



## EXPECTED OUTPUTS

- Creation of operational guidelines and upgrading of the MANIFESTS Decision Support System with new modelling modules and tools.
- New experimental data on the behaviour and impacts of HNS (evaporation, dissolution, rising of gas and evaporators in the water column) which will be implemented in the HNS-MS database.
- Refinement of the gas cloud drifting and evaporation as well as the explosion risk models developed in the framework of the MANIFESTS project.
- New tool for the modelling of gases and evaporators rising in the water column.
- Good practices and recommendations to improve emergency plans regarding new propulsion energies (methanol, ammonia...) as well as for coastal industries that use ammonia in their cooling system.
- Establishment of intervention protocols at cross-sectoral scale.
- Development of tools to facilitate the information sharing between marine pollution authorities and response groups.
- Training activities and desktop exercises.
- Bespoke training materials to transfer knowledge and decision-making tools developed in MANIFESTS Genius and other relevant EU and national project.

## CONSORTIUM

- Centre de documentation, de recherche et d'expérimentations sur les pollutions accidentelles des eaux (**Cedre**) - Project leader - France.
- Associação do Instituto Superior Técnico para a Investigação e o Desenvolvimento (**IST-ID**) - Portugal.
- Centro Tecnológico del Mar (Fundación **CETMAR**) - Spain.
- Instituto Tecnológico para o control do medio mariño de Galicia (**INTECMAR**) - Spain.
- Royal Belgian Institute of Natural Sciences (**RBINS**) - Belgium.
- Institut Mines-Telecom (**IMT**) - France.
- UK Health Security Agency (**UKHSA**) - United Kingdom (associated partner).

## DISCLAIMER

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From Gases and Evaporators risk assessment  
towards an Integrated management of sea and  
land pollution incidents

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# MANIFESTS GENIUS

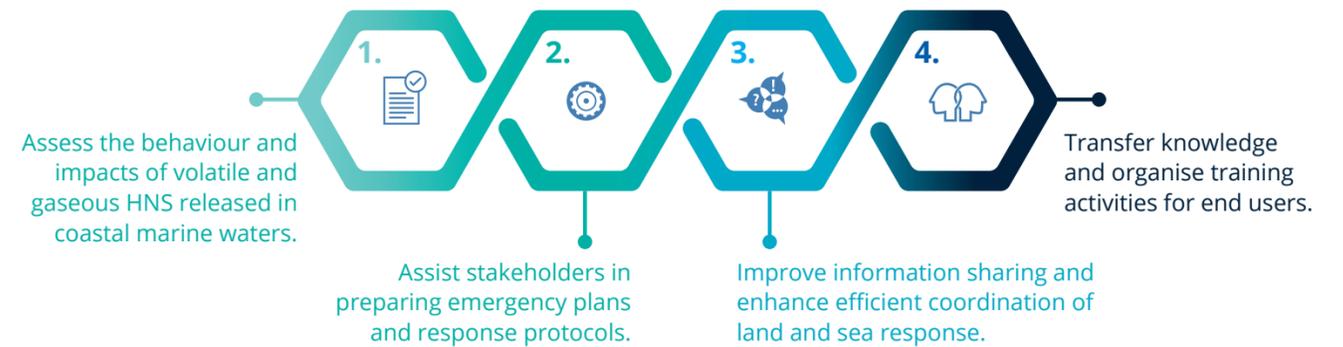
**Budget**  
**929,583 €**

**EU contribution**  
**790,146 €**

**Duration**  
**24 months**

**Project leader:** Cedre  
**Programme:** Union Civil Protection Mechanism (UCPM)  
**Call:** UCPM-2023-KAPP

## SPECIFIC OBJECTIVES



## THE ISSUE: HAZARDOUS AND NOXIOUS SUBSTANCES (HNS)

Accidental water pollution involving HNS that behave as gases or evaporators can pose significant risks to both the environment and public health, particularly when located in ports or coastal waters. Due to their potential to form toxic gas clouds, it is of primary importance to provide accurate information on these substances to help defining appropriate response techniques. Moreover, if an incident occurs in areas where multiple administrations, regions, or even countries are involved in the response, effective cross sectoral information exchange becomes crucial.

## PROJECT GOAL

Building on the MANIFESTS project outcomes, the MANIFESTS Genius project aims to strengthen preparedness and response capabilities for integrated management of coastal water pollution. The main focus will be on the release of HNS, including alternative fuels such as ammonia, methanol, LNG, and Lithium-ion batteries, as they have the potential to form a toxic gas cloud, which could potentially drift towards the shoreline and impact local communities, and possibly neighbouring countries.

### Two scenarios will be considered:

- 1) a subsurface leak from a pipeline.
- 2) a leak at water surface from a coastal facility.

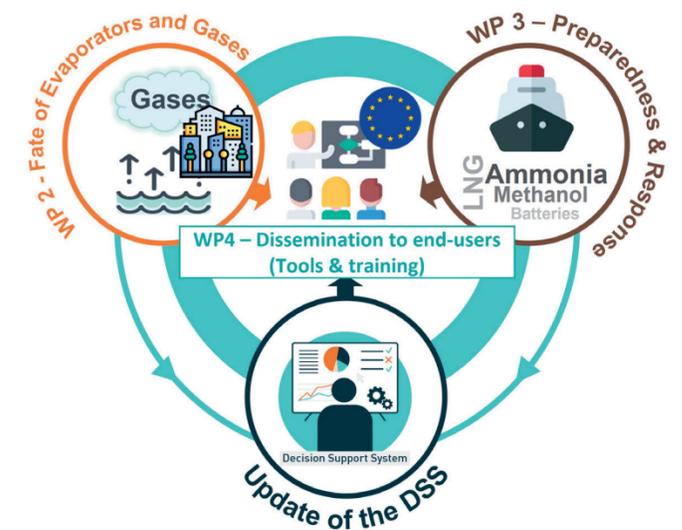
## WORKING STREAMS

### Fate of evaporators and gases

1. Generation of new experimental data on HNS evaporation and dissolution processes, including new propulsion energies.
2. Refinement of the gas cloud drifting and evaporation models as well as the explosion risk modules.
3. Development of a new tool for the modelling of gases and evaporators rising in the water column (subsurface leak).
4. Experimental characterization of the effectiveness of a protective barrier against a gas cloud taking place in a port.

### Cross-border/Land-Sea Preparedness and response

- Assessing potential hazards of new propulsion energies (ammonia, methanol, LNG and Li-ion batteries) and lesson learnt from past accidents.
- Accident analysis based on two accident scenarios: surface slick and bottom leakage.
- Training and desktop exercises based on the defined scenarios.
- Development and upgrading of tools to facilitate the information sharing for cross sectoral and multi-agency incidents.



### Transfer and capitalisation of knowledge

- Development of a virtual catalogue of resources to facilitate their transfer to end-users.
- Creation of bespoke training materials to demonstrate the use of existing tools and results dealing with coastal pollution response.
- Targeted interviews with crisis managers in port areas about maritime accidents.
- Training activities at both national and international levels to improve awareness on existing decision-making tools and to promote engagement with stakeholders.

