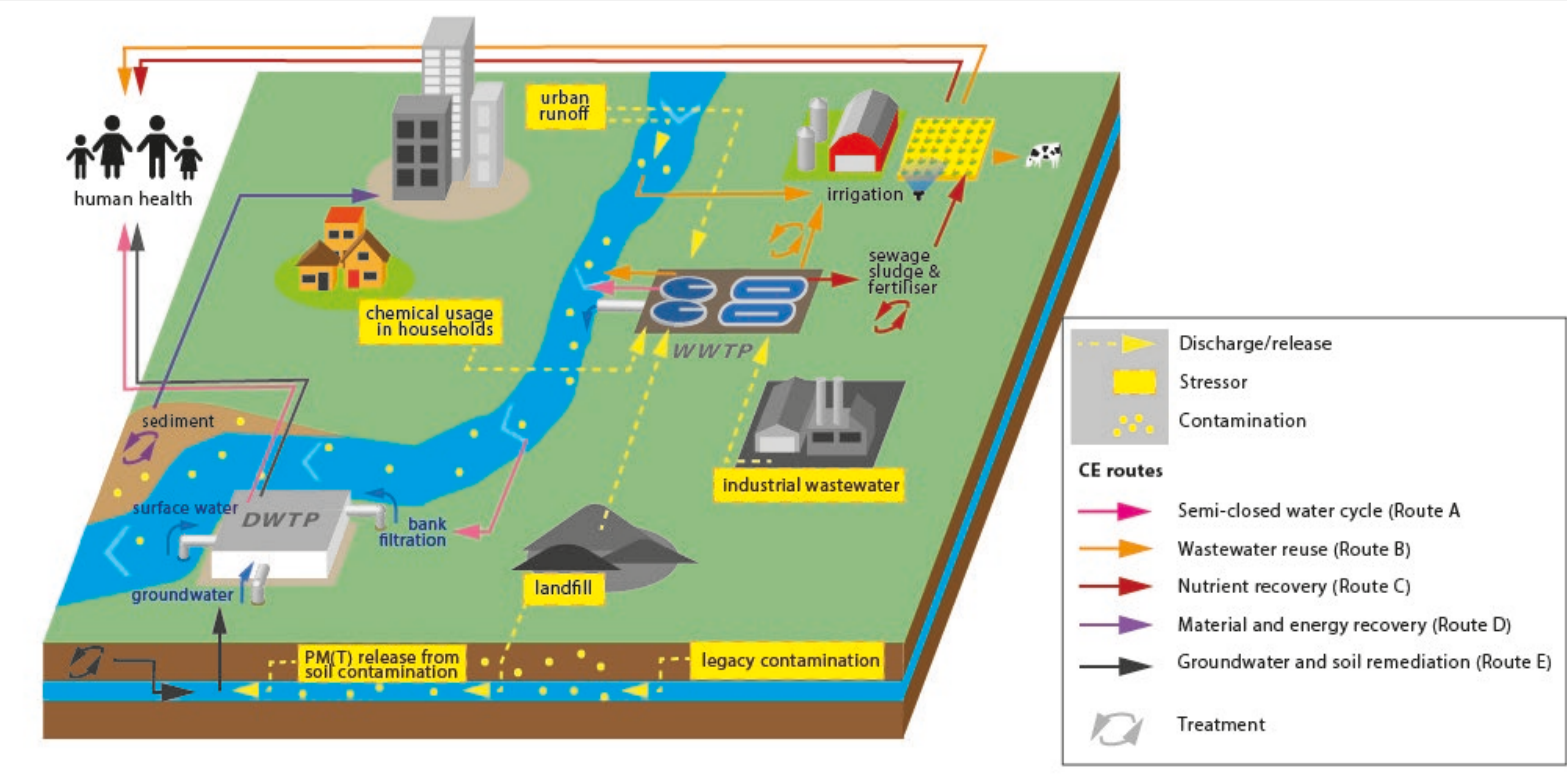
Circular economy routes

Contribute to **safe and sustainable Circular Economy**

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

A. semi-closed water cycles for drinking water supply at urban and catchment scale
B. wastewater reuse for irrigation in agriculture
C. nutrient recovery from sewage sludge
D. material recovery from dredged sediment
E. groundwater and land remediation for safe reuse in urban areas



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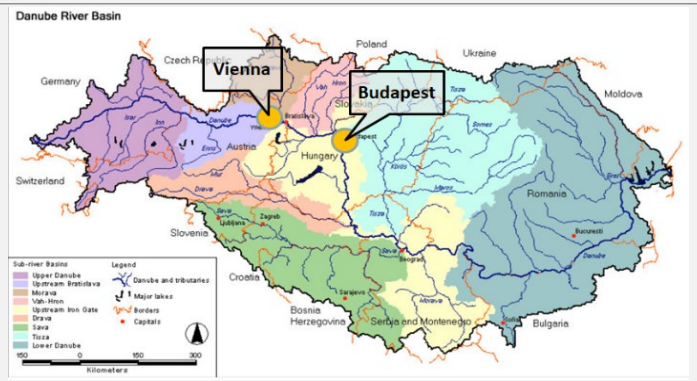
7 case studies

