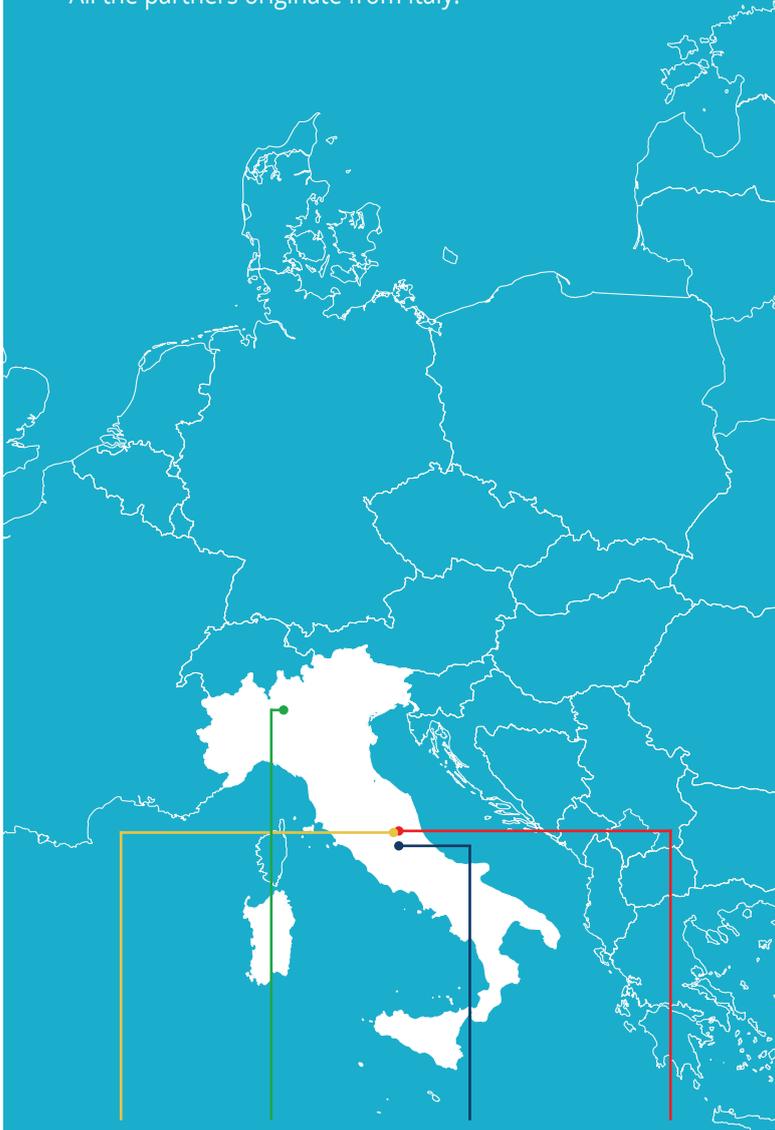


## Project Partners

The LifeBitmaps consortium combines a variegate expertise from the academic world via technologic environmental development through the semiconductor application sector. All the partners originate from Italy.



