



T.C. SANAYİ VE  
TEKNOLOJİ BAKANLIĞI



TÜBİTAK

# UFUK AVRUPA PROGRAMI

## KÜME 4

## DİJİTAL, ENDÜSTRİ ve UZAY

## ENDÜSTRİ ALANI

UFUK  
AVRUPA



TÜBİTAK

Dr. Hale AY  
Ulusal İrtibat Noktası

TÜSİAD Bilgi Günü, 10 Temmuz 2025

Çözüm gerektiren güçlüklerin merkezde olduğu yaklaşımlar birlikte izleniyor



Nitelikli Bilgi,  
Nitelikli İnsan



Çözüm Gerektiren  
Güçlükler



Birlikte Geliştirme  
(Co-Creation)



AB endüstrisinin rekabet üstünlüğünü ve özerkliğini garantiye almak için endüstrinin daha fazla dijitalleşmesini sağlamak, iklim-nötr, dögüsel ve temiz endüstriyi teşvik etmek

## Dijital

- Dijital kilit teknolojiler
- Veri, yapay zeka ve robotik
- Yeni nesil internet



## Endüstri

- İmalat teknolojileri
- İleri malzemeler
- Enerji yoğun endüstriler
- Dögüsellik ve sıfır kirlilik
- Ham maddeler
- İnşaat



## Uzay

- Uydu haberleşmesi
- Yer gözlemi
- Uzay ulaşımı



### Ulusal İrtibat Noktası

- Dr. Özlem GEZİCİ KOÇ
- H. Burak TİFTİK

### Ulusal İrtibat Noktası

- Dr. Hale AY
- Elif Sena YIKILMAZ

### Ulusal İrtibat Noktası

- Dr. Özlem GEZİCİ KOÇ

**Bütçe: 15,3 Milyar Avro (%16)**

## Avrupa Yeşil Mutabakatı



## 55'e Uyum Paketi



## Yeni Döngüsel Ekonomi Eylem Planı



## Avrupa için Yeni Sanayi Stratejisi



## AB Net Sıfır Sanayi Yasası

EU NET-ZERO  
INDUSTRY ACT:  
MAKING THE EU THE HOME  
OF CLEAN TECH INDUSTRIES

## Endüstriyel Liderlik için İleri Malzemeler Tebliği

COMMUNICATION ON  
ADVANCED MATERIALS  
FOR INDUSTRIAL  
LEADERSHIP

## AB Kritik Ham Maddeler Tüzüğü

EUROPEAN CRITICAL  
RAW MATERIALS ACT

## Temiz Sanayi Mutabakatı



# Küme 4 (Dijital, Endüstri ve Uzay) Hedefleri

## ENDÜSTRİ



1. İklim nötr, döngüsel ve dijitalleştirilmiş endüstriyel ve dijital değer zincirlerinde küresel liderliğe ulaşmak
2. Hammadde, kimyasallar ve yenilikçi malzemeler alanında Avrupa'nın açık stratejik özerkliği için teknolojik liderliğe ulaşmak

## DIJİTAL



3. Dünya lideri veri ve bilgi işlem teknolojileri
4. Rekabet ve yeşil mutabakata uygunluk için dijital ve gelişmekte olan teknolojiler

## UZAY



5. Küresel uzay-tabanlı altyapıların, hizmetlerin, uygulamaların ve verilerin geliştirilmesinde, konuşlandırılmasında ve kullanılmasında açık stratejik özerklik

## DIJİTAL



6. Dijital ve endüstriyel teknolojilerin insan merkezli ve etik gelişimi

Hedef 1: “İklim nötr, dögüsel ve dijitalleştirilmiş endüstriyel ve dijital değer zincirlerinde küresel liderliğe ulaşmak”

**Manufacturing  
Industry**

**Energy Intensive  
Industries**

**Construction  
Industry**



# Küme 4 – Hedef 1: “İklim nötr, döngüsel ve dijitalleştirilmiş endüstriyel ve dijital değer zincirlerinde küresel liderliğe ulaşmak”



## MANUFACTURING INDUSTRY

Çağrı Kodu ve Konu Başlığı	Bütçe/proje (Milyon Avro)	Desteklenecek proje sayısı
HORIZON-CL4-INDUSTRY-2025-01-TWIN-TRANSITION-01: Integrated approaches for remanufacturing (Made in Europe Partnership) (IA)	5.00 to 7.00	6
HORIZON-CL4-INDUSTRY-2025-01-TWIN-TRANSITION-02: Physical and cognitive augmentation in advanced manufacturing (Made in Europe Partnership) (RIA)	4.00 to 6.00	7
HORIZON-CL4-INDUSTRY-2025-01-TWIN-TRANSITION-05: Advanced manufacturing technologies for leadership of EU manufacturers in products for the net zero industry (Made in Europe Partnership) (IA)	5.00 to 7.00	6



<https://ec.europa.eu/digital-single-market/en/news/info-session-horizon-2020-artificial-intelligence-manufacturing>



<https://digital-strategy.ec.europa.eu/en/consultations/white-paper-artificial-intelligence-european-approach-excellence-and-trust>

◆ Proposals should demonstrate **cutting-edge remanufacturing approaches**, covering demanufacturing and appropriate manufacturing technologies, model-based systems engineering, quality control and business models.

