

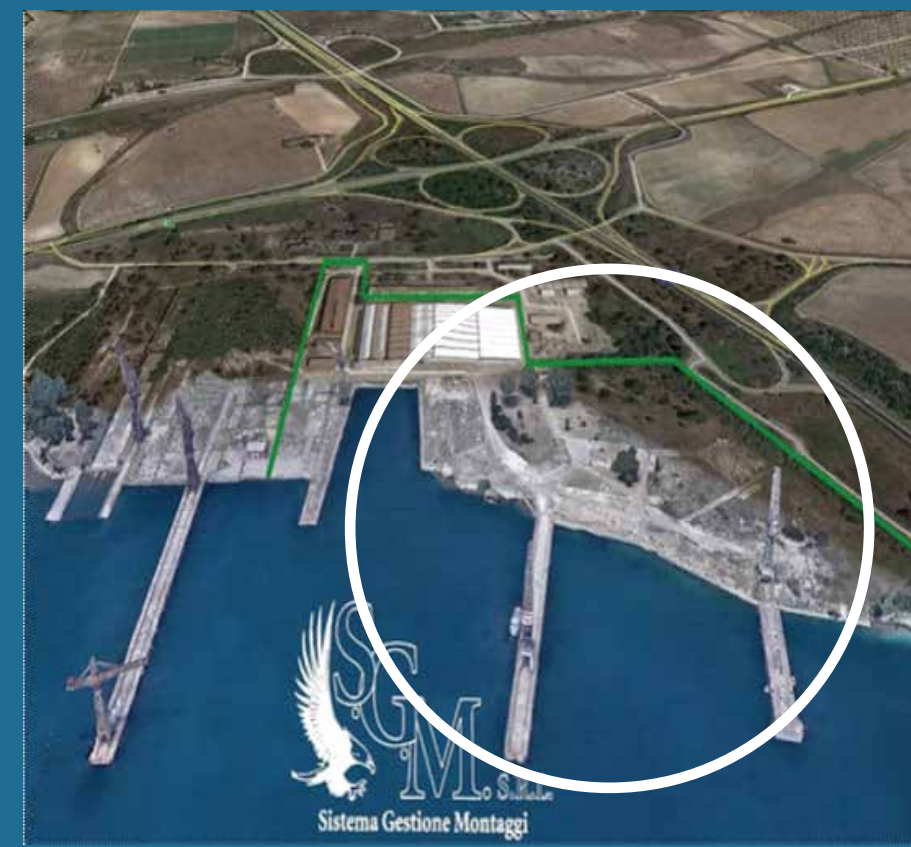
Responsive hub for long term governance to destress the Mediterranean Sea from chemical pollution

Mar Piccolo di Taranto, Taranto - Italy Demonstration site

The major industrial settlements around the urban area of Taranto are the Steel plant of Acciaieria d'Italia, Ex ILVA (among the largest in Europe), the ENI refinery and the Cementir (cement factory). Some areas of the Mar Piccolo, especially those adjacent to the naval shipyards, have high concentrations of mercury and PCBs. Marine sediments represent an extremely complex environmental issue for this area. Furthermore, investigation of other pollutants, like pesticides, pharmaceuticals, PFAS hasn't been done so far, although they are likely present.



Mar Piccolo is an example of Mediterranean coastal marine ecosystem whose biological balances have been modified as a result of the considerable environmental stress due to the development of human activities. Therefore, Mar Piccolo basin reflects the negative effects of pollution because of its semi-enclosed shape with remarkable problems of water exchange, which are mainly due to moderate sea tides. The seabed of this coastal basin are severely contaminated by metals, PAHs and PCBs.



The Italian demo-site is located in the "Mar Piccolo," which is a coastal basin north of Taranto. Specifically, in the I bay of Mar Piccolo, the site of the SGM srl shipyard will act as a base for capturing and treating waters from the Citrello canal that flow into the inlet. Moreover, the microalgae plant will treat water contaminated by sediment in a reservoir in order to evaluate ex-situ remediation of contaminated dredged sediment.

The planned position for the microalgae bioreactors is in S.G.M. shipyards (area outlined in green in the left image), whilst the proposed area for monitoring with mobile measurement station is in I bay from Mar Piccolo.