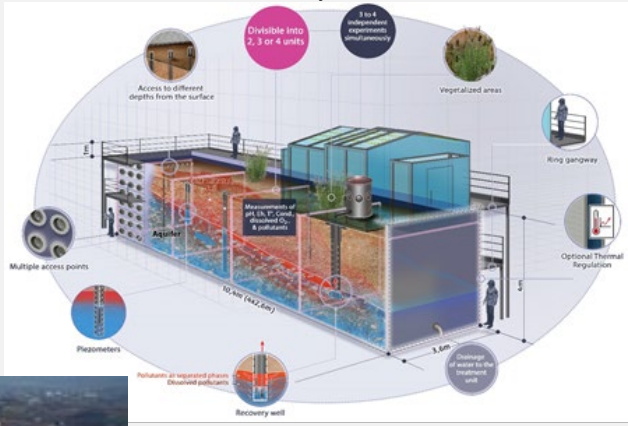
Urban water and drinking water
Urban area Berlin



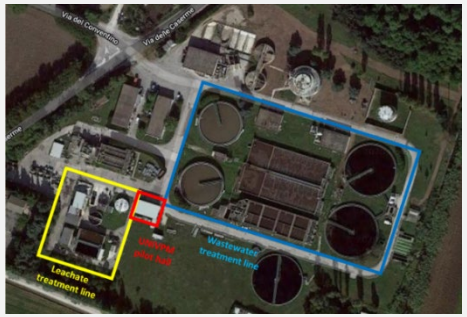
Large water catchment
Danube water basin

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, drinking water sources, wastewater and landfill leachate**
- ✓Deliver a multi-stakeholder **decision support framework (DSF)**

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DSF Design

DECISION SUPPORT FRAMEWORK

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Decision Support Framework

A DSF – What for?

- Difficulty to take an **holistic approach** regarding PMT using circular approach.
- Gathering all necessary data / tool **along the decision-making process**, to integrate **social, environmental and economic** aspects

A DSF – Targeted aims

- Mapping of the tools, the problems, the data, the knowledge, the SKH for the various **circular routes**.
- Provide tools to enhance the decision making along the circular routes – including synergies.
- Encourage SKH interaction, knowledge / understanding sharing, taking actions.

But overall, a DSF **meanful and useful for stakeholders**

=> June-July 2022: **PROMISCES on line-survey** to identify SKH demands & to collect SKH experiences

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SUR PC OU SMARTPHONE : **HTTPS://APP.KLAXOON.COM/JOIN/R2YSFSS**

Presentation of on-line Survey & interactive session

SUMMARY OF THE RESULTS & INTERACTIVE SESSION

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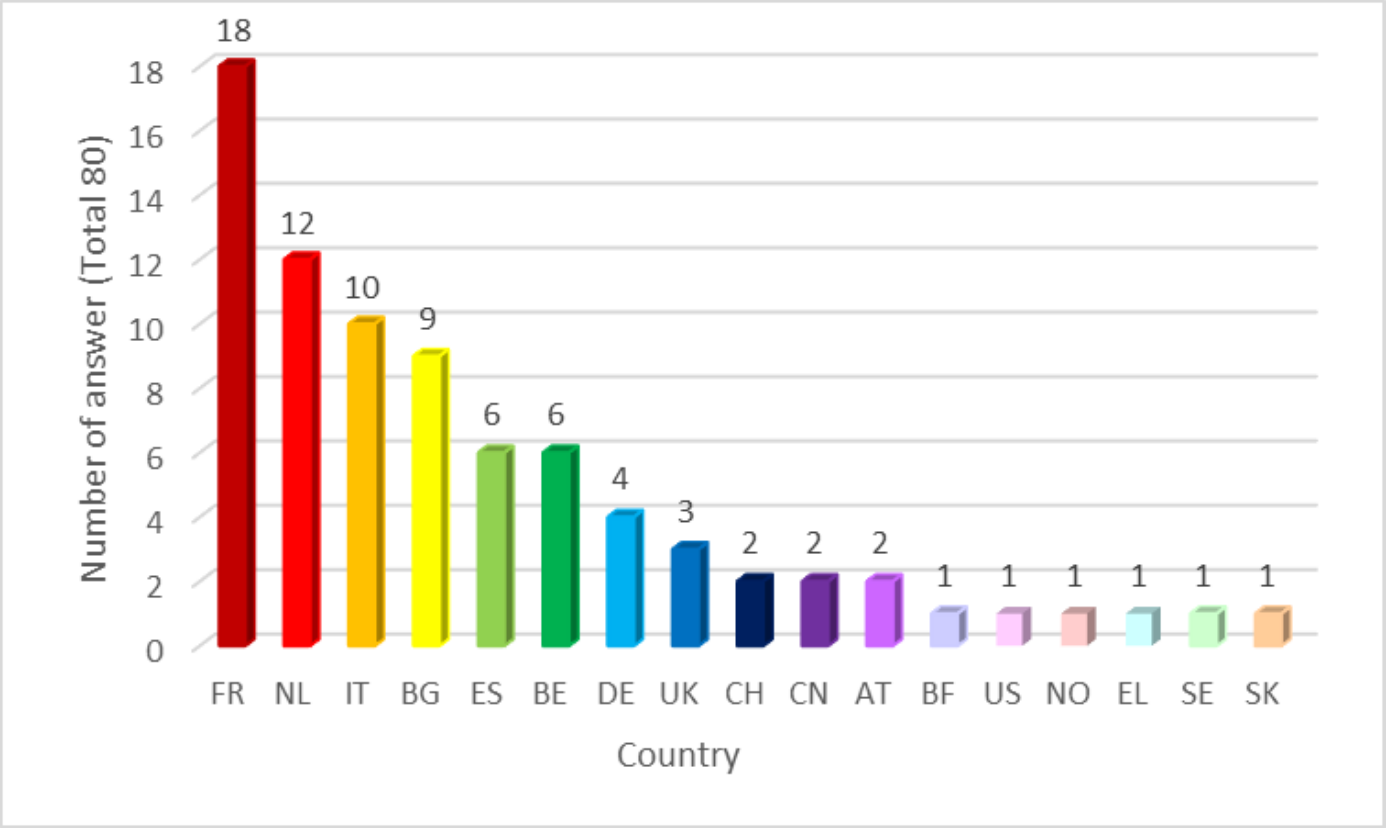
Who are the stakeholders? (respondants)



