



GENESIS

Generate in Europe a Sustainable Industry for Semiconductor

Iranda Chaki
Senior Policy Coordinator
SEMI Europe
GENESIS WP 6 Leader





Index

1 Introduction 5 GENESIS WP 4,5,6

2 Four Technological Pillars

3 Main Goals

4 Work Package Overview

5 GENESIS WP 1,2,3

Introduction

Consortium Partners

Materials & Chemicals

ARKEMA MERCK MOLYMEM

TECHNIG PiBond soitec

LayerOne MERSENI

RTOs

csem Tyndall imec

SINTEF Fraunhofer cea

VTT TNO

Communication

ArgYou.com semi

Semiconductor Manufacturing

GlobalFoundries STMicroelectronics NXP

BOSCH LEONARDO infineon

IBM intel

Equipment

RIXTRON Besi SCREEN

APPLIED MATERIALS TEL SCHMIDT HAENSCH

Recycling

CS CLEAN SOLUTIONS WEEE Cycling FATHGROUP

Research

POLITECNICO MILANO 1863 UNIVERSITY OF LEICESTER Aalto-ympäristö tutkimuskeskus Aalto University

Università di Catania L-Università ta' Malta ICRA

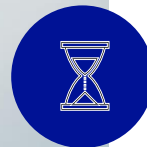
TOR VERGATA UCLouvain

Gas, Water Monitoring, & Abatement

QASERA VOCsens VARIOLYTICS

TOPWERK HQ-DiElectrics ThermoFisher SCIENTIFIC

centrotherm PFEIFFER EDWARDS



Type of Action

Horizons Chips JU - GENESIS is an EU program supported by CHIPS JU and its associated members states. In addition, GENESIS Swiss partners are supported by the Swiss state secretariat (SERI).

Budget

15,000,000 EUR EU Funding + various Member State funding.

Consortium

58 partners – Project Coordinated by CEA-Leti.

Duration

3 years



Co-funded by
the European Union



Project funded by

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra
Swiss Confederation

Federal Department of Economic Affairs,
Education and Research SAE
State Secretariat for Education,
Research and Innovation SERI



Project Started on the 1st of May 2025

Four Technological Pillars

1

Monitoring & Sensing

Real-time emissions tracking and feedback systems.

2

New Materials

PFAS- alternative and low-GWP alternatives.

3

Waste Minimization

Recycling and reuse innovations.

4

Critical Raw Materials Mitigation

Reduce dependency and improve resource security.



Co-funded by
the European Union



Project funded by



Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Swiss Confederation

Federal Department of Economic Affairs,
Education and Research SAE
State Secretariat for Education,
Research and Innovation SERI

Main Goals

- 1 Reduce the Environmental Footprint of Semiconductor Manufacturing
- 2 Develop Eco-Friendly Materials and Processes
- 3 Improve Waste Management and Circularity
- 4 Deploy Advanced Monitoring & Sensing Technologies 

Driving Sustainable semiconductor innovation across Europe

Mission

Our mission is to replace PFAS chemicals from semiconductor manufacturing through sustainable materials, advanced process monitoring, and circular economy practices.

Vision

Our vision is to build a resilient, circular, and environmentally responsible microelectronics sector aligned with the European Green Deal and the European Chips Act.



Co-funded by
the European Union



Project funded by



Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Swiss Confederation

Federal Department of Economic Affairs,
Education and Research SAE
State Secretariat for Education,
Research and Innovation SERI



The SEMI team

The WP 6 proposal of the project was drafted by Stefano Ramundo Orlando, Manager Advocacy & Public Policy, SEMI Europe



Iranda Chaki, WP 6
Leader (GENESIS),
Senior Policy
Coordinator EHS,
Advocacy Team,
SEMI Europe



Jatin Mendiratta,
Communication Lead
(GENESIS), Specialised in
EU R&D Communication,
Communication Officer,
SEMI Europe

Work Package Descriptions

Work Package 1

Objective: Ensure the effective coordination of the project, define specifications, and implement unified methodologies across all technical and reporting tasks.

Key Tasks:

- T1.1 Project coordination and risk management
- T1.2 Definition of common protocols and methodologies
- T1.3 Internal quality assurance and evaluation

Work Package 2

Objective: Develop next-gen sensing and monitoring systems for semiconductor manufacturing to reduce reliance on harmful substances and improve efficiency.

Key Tasks:

- T2.1 Identification of key monitoring points in manufacturing
- T2.2 Development of new sensors and sensing techniques
- T2.3 Validation of sensing systems in lab and pilot lines

Work Package 3

Objective: Design and evaluate alternatives to hazardous materials currently used in semiconductor processes.

Key Tasks:

- T3.1 Identification and characterisation of PFAS alternatives
- T3.2 Integration of alternative materials into test environments
- T3.3 Environmental impact assessment of new materials

Work Package Descriptions (cont...)

Work Package 4

Objective: Implement strategies and technologies that significantly reduce chemical waste and emissions in semiconductor fabs.

Key Tasks:

- T4.1 Mapping current waste and emission profiles
- T4.2 Engineering solutions for minimisation
- T4.3 Environmental compliance and reporting mechanisms

Work Package 5

Objective: Identify critical raw materials at risk and propose mitigation strategies through reuse, substitution, or circular economy solutions.

Key Tasks:

- T5.1 Analysis of supply chain vulnerabilities
- T5.2 Identification of substitution opportunities
- T5.3 Circular economy roadmap for microelectronics materials

Work Package 6

Objective: Ensure regulatory alignment, effective communication, widespread dissemination, and long-term impact of project results.

Key Tasks:

- T6.1 Communication strategy and brand identity (#GENESISEU)
- T6.2 Stakeholder engagement (policy, industry, academia)
- T6.3 Exploitation of results and post-project sustainability
- T6.4 Regulatory compliance and policy alignment



Thank you!

ichaki@semi.org, jmendiratta@semi.org
contactus@genesiseu.eu
<https://www.genesiseu.eu/>