◆ In general, the approaches should integrate traditional manufacturing processes, such as **additive manufacturing, machining and welding**, with **automation, robotics and digitalisation**.

### Proposals should address all of the followings:

- Remanufacturing technologies and processes and/or system engineering, building on advances in data sharing and AI;
- Mass de-manufacturing, such as disassembly, separation and sorting;
- Capability to produce high-quality products from a wide range of resources (new and remanufactured components and materials);
- Methodologies to facilitate decisions made at the end-of-use or end-of-life phase at the level of components or systems;
- Measurement, verification and inspection approaches assuring high quality, traceability and compliance with quality standards;
- Stringent data sourcing, interoperability and processing, coupled to robust AI technologies;
- International standards, building on existing standards or contributing to future standardisation, with a focus on remanufacturing standards;
- New sets of skills required for remanufacturing implementation at the European level.

◆ The focus is on **advanced discrete manufacturing processes** for such products, components and equipment, which enable new product features (in terms of geometry, weight, robustness, functional integration, re-use-potential); **advanced production processes** including automation; or the use of innovative materials.

◆ The processes should improve productivity and upscaling, decrease waste, and shorten time-to-market and process integration times.

Research and innovation should focus on the innovative development and application of one or more of the following manufacturing technologies and associated systems:

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- Additive manufacturing or cladding for manufacturing and/or repair;
- Advanced joining technologies;
- Advanced forming and material shaping technologies;
- Surface (pre-)processing technologies, nano- or micromanufacturing;
- High-precision machining and assembly.

### **Proposals should consider integrating**

- Innovative metrology and inspection methods, aiming at first-time right manufacturing;
- Advanced and flexible automation approaches, for instance for large components, complex assembling or handling of hazardous materials;
- Digital twins and data mining for fast ramp-up, scale-up and real-time optimisation of production;
- Circular manufacturing approaches in view of increasing the options for remanufacturing, disassembly, recycling, etc.

# Küme 4 – Hedef 1: “İklim nötr, döngüsel ve dijitalleştirilmiş endüstriyel ve dijital değer zincirlerinde küresel liderliğe ulaşmak”



## ENERGY INTENSIVE INDUSTRIES Decarbonisation and Energy Efficiency

Çağrı Kodu ve Konu Başlığı	Bütçe/proje (Milyon Avro)	Desteklenecek proje sayısı
HORIZON-CL4-INDUSTRY-2025-01-TWIN-TRANSITION-31: From heat-driven processes to the use of mechanical and electric forces (Processes4Planet partnership) (IA)	8.00 to 10.00	3
HORIZON-CL4-INDUSTRY-2025-01-TWIN-TRANSITION-32: Green and resilient flexible production processes (Processes4Planet partnership) (IA)	8.00 to 10.00	3
HORIZON-CL4-INDUSTRY-2025-01-TWIN-TRANSITION-33: Integrated use of renewable energy carriers in industrial sites (Processes4Planet partnership) (RIA)	6.00 to 8.00	3
HORIZON-CL4-INDUSTRY-2025-01-TWIN-TRANSITION-34: Smart integration of net zero technologies into Energy Intensive industries (Processes4Planet and Made in Europe partnership) (IA)	5.00 to 9.00	3
HORIZON-CL4-INDUSTRY-2025-01-TWIN-TRANSITION-37: Solving issues in carbon-neutral iron and steel making processes with diverse input materials of varying quality (Clean Steel Partnership) (RIA)	Around 14.00	2



<https://monitor-industrial-ecosystems.ec.europa.eu/industrial-ecosystems/energy-intensive-industries>



JRC Scientific and Policy Reports, Prospective Scenarios on Energy Efficiency and CO2 Emissions in the EU Iron & Steel Industry

◆ There is a **broad range of renewable energy carriers** (e.g., electricity, hydrogen, solar heat, ammonia, etc) which can be utilised in the process industries.

◆ Many of them are provided with significant temporal variations, e.g., renewable electricity and solar heat.

◆ Integrated design and operation of these highly complex systems within process industry sites are needed to cope with the fluctuations of the energy inputs and to achieve overall Energy and cost efficiency.