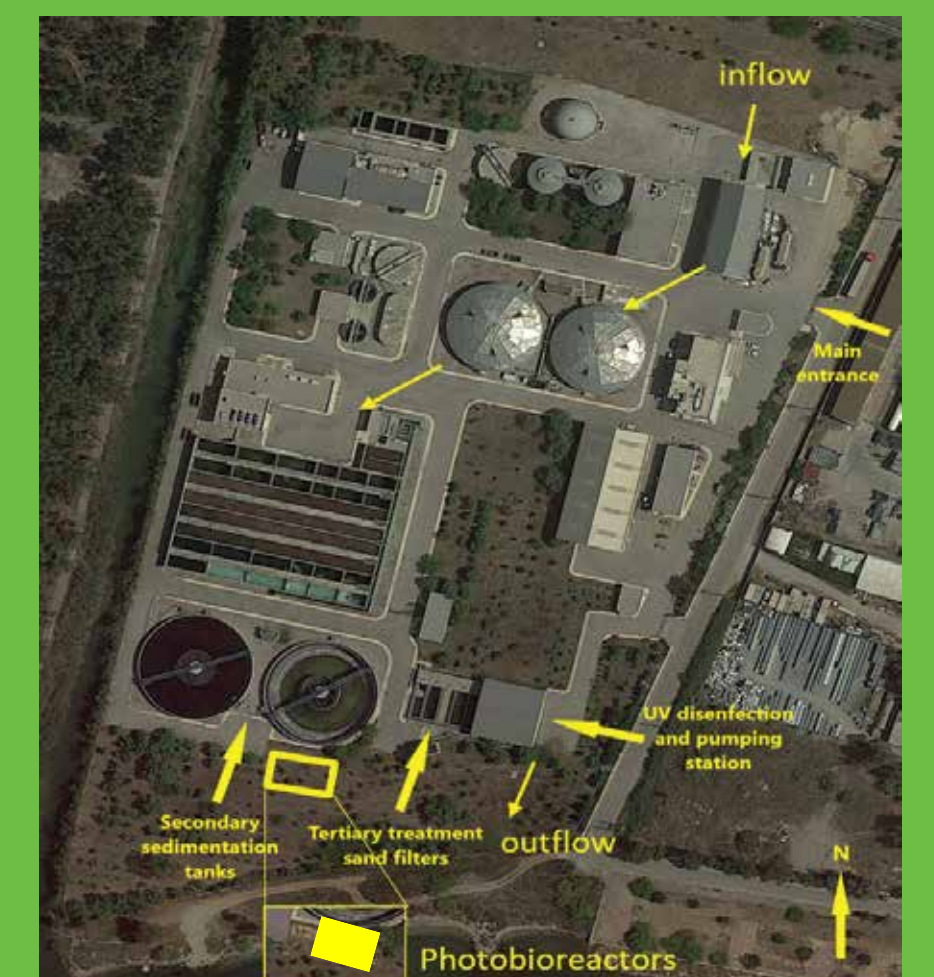
Thriasio WWTP, Athens - Greece Demonstration site



The Thriasio Wastewater Treatment Plant (WWTP) serves as the demo-site in Greece. It is located West of Athens and it serves the Municipalities of spropyrgos, Elefsina, and Mandra-Idyllia, also receiving pre-treated liquid waste from nearby industries and businesses. The Thriasio WWTP has been operating since 2012, eliminating phenomena of absorbent cesspools and uncontrolled sewage discharges that were common practice in the area. Treated sewage is discharged to the sea of Elefsis Gulf, meeting all the current compliance criteria required by European and national regulations.

Demo Site, consists of an integrative tertiary process at the WWTP outlet, using microalgae photobioreactors (yellow box, left image), to remove undesired chemicals that conventional WWT technologies do not treat. Membrane filtration equipment based on industrial micro and ultra-filtration solutions will be used to collect microalgal biomass and obtain an effluent with excellent discharge characteristics, even suitable for re-use.

A monitoring system will be deployed, composed of fixed installation at the WWTP outlet and mobile, autonomous drifters in the Elefsis Gulf.



Dilovas Municipal WWTP, Izmit Bay - Turkey Demonstration site



The Dilovası Municipal Advanced Biological Wastewater Treatment Plant serves as the demo-site in Turkey. The Dilovası WWTP is located in the east/northeast of the Marmara Region and plant treats domestic wastewater and waste-water originating from industries. It has been operating since 2017. The discharge of the treatment plant reaches the Izmit Bay via Dilderesi meeting all the current compliance criteria required by Turkish national regulations. It is operated as extended aeration activated sludge process integrated with phosphorous removal capability. There is also rapid sand filter and UV disinfection for further treatment in order to supply industrial water needs.