Academic world



Industry Applications



Semiconductor Industry

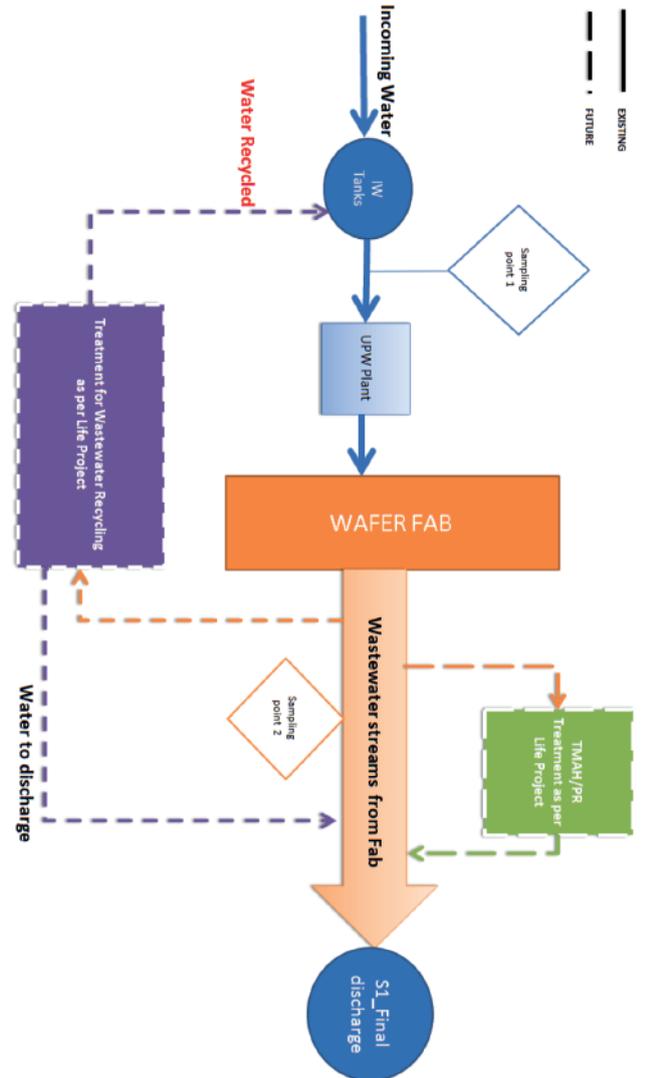


Environmental R&D

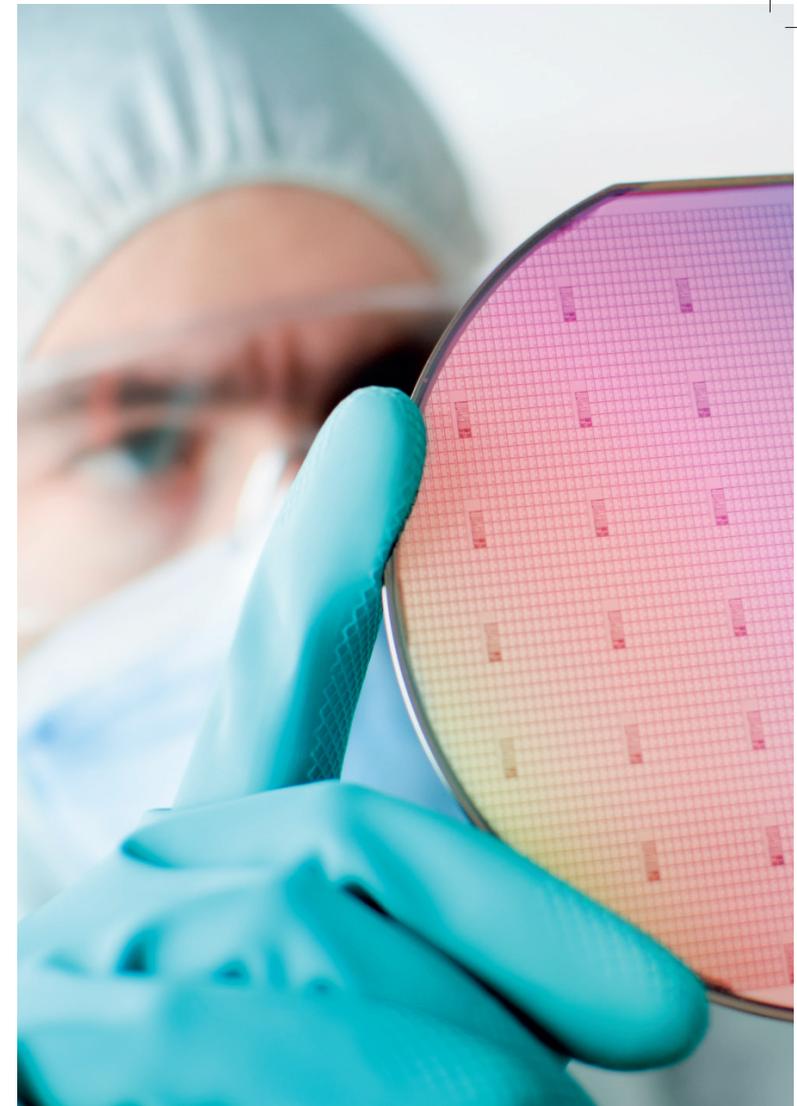
## Project Coordinator

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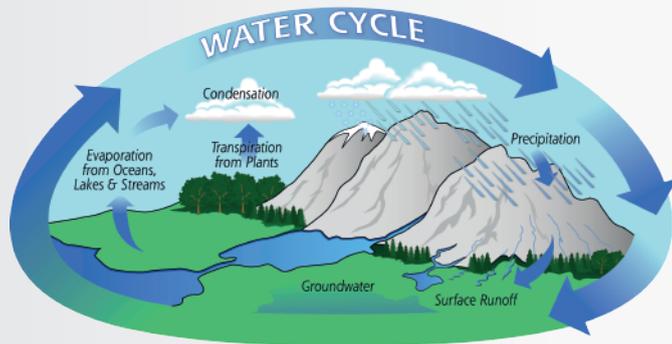