## Proposals under this topic should address all of the following:

- Develop **highly efficient technologies for**, and prototype designs of, **integrated structures of industrial sites**, including **storage elements and solutions** for their integrated operation **under varying conditions**;
- Take due account of logistic aspects, **risk assessment** and management at plant level;
- Develop systemic solutions embracing industrial symbiosis, and if relevant, contribute to further evolution of existing Hubs4Circularity;
- Consider the interaction with the **supply side**, in particular electric power grids, hydrogen pipelines or district heating;
- Demonstrate **full integration and use of advanced digital technologies** from fields of distributed process control strategies, and data driven AI based optimisation and the application of model-based technologies for the improved, safe and efficient operation of industrial plants and sites
- Demonstrate and evaluate **energy efficiency and CO<sub>2</sub> footprint reduction** by optimal integration of energy from renewable sources as well as providing demand side flexibility;
- Propose new ways to adapt the workplaces and organisation of site management to ensure that the solutions can be widely implemented.

# Küme 4 – Hedef 1: “İklim nötr, döngüsel ve dijitalleştirilmiş endüstriyel ve dijital değer zincirlerinde küresel liderliğe ulaşmak”



## ENERGY INTENSIVE INDUSTRIES Circularity and Zero Pollution

Çağrı Kodu ve Konu Başlığı	Bütçe/proje (Milyon Avro)	Desteklenecek proje sayısı
HORIZON-CL4-INDUSTRY-2025-01-TWIN-TRANSITION-35-two-stage: Developing and embedding up-cycling technologies into viable business (Processes4Planet partnership) (IA)	8.00 to 12.00	5
HORIZON-CL4-INDUSTRY-2025-01-TWIN-TRANSITION-36: Safe and clean processing technologies and products (Processes4Planet partnership) (RIA)	6.00 to 8.00	4
HORIZON-CL4-INDUSTRY-2025-01-TWIN-TRANSITION-38: Synergies and mutual learning with national and regional initiatives in Europe on Industrial decarbonisation (Processes4Planet and Clean Steel partnerships) (CSA)	Around 1.00	1
HORIZON-CL4-INDUSTRY-2025-01-TWIN-TRANSITION-39: Towards humancentric, sustainable and resilient energy-intensive industries (Processes4Planet and Clean Steel partnerships) (CSA)	Around 2.00	1



A simplified model of the circular economy for materials and energy

<https://www.eea.europa.eu/en/analysis/maps-and-charts/circular-economy>

◆ The **recycling of end-of-life materials** into valuable materials that can replace primary raw materials requires **integrated systems** from the collection to dismantling and separation to their final processing.

◆ The technologies and of such circular schemes must be addressed in an integrated way. The innovation needed will depend on the **addressed waste category**.

◆ However, **even if the upcycling technologies and implementation may be sector/material specific**, the **cross-sectorial elements are important and should deserve due attention**

## Proposals are expected to address the followings:

- Focus on the integration of technologies, logistics systems into business models of circular schemes;

- **Develop processes for the upcycling of end-of-life materials in an integrated way**, including the development of **better novel separation, sorting and processing technologies** as well as **digitalisation and automatisisation of the processes** as necessary;

- **Identify the processes and secondary raw materials which offer the highest upcycling potential** and accordingly develop novel upcycling technologies and processes including purification technologies;

- **Identify the likely impacts of the upcycling solutions with respect to economic and job creation potential**, as well as environmental footprint referring to the full set of planetary boundaries including freshwater intake aspects;

- **Minimise the presence of substances of concern** to mitigate the impacts of multiple recycling loops as well as the accumulation of additives and trace materials in secondary resource streams;

- **Consider advanced monitoring and sensing along the value chains** and improved data completeness, accuracy and interoperability between the process and recycling companies.

- ◆ Whereas the release of pollutants by European industry has generally decreased during the last decade, **industry still contributes significantly to the emission of many pollutants into the European environment.**

- ◆ Moreover, only emissions of historically important pollutants are reported by industry. **Information on emerging and less known pollutants**, and related methods of monitoring is lacking.

**GHG emissions from industry are not included** in the scope of this topic.

Pollutant emissions to air, water and soil are considered.

### Proposals under this topic should address the followings:

- Develop **novel processing technologies** leading to reduced health, safety and environmental impacts beyond CO<sub>2</sub> emissions;
- Demonstrate the **reduction of the use of hazardous substances that pose a risk for human and environmental health** and safety and thereby also their proliferation into the products;
- **Minimise adverse effects from the novel processes' technologies** on the function and durability of the materials, recyclability, the production cost as well as the associated risk;
- Consider involving all the relevant actors in a **participatory approach** for the reduction of risk and health issues at work;
- Where relevant, **develop sampling and monitoring methods for emerging pollutants and less known groups of pollutants** in stack emissions before entering the environment.