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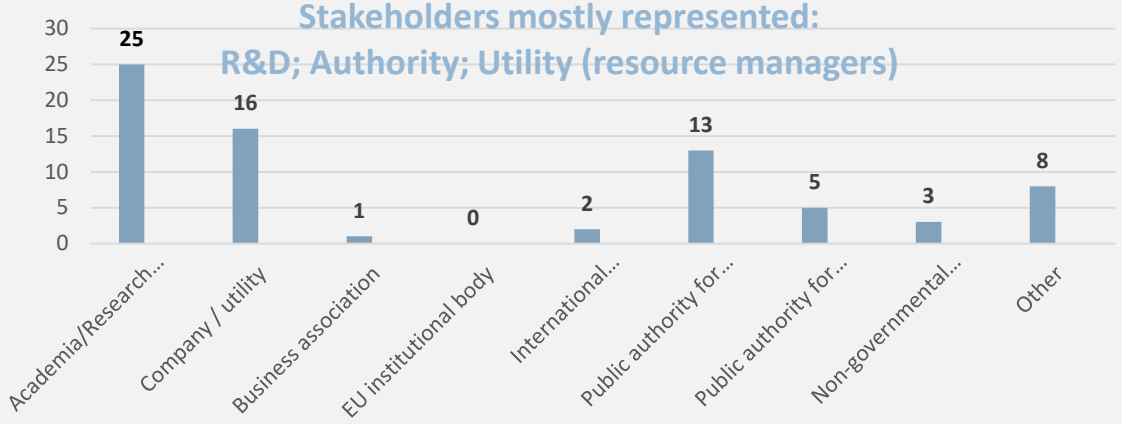
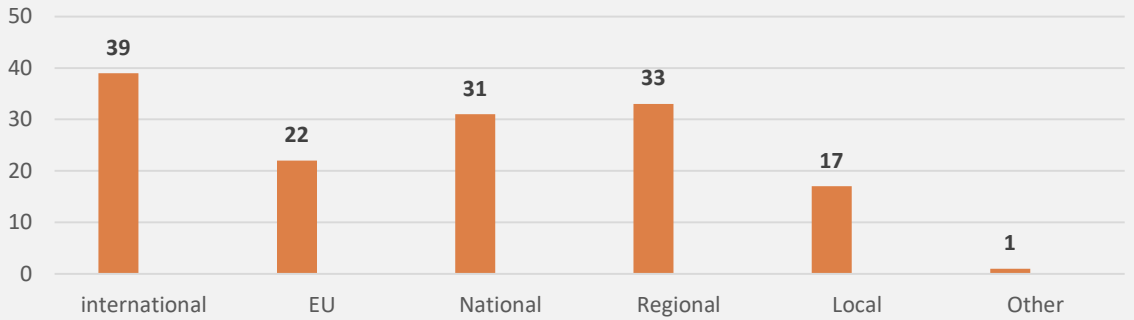
Survey overview of stakeholders