# LIFEBITMAPS

Pilot technology for aerobic Biodegradation of spent TMAH Photoresist solution in Semiconductor industries

## Background

A large amount of wastewater containing tetramethyl ammonium hydroxide (TMAH) and Photoresist (PR) is generated every year in Europe by the Electronics and Semiconductor (E&S) industries that use it as a developer and etchant. Due to the toxic properties the industrial streams containing TMAH and PR have to be treated in order to protect the water ecosystem, with high costs for the companies and impacts on the environment.



## The ambition

- ✔ Contribute to reach the ultimate aim of the European Water Framework Directive (2000/60/EG) that is "to achieve the elimination of priority hazardous substances and achieving concentrations in the environment near background values for naturally occurring substances".
- ✔ Prove that the proposed process could replace the state-of-the-art technologies for the TMAH removal as they are less effective and consume great amounts of reagents.
- ✔ Help filling the gaps in the regulatory scenario by providing tangible results to local and EU policy makers to introduce shared regulations on TMAH emissions.
- ✔ Increase the awareness among the European E&S industry about the problem influencing industrial investments in safer and eco-innovative technologies.

## Objectives

- ✔ Design, construction and validation of a semi-industrial pilot plant enabling the treatment of spent PR/TMAH, and other mixed solutions generated by the E&S manufacturing processes.
- ✔ Demonstrate, at industrial scale, the biodegradation of TMAH to non-toxic biomass plus NH<sub>3</sub> by using some specific savage microorganisms selected during the previous R&D phase.
- ✔ Prove the cost sustainability of the process, in a LCC perspective, also taking into account the actual annual operating costs for the PR/TMAH concentrated disposal.
- ✔ Set up a more efficient water management approach proving that it is possible to reduce the net water consumption by saving water of the currently used ionic exchange process, and evaluate the total reuse of treated wastewater in the company's industrial plant.
- ✔ Promote the project through dedicated dissemination and networking means and activities.
- ✔ Pave the way for replication and transfer of the results to E&S Sector.



## Project

Start: **01/07/2016**

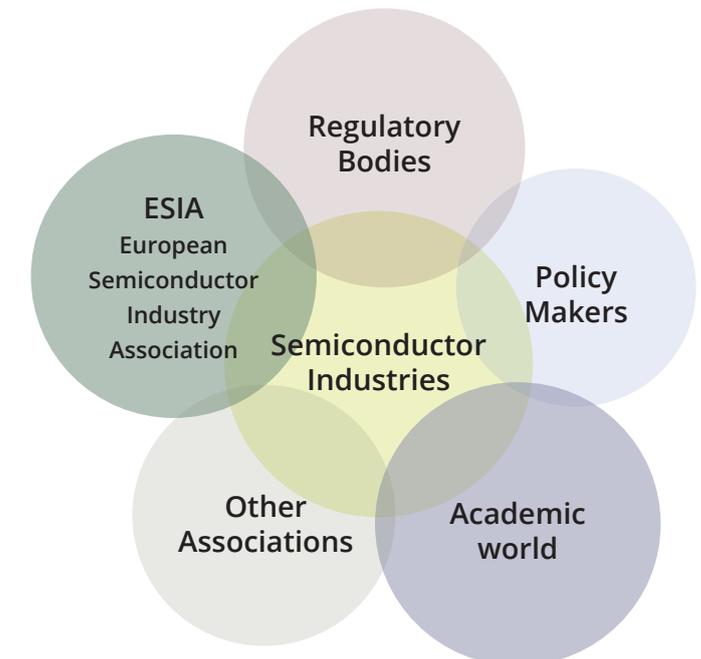
Duration: **30 months**

Total budget: **€ 1,676,923.00**

EU Contribution: **€ 1,003,753.00**

## Outreach

The consortium would like to interrelate with actors from:



In case you were interested to get more information on our project or if you want to share information from your side, please do not hesitate to contact the project coordinator and subscribe to [www.lifebitmaps.eu](http://www.lifebitmaps.eu) to receive newsletter.