# Küme 4 – Hedef 1: “İklim nötr, döngüsel ve dijitalleştirilmiş endüstriyel ve dijital değer zincirlerinde küresel liderliğe ulaşmak”



## CONSTRUCTION INDUSTRY

Çağrı kodu ve Konu Başlığı	Bütçe/proje (Milyon Avro)	Desteklenecek proje sayısı
HORIZON-CL4-INDUSTRY-2025-01-TWIN-TRANSITION-11-two-stage: Enhanced logistics and operations of construction sites (IA)	Around 6.50	2



JRC Science for Policy Report, Digital Transformation in Transport, Construction, Energy, Government and Public Administration, EUR 29782 EN, Publications Office of the European Union, Luxembourg, 2019



JRC Science for Policy Report, Digital Transformation in Transport, Construction, Energy, Government and Public Administration, EUR 29782 EN, Publications Office of the European Union, Luxembourg, 2019



JRC Science for Policy Report, Digital Transformation in Transport, Construction, Energy, Government and Public Administration, EUR 29782 EN, Publications Office of the European Union, Luxembourg, 2019

Hedef 2: “Ham madde, kimyasallar ve yenilikçi malzemeler alanında Avrupa'nın açık stratejik özerkliği için teknolojik liderliğe ulaşmak”

Raw Materials

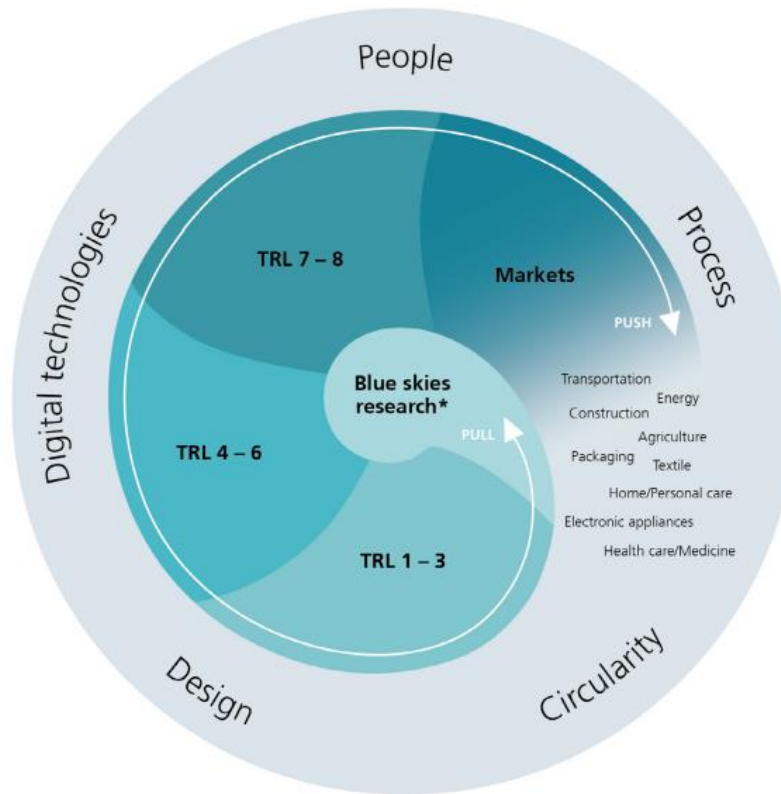
Innovative Advanced Materials

Safe and Sustainable by Design

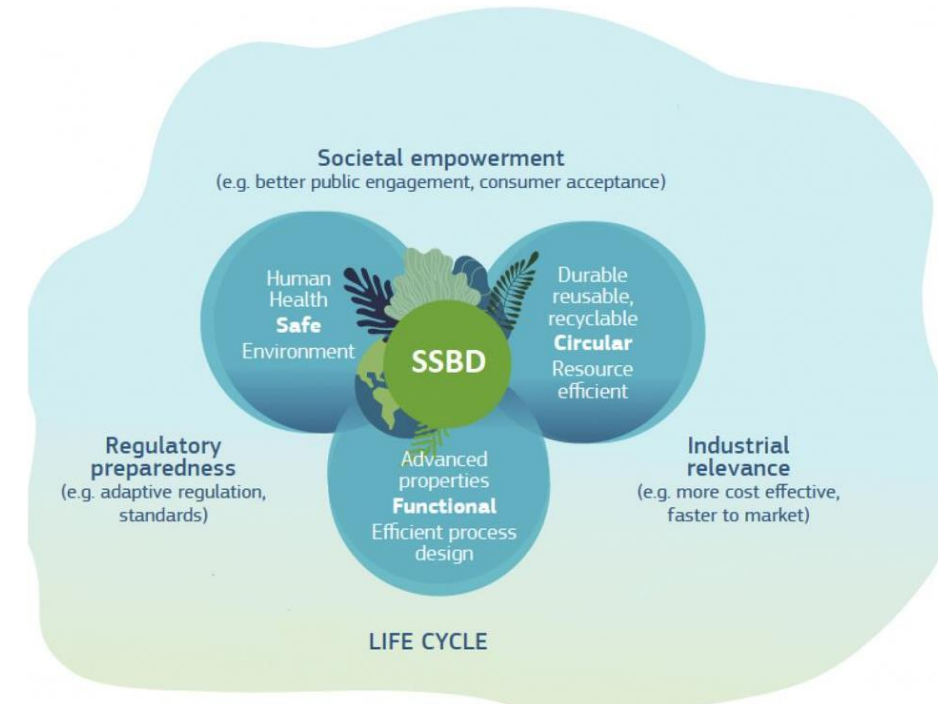
Textiles



[https://single-market-economy.ec.europa.eu/sectors/raw-materials/areas-specific-interest/critical-raw-materials/strategic-projects-under-crma\\_en](https://single-market-economy.ec.europa.eu/sectors/raw-materials/areas-specific-interest/critical-raw-materials/strategic-projects-under-crma_en)



MATERIALS 2030 MANIFESTO Systemic Approach of Advanced Materials for Prosperity – A 2030 Perspective



[https://joint-research-centre.ec.europa.eu/jrc-news/contributing-greener-eu-safe-and-sustainable-nanomaterials-design-stage-2021-04-19\\_en](https://joint-research-centre.ec.europa.eu/jrc-news/contributing-greener-eu-safe-and-sustainable-nanomaterials-design-stage-2021-04-19_en)