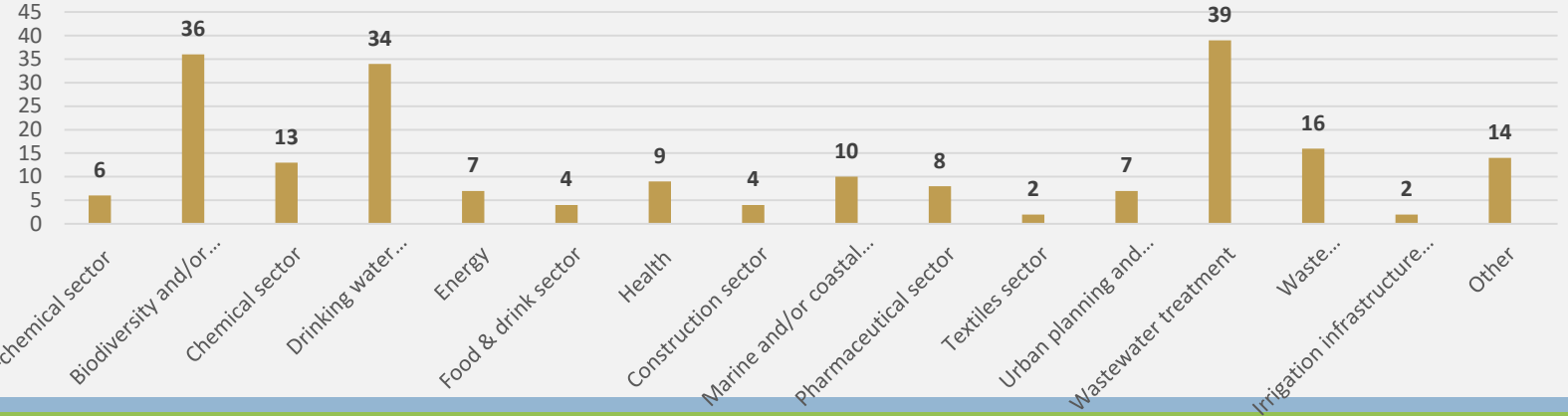
Stakeholders mostly represented:
R&D; Authority; Utility (resource managers)



Working level fairly balanced among different scale



Main sectors of activities:
Biodiversity / Environment; Waste water treatment; Drinking water treatment



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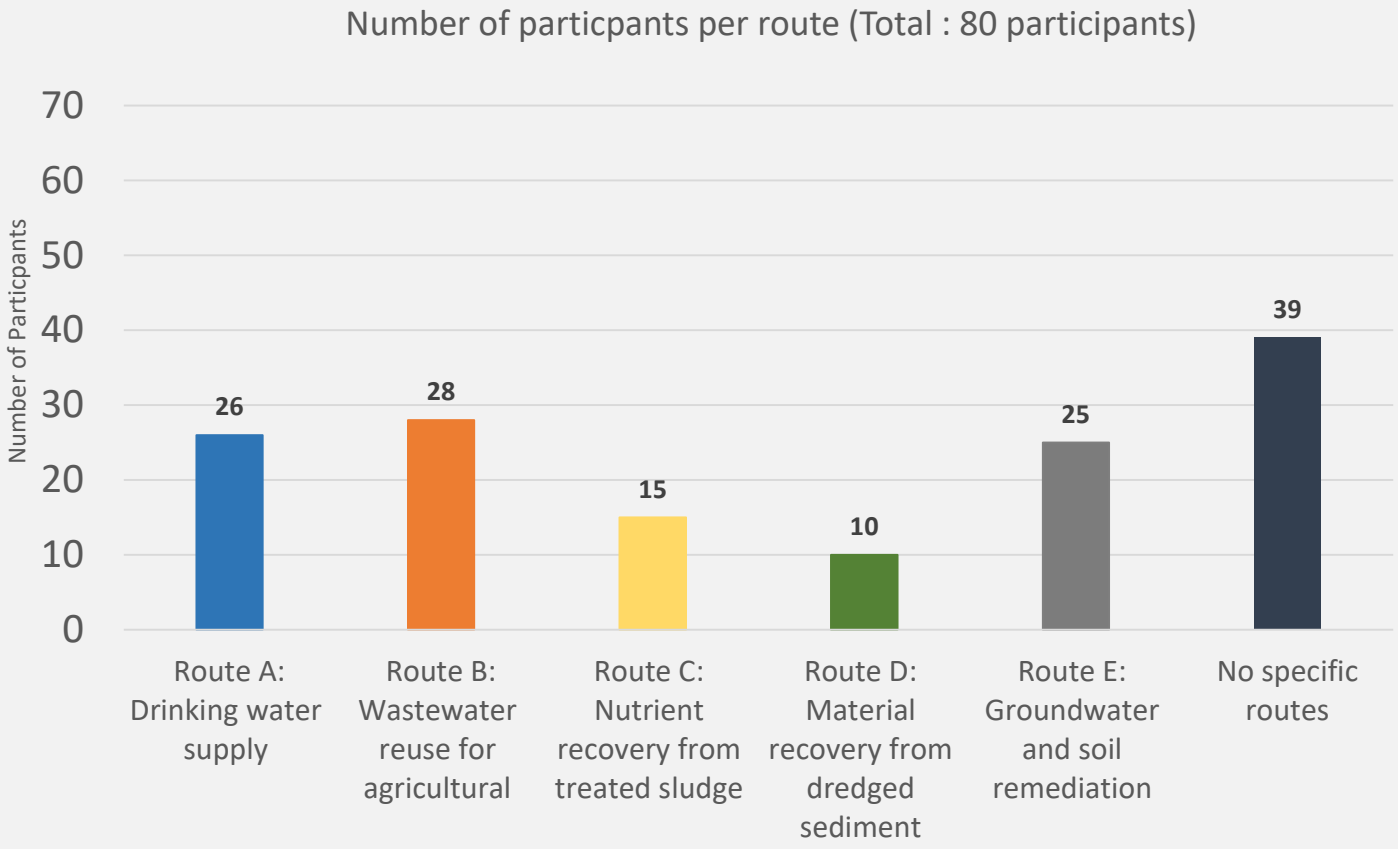
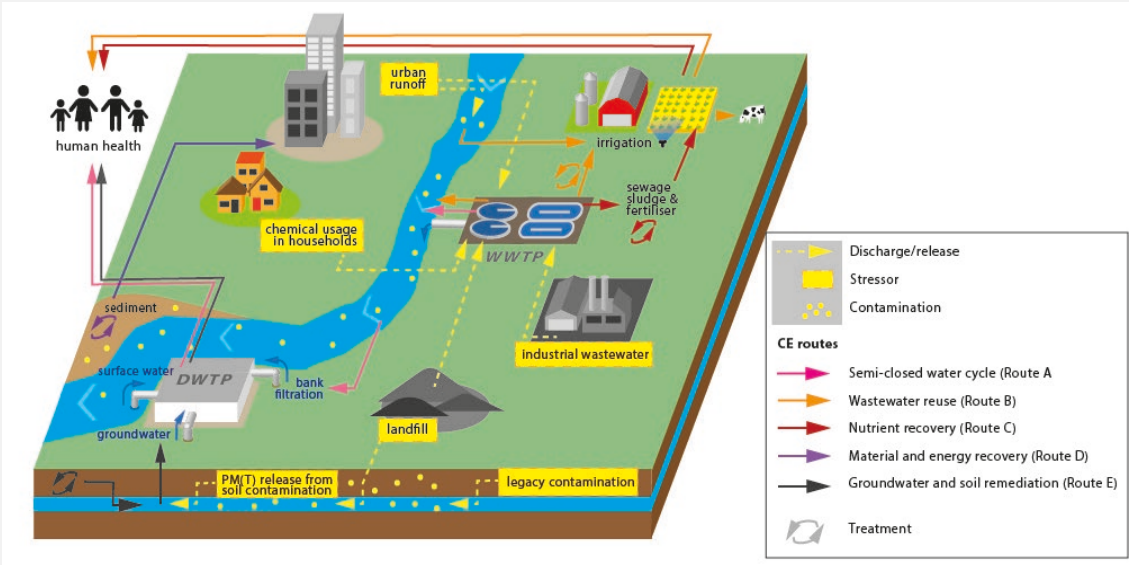
Circular economy route(s) of interests





