Integrated and sustainable processes for environmental clean-up, wastewater reuse and waste valorization

The complex project SUSTENVPRO proposes the following research directions:

1. Development and validation of an innovative method for complex assessment of priority pollutants in various water matrices;
2. Development of efficient innovative water treatment processes and advanced wastewater treatment in order to eliminate priority organic and inorganic pollutants;
3. Development of new innovative materials (polymers, composites) designed for efficient removal of priority pollutants;
4. Capitalization of materials from organic (biomass) and inorganic waste (metallic waste) in innovative wastewater treatment processes for removal of priority pollutants and water recirculation / reuse;
5. Sustainability assessment of the water treatment processes and use of synthesized innovative materials through Life Cycle Assessment

These research directions are targeted in the 5 component projects (CPs) of the SUSTENVPRO project, implemented through an integrative and sustainable approach of research priorities in the field of Environment and Circular Economy (national priorities and smart specialization):

CP 1. Complex assessments of priority pollutants from different water matrices and identification of potential risks to ecosystems and human health;
CP 2. Improving the efficiency of water treatment processes and development of innovative materials for the elimination of priority pollutants;
CP 3. Valorisation of biomass resources for the development of innovative wastewater treatment and priority pollutant disposal processes;

CP 4. Waste metal recovery for the development of innovative wastewater treatment and priority pollutant removal processes;

CP 5. Sustainability assessment of water treatment / cleaning processes and waste recovery through Life Cycle Analysis.

Multidisciplinary teams bringing together experts in the field of materials science and engineering, chemical engineering, environmental engineering are involved in this project, ensuring thus its success.

- **Partners**

  P1 – Politehnica University of Bucharest

  P2 – Institute of Macromolecular Chemistry "Petru Poni" Iași

  P3 – "Alexandru Ioan Cuza" University of Iași

  P4 – Politehnica University of Timișoara

  P5 – National Institute for Research and Development in Environmental Protection

- **Project Coordinators**

  P5 Coordinator: Eng. Deák György, Ph.D Habil., CS I

- **Period**
  01.03.2018 – 31.12.2020

- **Financed via**
  UEFISCDI

Objectives

The main objective of the complex project was to increase the institutional performance of public research organizations in the consortium, with tradition and recognized performances in the scientific research and with relaunching opportunities, in the Environmental field, through an integrative approach which supports/develops the existent institutional research competencies, and transfer capacities of results with applicative and innovative potential towards the social-economic sector.

Expected Results

The implementation of the project determines the following results:

- 10 research jobs supported by the program;
- 4 national patent applications;
- 6 new / significantly improved products and technologies;
- 7 new research services on the ERRIS platform;
- 3 research services offered by using the existing research infrastructure;
- 3 internships / visits for young and experienced researchers and an internship / training for strengthening INCDPM's capacity;
- 17 articles in ISI indexed journals and 15 papers presented in national and international scientific events;
- 6 workshops with economic agents.