[https://environment.ec.europa.eu/strategy/textiles-strategy\\_en](https://environment.ec.europa.eu/strategy/textiles-strategy_en)

# Küme 4 – Hedef 2: “Ham madde, kimyasallar ve yenilikçi malzemeler alanında Avrupa'nın açık stratejik özerkliği için teknolojik liderliğe ulaşmak”



## RAW MATERIALS

Çağrı kodu ve Konu Başlığı	Bütçe/proje (Milyon Avro)	Desteklenecek proje sayısı
HORIZON-CL4-INDUSTRY-2025-01-MATERIALS-61: Technologies for critical raw materials and strategic raw materials from End of Life products (IA)	Around 8.00	3
HORIZON-CL4-INDUSTRY-2025-01-MATERIALS-62: Strategic Partnerships for Raw Materials: Innovative Approaches for sustainable production of Critical Raw Materials (IA)	Around 7.50	4
HORIZON-CL4-INDUSTRY-2025-01-MATERIALS-63: Innovative solutions for the sustainable production for Semiconductor raw materials (IA)	Around 8.00	3
HORIZON-CL4-INDUSTRY-2025-01-MATERIALS-64: EU Co-funded Partnership on raw materials for the green and digital transition (Co-fund)	Around 90.00	1



[https://single-market-economy.ec.europa.eu/sectors/raw-materials/areas-specific-interest/critical-raw-materials/strategic-projects-under-crma\\_en](https://single-market-economy.ec.europa.eu/sectors/raw-materials/areas-specific-interest/critical-raw-materials/strategic-projects-under-crma_en)



Projects are expected to contribute to the following outcomes:

- ◆ Increased recovery rate of critical and strategic raw materials as set out in the Critical Raw Materials Act through developing raw materials recycling and re-use of components and/or products from end-of-life products, including recovery of raw material by-products.
- ◆ Improved competitiveness of secondary raw materials production by enhancing cost effectiveness.
- ◆ Improved efficiency of technologies for separation and recycling and the sustainable embedment of the process in terms of energy, resource and water use, waste and emissions footprint.
- ◆ Improved responsible supply of raw materials to Europe from EoL streams in line with the EU principles for sustainable raw materials.

