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Environmental protection and risks prevention



Project contribution to strengthen the territory's resilience and to reduce the impact of human activity on environment

ARCOPOLplatform aims to improve the **preparedness and capabilities** of Atlantic regions to deal with **pollution** derived from maritime transport and thus, reduce its effects on both the coastal communities and on the coastal environment. This goal is being addressed through a comprehensive approach addressing the following components:



Contingency plans: ARCOPOLplatform is supporting the elaboration and implementation of regional and local emergency plans specific for maritime pollution incidents. Taking Spain as a concrete example, the local authorities concerned are 81 Galician coastal municipalities (pilot actions in the town of Laxe and in the National Park of the Atlantic Islands in Galicia) and 7 municipalities in Andalusia (Algeciras, Los Barrios, Gelves, La Puebla, San Roque, La Linea and Punta Umbría) and the Bahía de Cádiz Natural Park.

Response operations support tools: ARCOPOLplatform is working to improve numerical modelling to predict the fate or behaviour of pollutants split at sea or in coastal zones, as well as Decision Support tools such as the [Dynamic Risk Analysis](#) in Portugal or the data and information management system ([ARCOPOL viewer](#)) in Galicia.

Personnel training: Local authorities' preparedness is being improved through the organisation of exercises (1 exercise in Andalusia and 3 in Galicia), tailored workshops, training courses and the production of [videos](#). One of these workshops, focused on raising awareness of public health response to maritime pollution incidents, has already been held in UK, Ireland, and in Spain. Finally, e-learning courses developed in ARCOPOLplus are being updated and/or further promoted (i.e. [General course on maritime spills for local responders](#); [Chemical incident management](#), etc.), and new courses are being developed on Environmental toxicology and on the oceanographic operational system in Andalusia (UCA-Oceansmap).

Effects on the environment: The existent knowledge on potential environmental effects of spills involving chemicals transported by sea is being compiled, organised, and made available in the form of online databases, and through workshops and guidelines.

International cooperation: The [Atlantic Technological Platform](#) acts as a meeting forum for public and private organisations dealing with oil and chemical spills to promote the exchange of knowledge, to facilitate the identification of the new challenges and the best strategy to address them by building public-private initiatives. With 84 members, it will very probably reach 200 this year.

Main challenges your partners are facing in terms of environmental protection and risks prevention

ARCOPOLplatform partners are addressing the challenge of reducing the potential effects of maritime transport incidents on coastal communities, and so, making shipping and the protection of our coastal ecosystems compatible. This challenge is even more patent considering that almost 90% of the EU external freight trade is seaborne and that the maritime transport of chemical substances has grown considerably in the last few decades.

Cooperation contribution to tackle such challenges as opposed to dealing with them on their own

The transnational relevance of marine pollution originated by oil and chemical spills is evident as a pollution event occurring at sea will very likely impact the coastline of several member states and regions. ARCOPOLplatform facilitates the sharing of experience and knowledge among participating regions and countries to fill each other's gaps. Eventually this will lead to improve the preparedness to deal with maritime spills in the Atlantic Area as a whole.

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Project contribution to strengthen the territory's resilience and to reduce the impact of human activity on environment

The project concerns the **demonstration, evaluation and dissemination of new robotic systems**, sensors and networking technologies in **maritime incidents** endangering human life, the environment and economic activities. Air and sea going robotic vehicles provide new capabilities to operate in dull, dirty and dangerous environments. Networking technologies enable the orchestration of systems for enhanced situational awareness and intervention. New command, control and visualization tools provide new capabilities for the coordination of existing robotic systems, sensors and human operators over inter-operated networks.



Demonstrations and return on experience workshops have contributed to transition tools, technologies and concepts of operation to operational practice. Examples include: 1) operational use of autonomous underwater vehicles to find lost containers at sea (March 2015) and inside the Leixões harbor (January 2014); 2) integration of command and control tools with national incident response systems in Portugal and Spain; 3) recommendations for operational use of unmanned vehicles for the 5 countries (this was done in articulation with national and international entities involved in all aspects of incident response); 4) inter-operability with unmanned vehicle systems from, for example, the US Navy; and, 5) integration with NASA's mission tools suite.

The project demonstrated unprecedented spatial and temporal resolution surveys with unmanned air and ocean going vehicles. These capabilities were simply not available a few years ago. This means that not only **can these vehicles be used in incident response** but, probably as important, these vehicles can also be used in discrete surveillance thus providing strong incentives environmentally friendly behaviors.

Main challenges your partners are facing in terms of environmental protection and risks prevention

Environmental protection and risk prevention and mitigation at the Atlantic scale cannot be addressed without the consideration of **persistent networked** unmanned vehicle systems. Unmanned vehicle systems provide unique access to dirty, dull, and dangerous places, as well as persistence (for vehicles capable of harvesting energy from the environment). This is why NETMAR addresses **key challenges in environmental protection and risk prevention**.

With regards to the objectives of the project, the partners, face several challenges: 1) concepts of operation; 2) legal frameworks; 3) inter-operability; 4) information sharing; and, 5) public awareness. These are challenges that cannot be tackled by each partner, or by each country on its own. Maritime incidents may affect several countries and coordinated actions, legal frameworks, seamless integration, information sharing, and support for public awareness are needed.

Cooperation contribution to tackle such challenges as opposed to dealing with them on their own

NETMAR addressed all of these challenges by organizing the project around **3 demonstrations** which took place in Ireland (Shannon Estuary), Spain (Pobra do Caraminal) and Portugal (Leixões). These provided the applications pull to the project. Concepts of operation had to be developed for partners from different countries to **contribute assets and technologies for joint operations**. The problem of inter-operability was also addressed by demonstrating web-based tools integration for situational awareness and decision making. These tools provide unprecedented situational awareness and measurements with adjustable spatial and temporal resolution. Partners from different countries did comparative studies of legal frameworks for the operation of these vehicles and identified gaps that have to be addressed at the international level.

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