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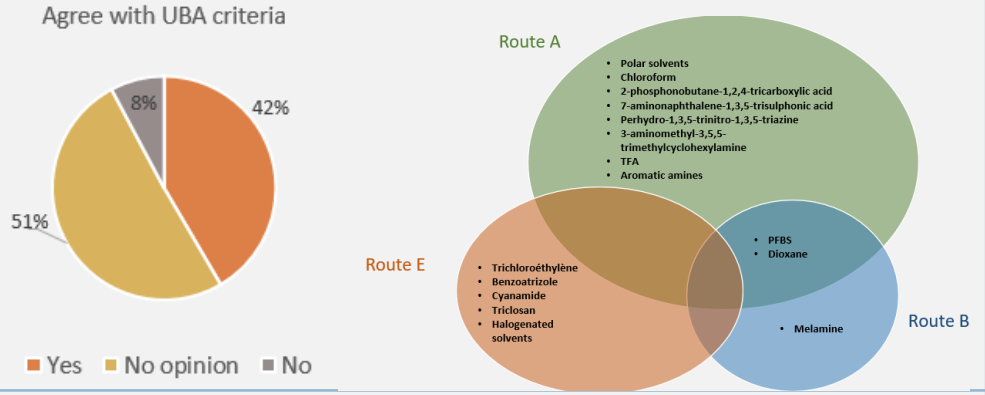
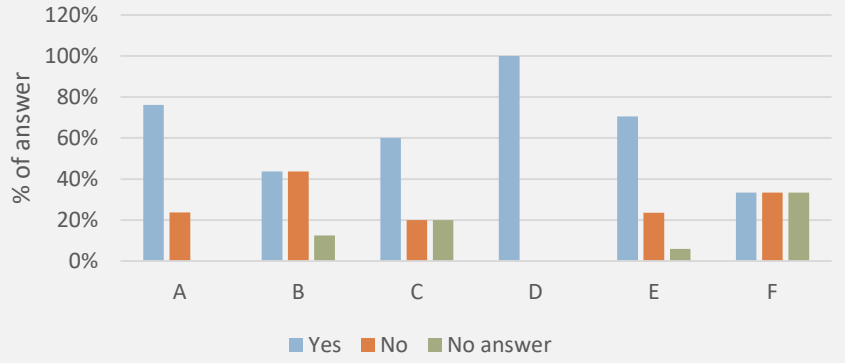
The following topics were adressed

What are the substances of concern ?