## SCOPE

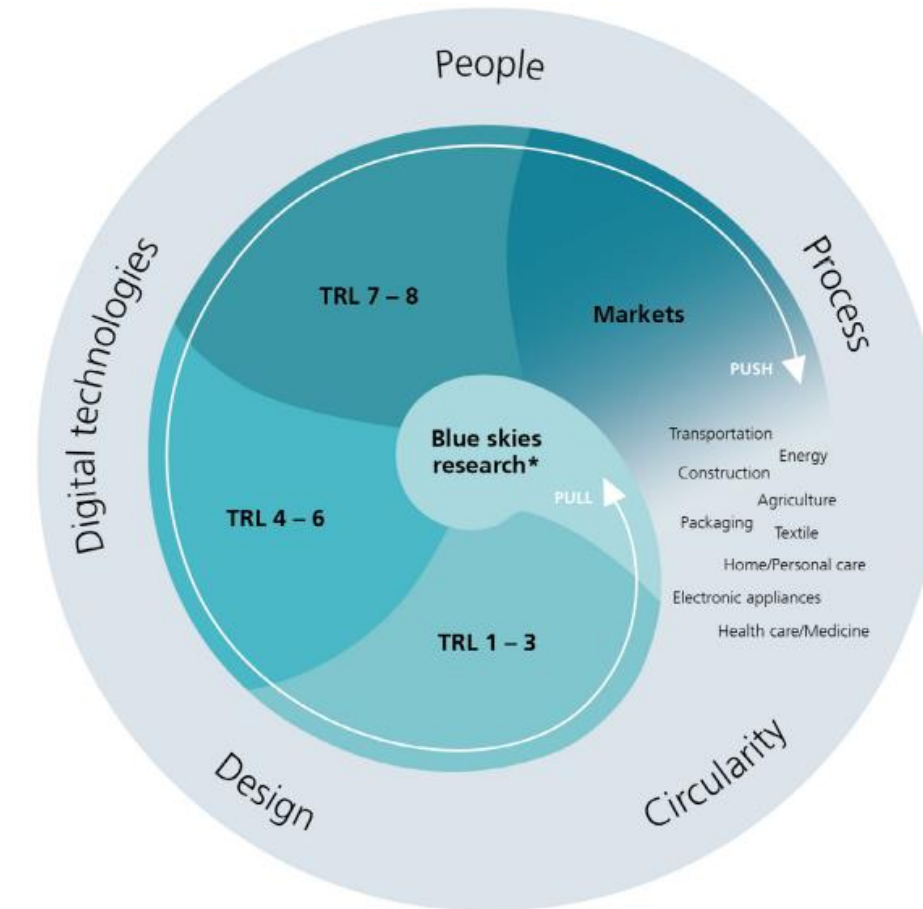
- Actions should develop material efficient high-quality re-use and recycling of one or more of the following end-of-life product categories/key waste streams: waste electrical and electronic equipment, waste batteries, end-of-life vehicles, waste wind turbines, waste solar photovoltaics, waste heat pumps, waste electrolysers and machine tools made from high-performance alloys.
- Actions should focus on the whole chain of re-using and recycling processes and procedures – from collection, logistics, characterisation, sorting, cleaning, refining and purification of secondary raw materials and quality of produced outputs.
- Actions should focus on functional re-use and recycling. Recycling where the recycled material is of lower functionality than the original material (downcycling) is to be avoided.
- Actions should envisage clustering activities with other projects aiming at recycling, second life, re-use, repurposing, remanufacturing of products and/or components relevant selected projects for cross-projects co-operation
- Actions should facilitate the market uptake of solutions developed through industrially- and user-driven multidisciplinary consortia covering the relevant value chain.

# Küme 4 – Hedef 2: “Ham madde, kimyasallar ve yenilikçi malzemeler alanında Avrupa'nın açık stratejik özerkliği için teknolojik liderliğe ulaşmak”



## INNOVATIVE ADVANCED MATERIALS

Çağrı kodu ve Konu Başlığı	Bütçe/proje (Milyon Avro)	Desteklenecek proje sayısı
HORIZON-CL4-INDUSTRY-2025-01-MATERIALS-42-two-stage: Innovative Advanced Materials (IAMs) for product monitoring, smart maintenance and repair strategies in the <b>construction sector</b> (RIA)	Around 6.00	5
HORIZON-CL4-INDUSTRY-2025-01-MATERIALS-43-two-stage: Innovative Advanced Materials (IAMs) for robust, fast curing <b>sealants and coatings</b> for manufacturing and final assembly (IA)	Around 6.00	5
HORIZON-CL4-INDUSTRY-2025-01-MATERIALS-44: Innovative Advanced Materials Innovation Procurement (CSA)	Around 2.00	1
HORIZON-CL4-INDUSTRY-2025-01-MATERIALS-45: Materials Commons for Europe (IA)	Around 28.00	1
HORIZON-CL4-INDUSTRY-2025-01-MATERIALS-46: Innovative Advanced Materials (IAMs) for photonics, enabling low-power and ultra-broadband performance for <b>telecommunication</b> (RIA)	Around 5.00	2
HORIZON-CL4-INDUSTRY-2025-01-MATERIALS-47: Innovative Advanced Materials (IAMs) for conformable, flexible or stretchable <b>electronics</b> (RIA)	Around 5.00	3



MATERIALS 2030 MANIFESTO Systemic Approach of Advanced Materials for Prosperity – A 2030 Perspective

The concept of "ubiquitous electronics" can be a unique opportunity for the EU, opening up new avenues for e.g., wearable electronics, e-textile, e-skin, wellbeing solutions and Internet of wearable things (IoWT), which represent strategic markets for the EU.

◆ Innovative and advanced materials can enable new technologies and the much-needed paradigm of an electronic device that can adapt to any substrate.

◆ Despite the progress made in this field, current devices are made up of a limited proportion of flexible, conformable, and stretchable components, mainly sensors, while the rest of the circuit remains rigid, limiting this technology shift.

The objective is to discover IAMs, including 2DMs, with improved properties in terms of flexibility, conformability and stretchability that can enable novel flexible electronic applications, with a focus on environmentally friendly technologies with reduced carbon footprint processing.

