

The background features a stylized green plant with three leaves on the left side. Below the plant, there are two overlapping, rounded shapes representing hills or land. The foreground is a large, dark teal curved shape that contains the main text.

MISSOURI

**MicroplasticS in Soils and grOUndwateR:
sources, transfer, metrology and Impacts**

Consortium:

- Project leader:



INERIS

maîtriser le risque
pour un développement durable

French National Institute for industrial
environment and risks (Ineris, France)

- Project co-partners :



VU

- Vrije Universiteit (VU,
Netherlands), department
Environment & Health



ISSEP

- Institut scientifique de service
public (ISSEP, Belgium)

Funded by:

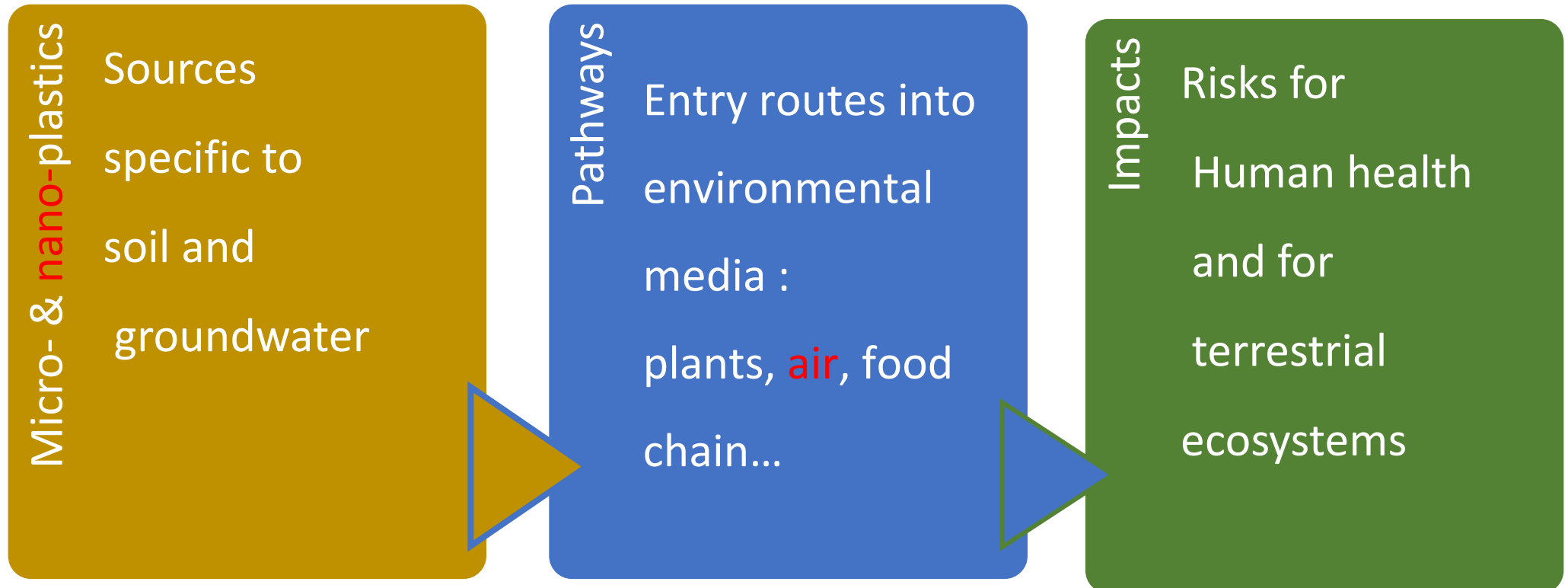


Ministry of Infrastructure
and Water Management

Aim/goals of the project

- MISSOURI answers to IRT14's topic: *Emerging contaminants in soil and groundwater*
- Goals:
 - Review laboratory methods for the separation and analysis of microplastics (MPs) in soils thanks to an ILS
 - Propose a definition for microplastics
 - Collect stakeholders/end-users' expectations for MPs' studies
 - Identify priorities for future projects for MPs
- 2 phases to respond to these goals:
 - **A state-of-the-art review**
 - Microplastics
 - Soil and groundwater
 - Types, emission sources, composition, transport mechanisms, foodchain, distribution, impacts on terrestrial ecosystems and human health
 - **A European-scale ILS (Interlaboratory study)**– separation and characterization methods – MPs in soils
 - Led by WEPAL-QUASIMEME
 - About 60 laboratories involved