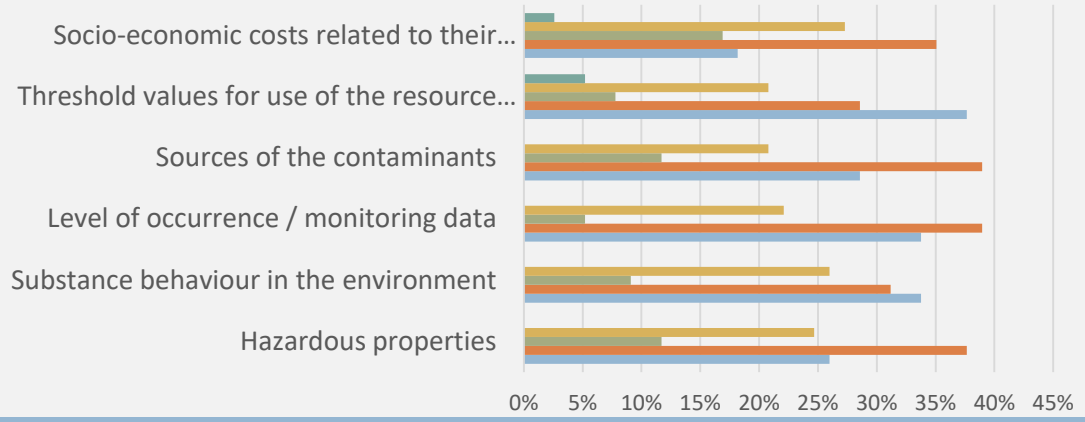


The analytical difficulties

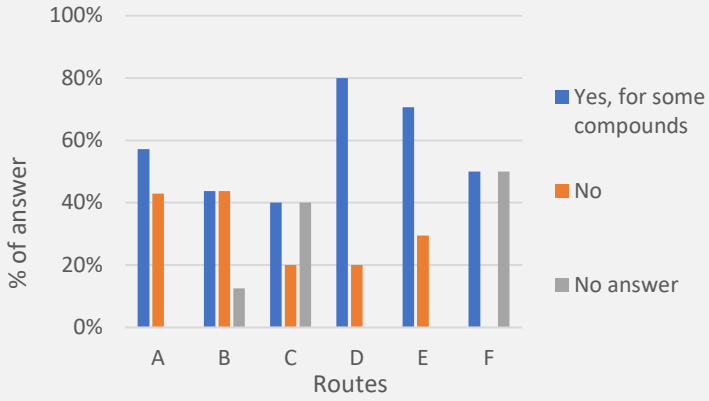


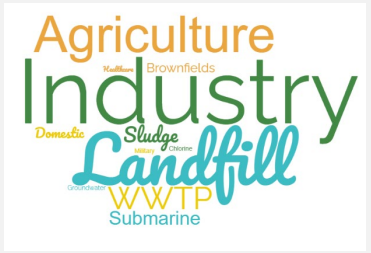
Costs
Lack of standards
Too many substances
Polarity
Blank contamination
Threshold values
…

Main data gaps



What are the sources of PMTs in the environment?





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The open possibilities for the DSF framework

Support with analytics

Better knowledge of PMT compounds

Risk analysis

Is my re-use application safe ?

Diagnosis

Problem severity, priorities, and actions required

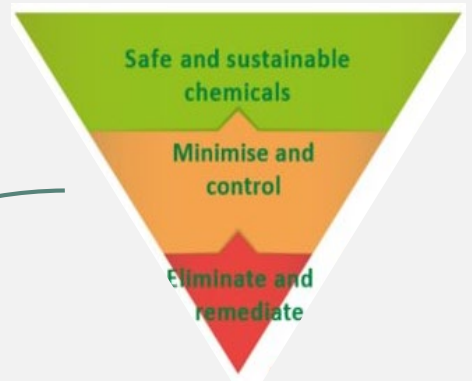
Concrete examples of re-use options

Strategies

Which elements to consider when choosing solutions

Solutions

Performance of corrective and preventive solutions



Evaluation of options

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It is your turn!

Which function of the DSF is the most relevant for you ?

In your work…

- Comprehensive description of PMT substances (properties, toxicity, uses, monitoring results)
- Information on risks posed by PMT substances (e.g. chemical risk assessment)
- Inventory on solutions (prevention, Remediation and treatment technologies)
- Information on regulation & regulatory watch (Directive, EU strategy, REACH...)
- Help with analytics and monitoring

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It is your turn!

Will you use a Decision Support Framework ?

During the project, the **DSF will be tested** by the project team as well as by **end-users** of the DSF (i.e. utilities, chemical companies).

You can be part of the project !