### Proposals should address most of the following challenges:

- Discomfort of existing wearables leading to non-adoption
- Limited integrability of current electronics: size and/or weight, complex cabling, interface between flexible and rigid components, design limitations (i.e., pattern geometry, thickness, dimensions).
- Low or limited performance and durability of existing materials for high performance and reliable flexible electronic devices and circuits
- Environmental impact of current electronics due to the use of hazardous and/or critical raw materials, energy-hungry and resources intensive processes

# Küme 4 – Hedef 2: “Ham madde, kimyasallar ve yenilikçi malzemeler alanında Avrupa'nın açık stratejik özerkliği için teknolojik liderliğe ulaşmak”

## Safe and Sustainable by Design

Çağrı kodu ve Konu Başlığı	Bütçe/proje (Milyon Avro)	Desteklenecek proje sayısı
HORIZON-CL4-INDUSTRY-2025-01-MATERIALS-51-two-stage: Development of safe and sustainable by design alternatives to Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS) (IA)	Around 7.00	4
HORIZON-CL4-INDUSTRY-2025-01-MATERIALS-52: Accelerate the uptake of lifecycle assessment (LCA) for Safe and Sustainable by Design (SSbD) chemicals and materials and resulting products (RIA)	4.00 to 5.00	3



[https://joint-research-centre.ec.europa.eu/jrc-news/contributing-greener-eu-safe-and-sustainable-nanomaterials-design-stage-2021-04-19\\_en](https://joint-research-centre.ec.europa.eu/jrc-news/contributing-greener-eu-safe-and-sustainable-nanomaterials-design-stage-2021-04-19_en)

## Textiles

Çağrı kodu	Bütçe/proje (Avro)	Desteklenecek proje sayısı
HORIZON-CL4-INDUSTRY-2025-01-MATERIALS-31: Digitally enabled local-for-local textile and apparel production (IA)	Around 5.00	2



[https://environment.ec.europa.eu/strategy/textiles-strategy\\_en](https://environment.ec.europa.eu/strategy/textiles-strategy_en)

- ◆ PFAS are a large class of substances used in a wide range of applications (for instance, as adhesives, coatings, lubricants, sealants, surfactants), for their technical and/or safety functions (e.g., water and oil repellence, antiadhesion, thermal & chemical stability).

- ◆ Nevertheless, PFAS have been detected in groundwater, surface water and soil, the remediation of which is extremely problematic.

- ◆ Their accumulation in the environment has been linked to negative effects for the wildlife and the human health, including carcinogenic, mutagenic, reprotoxic and toxic effects for the endocrine system

Proposals should address at least one industrial application and should **develop one or more new chemical substances or technologies to replace existing PFAS used**, according to abovementioned applications and functions, in one of the following areas:

- **Electronics, electrical appliances and grids** (e.g., wires, cables, heat transfer fluids, transformers, switchgears), where PFAS are currently used to provide a combination of technical and/or safety functions to withstand impact of high temperature, pressure and chemicals, ensure corrosion inhibition and non-flammability.

- **Construction technologies** (e.g., carpeting, drywall, paintings, foams) where PFAS are currently used to provide a combination of technical functions such as resistance in harsh environments and for wetting agents.

- **Technical textiles** (e.g., personal protective equipment, construction textiles, filtration and separation media, technical textiles for transport applications) where PFAS are currently used for their repellence but also heat stability and corrosion inhibition.

- **Automotive parts** (e.g. electrical parts including batteries, membranes, hoses and pipes, brakes, rubber processing) where PFAS are also currently used.

## DIAMETER: Demonstration of a sustainable circular-by-design manufacturing system based on additive manufacturing

Ufuk Avrupa Programı kapsamında **HORIZON-CL4-2024-TWIN-TRANSITION-01-05** çağrısına sunulan **72 adet proje arasından**, **Sabancı Üniversitesi'nin Proje Koordinatörü** olarak yer aldığı **DIAMETER projesi** Avrupa Komisyonu tarafından desteklenmeye hak kazandı.

Proje akronimi	DIAMETER
Proje başlığı	Demonstration of a sustainable circular-by-design manufacturing system based on additive manufacturing
Proje koordinatörü	Sabancı Üniversitesi
Projedeki Türk Paydaşlar	Sabancı Üniversitesi TUSAŞ-Türk Havacılık ve Uzay Sanayii A.Ş. Coşkunöz Kalıp Makina San. ve Tic. A.Ş.
Projenin toplam bütçesi	~ 6 Milyon Avro
Projenin başlangıç – bitiş tarihleri	1 Kasım 2024 – 31 Ekim 2028



Avrupa, Asya, Amerika ve Avustralya olmak üzere dört kıtanın çeşitli ülkelerinden 18 ortağın oluşturduğu konsorsiyum, toplam bütçesi 6 Milyon Avro olan projede, yeniden imalat, yenileme, onarım ve malzeme geri dönüşümü gibi döngüsellik stratejilerinin havacılık, otomotiv ve kalıpcılık endüstrilerinde kullanılan eklemeli ve talaşlı imalat süreçlerinde uygulamasının kolaylaştırılması, tasarım ve süreç iyileştirilmesine yönelik bir dizi dijital araç geliştirilecek.