Aim/goals of the project



Overview of the project program (WP)

WP 1 : MISSOURI project management and Coordination

WP2 : State-of-the art review

WP3 : Interlaboratory study

WP 4 : MISSOURI results dissemination and exploitation



Challenges for the feasibility of the project

- Many recent studies, many types of MPs and many emission sources:
 - need to narrow the scope to subjects/studies with enough reliable data
 - need to identify issues with lack of data
- Overview of entire conceptual model: from sources, through exposure pathways to impacts on humans and ecosystems
- Participation to QUASIMEME/NORMAN Interlaboratory study (ILS) on the Analysis on Microplastics in Environmental Matrices
 - restricted to 2 types of soils
 - restricted to 3 types of plastics according to 2 modalities : i/PE; ii/mixture of PE, PMMA, PS
- Organisation of the workshop:
 - Workshop 1 (project's kick-off): replaced by survey → revision of its scope and goals
 - Workshop 2 (restitution): depends on survey and overall fate of MISSOURI

Challenges for the feasibility of the project

Remaining questions:

- Sampling and characterization methods applicable to other types of soils?
- How do the forms of microplastics (bead, foam etc.) affect those methods?
- What is needed before conducting risk assessments for humans and ecosystems (parameters, other studies)?

Project results

- Mid-term **report** (before january 15th 2021)
- **Pedagogic synthetic brochure** on the state-of-the art review for a broad audience
- **Oral presentations** during next technical days in France
- **Final report (spring 2021)**
 - ILS's results (round 2 WEPAL-QUASIMEME): results interpretation in link with other media (sediments)– may 2021
 - **Survey analyse**: concerns and expectations from producers, end-users, researchers, environmental associations etc.
- **Final workshop**

Stakeholder / end-user involvement

- Survey:
 - Fall 2020
 - Submitted to a wide panel: laboratories, academics, national institutions, NGO, european regulators, private companies, water providing/treatment companies etc.
- French Polluted sites management technical day (june 2021)
- Internet, social networks
- Presentation and involvement to Ineris' CORE (French expertise and research's orientations commission), on November 5th, 2020

How will the results be put to use? Follow up of the project

- All deliverables available on SoilveR and partners' website
- Response to Horizon 2021 calls on microplastics
- Results available to NORMAN network and WEPAL-QUASIMEME

Overview of National or international projects in this research area

Title	Source
GRAINE : identifying needs to assess environmental impact of agricultural organic products spreading (occurrence and ecotoxicity of microplastics in soil, in compost and in digestate) and to understand the fate of biosourced plastics into the environment	ADEME (Ineris; on-going)
Microplastics in continental surface waters	AQUAREF (Ineris, Laboratoire national de métrologie et d'essai (LNE) and Ifremer)
MICROPLAST (presence and the ecological impacts of micro-plastics in river systems in Wallonia)	ISSEP
PLASTI-SOL (development of separation methods for micro-plastics in solid matrices)	
MICROPLASTSOIL (characterization methods adapted to agricultural soils fertilized with recycled organic sludge)	
PETHUNT (Novel method for identification and quantification of PET microfibrés)	VU-EH
LIMNOPLAST (Microplastics in Europe's Freshwater Ecosystems: From Sources to Solutions)	
Method development for the identification of nanoplastics	Institute of Geography, University of Bern
Microplastics in roadside soils	
Synergies Between Microplastics and Pesticides in the Terrestrial Environment	Frontiers in Environmental Science
Fate of microplastics in groundwater: Assessing vulnerability of drinking water supplies and coastal environments	University of Edinburgh
Waste Plastics and Micro-plastics: Their Effects on the Terrestrial Environment	Future Directions International
Optimising the process for microplastic analysis	Institute of Environmental Science and Research (ESR), New Zealand