If you are interested please contact the team: Promisces_sec@brgm.fr

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Thank you for your attention

Contact:
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Corinne Merly – c.merly@brgm.fr
Pierre Boucard - pierre.boucard@ineris.fr

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www.promisces.eu
Promisces_sec@brgm.fr

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Results of the survey

20-10-2022 – PFAS CONGRESS

72 PEOPLE REGISTERED – INVOLVEMENT 69%

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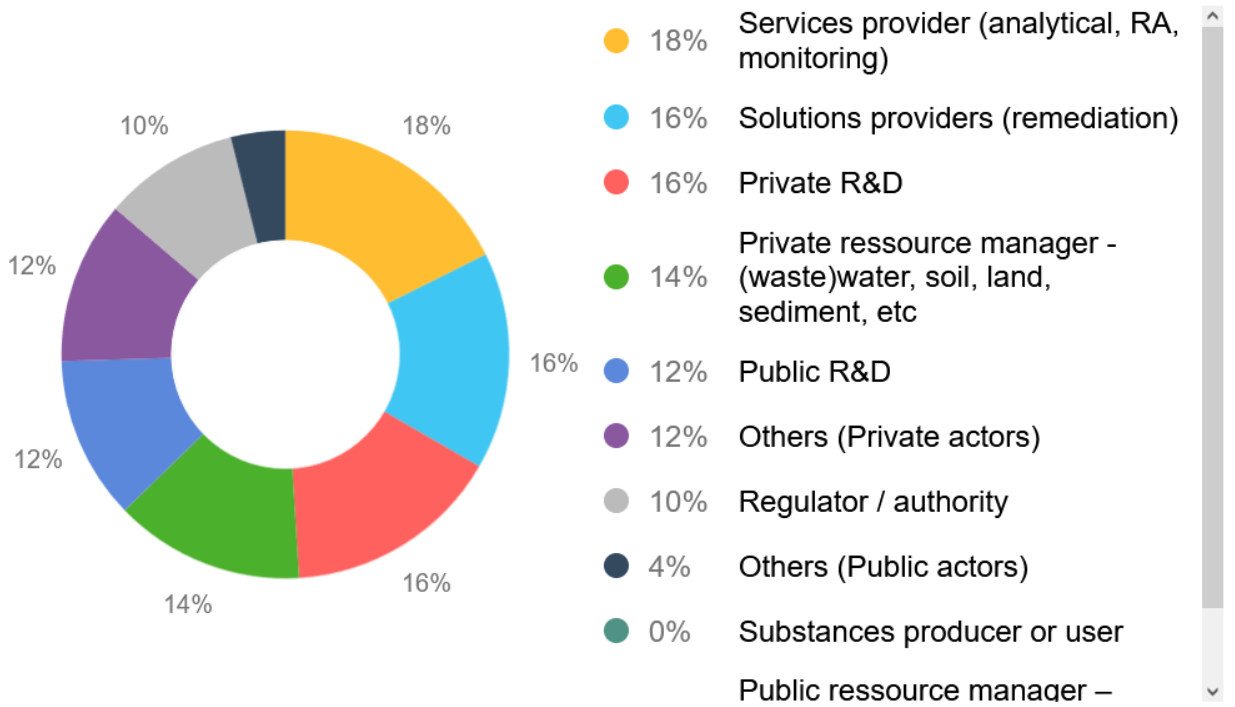
Who is in the room today?

10 choix choix unique



51 /72 **votes**

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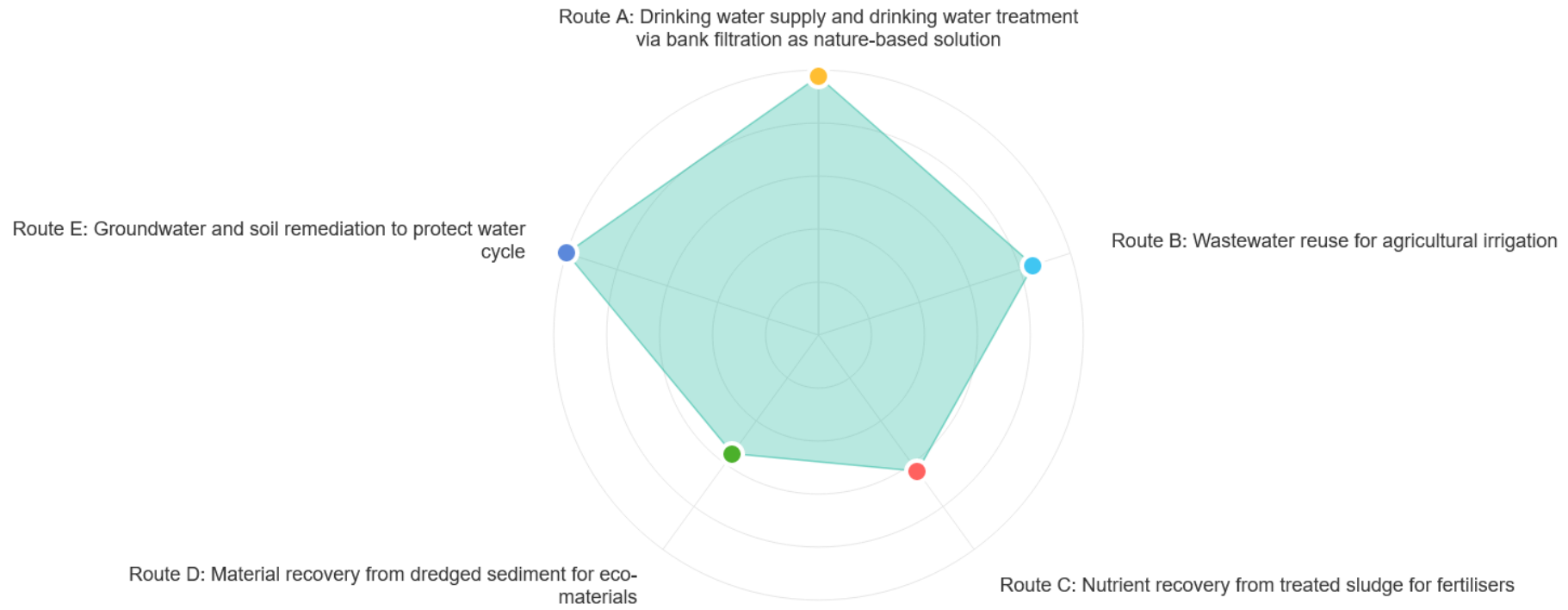
As part of the Zero Pollution Ambition, which circular routes should be adressed in priority for you ?

classement



49 /72 **votes**

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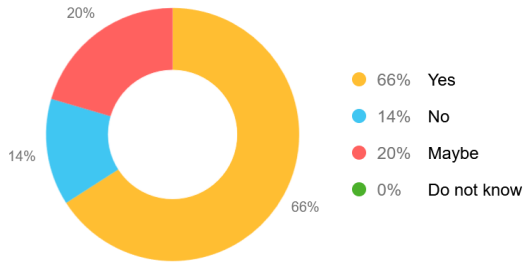
In your work, you need help on

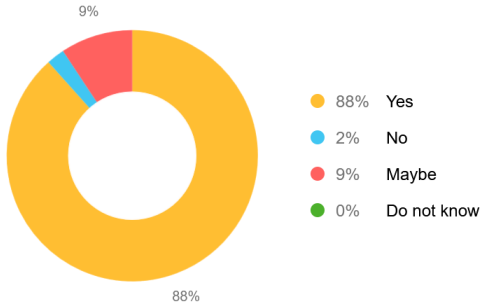
5 éléments catégoriser

Help with analytics and monitoring



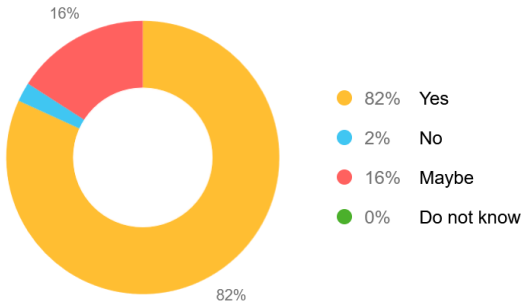
44 /72 votes

Comprehensive description of PMT substances (properties, toxicity, uses, monitoring results)



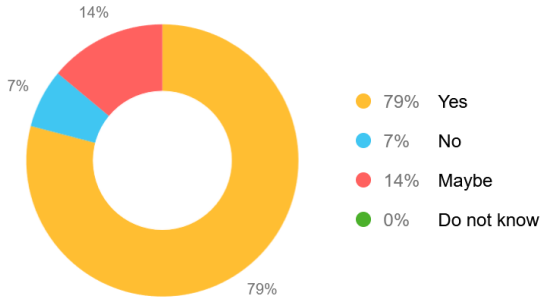
44 /72 votes

Inventory on solutions (prevention, remediation and treatment technologies)



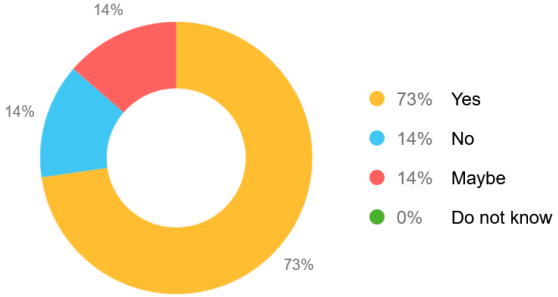
44 /72 votes

Information on risks posed by PMT substances (e.g. chemical risk assessment)



44 /72 votes

Information on regulation & regulatory watch (Directive, EU strategy, REACH...)



44 /72 votes

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Focus on substances: Indicate the features that would be useful to you

5 choix choix multiples

39 /72 **votes**

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PROMISCES

Focus on analyses & monitoring: Indicate the features that would be useful to you

4 choix choix multiples

40 /72 votes

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Focus on solutions: Indicate the features that would be useful to you

4 choix choix multiples

38 /72 **votes**

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