## Ülkemizden 17 Farklı Projede Yer Alan 32 Proje Ortağına Toplam 7.9 Milyon Avro Hibe

- Teknopar Endüstriyel Otomasyon San. ve Tic. A.Ş. ve Silverline Endüstri ve Tic. A.Ş.: [AI Powered human-centred Robot Interactions for Smart Manufacturing](#)
- Simularge Bilisim ve Mühendislik Teknolojileri A.Ş., Siemens San. ve Tic. A.Ş. ve Arçelik A.Ş.: [Non-Destructive Inspection Services for Digitally Enhanced Zero Waste Manufacturing](#)
- Arçelik A.Ş.: [Boosting the adoption of Ultrashort Pulsed Laser large scale structuring with an agile, dexterous and efficient manufacturing platform](#)
- Arçelik A.Ş., Farplas Otomotiv A.Ş. ve Tofaş Türk Otomobil Fabrikası A.Ş.: [InnoVatIve processing Technologies for bio-based foAmed thermopLastics](#)
- Teknopar Endüstriyel Otomasyon San. ve Tic. A.Ş. ve Socar Türkiye Araştırma Geliştirme ve Inovasyon A.Ş.: [AI Platform for Integrated Sustainable and Circular Manufacturing](#)
- Hidromek - Hidrolik ve Mekanik Makina İmalat San. ve Tic. A.Ş.: [Breakthrough European Technologies Yielding Construction sovereignty, Diversity & Efficiency of Resources](#)
- Korteks Mensucat San. ve Tic. A.Ş. ve Sun Tekstil San. ve Tic. A.Ş.: [New technologies to integrate PLASTIC waste in the Circular Economy](#)
- Ford Otomotiv San. A.Ş., Türkiye Bilimsel ve Teknolojik Araştırma Kurumu, Sakarya Elektrik Dağıtım Şirketi, Mutlu Akü ve Malz. San. A.Ş. ve Türkiye Petrol Rafinerileri A.Ş.: [Digitally-enabled FLEXible Industries for reliable energy grids under high penetration of Variable Renewable Energy Sources\)](#)

- Ford Otomotiv San. A.Ş.: [Recycling of end of life battery packs for domestic raw material supply chains and enhanced circular economy](#)
- İzmir Yüksek Teknoloji Enstitüsü: [Raw materials from geothermal fluids: occurrence, enrichment, extraction](#)
- Arçelik A.Ş.: [Plastics Recycling from and for home appliances, toys and textile](#)
- Arçelik A.Ş.: [Toxic Free metallization process for plastic surfaces](#)
- Coşkunöz Kalıp Makina San. ve Tic. A.Ş.: [Metal Matrix Nano-composite Coatings Utilization as Alternative to Hard Chromium](#)
- Arçelik A.Ş.: [Smart Response Self-Disinfected Biobased NanoCoated Surfaces for Healthier Environments](#)
- Eczacıbaşı Yapı Gereçleri San. ve Tic. A.Ş., Almaxtex Tekstil San. ve Tic. A.Ş. ve Panasonic Life Solutions Elektrik San. ve Tic. A.Ş.: [Sustainable Antimicrobial and Antiviral Nanocoating](#)
- Zorlu Enerji Elektrik Üretim A.Ş. ve TPI Kompozit Kanat San. ve Tic. A.Ş.: [Joint Industrial Data Exchange Pipeline](#)
- DE Sürdürülebilir Enerji ve İnşaat San. Ltd. Şti. ve Kadıköy Belediyesi: [S=Smart U=Upgraded asset-values and quality of life P=Public Private Partnership E=Extended Energy Efficiency R=Renewables triggered by the project SH=Social Housing I=Investment N=Net Zero E=European](#)

## Ülkemizden 11 Farklı Projede Yer Alan 16 Proje Ortağına Toplam 5.4 Milyon Avro Hibe

- Farplas Otomotiv A.Ş.: [Sustainably and digitally driven hierarchical laser texturing for Complex Surfaces](#)
- Tofaş Türk Otomobil Fabrikası A.Ş.: [Handling with AI-enhanced Robotic Technologies for flexible manufacturing](#)
- KOÇ Üniversitesi: [Data-driven method based on a process mining approach for Automated Digital Twin generation, operations, and maintenance in circular value chains](#)
- Arçelik: [Digitalised Value Management for Unlocking the potential of the Circular Manufacturing Systems with integrated digital solutions](#)
- İstanbul Büyükşehir Belediyesi ve Teknoloji Arastirma ve Gelistirme Endustriyel Ürünler Bilişim Teknolojileri San. ve Tic. A.Ş.: [CircularPSP – Public Service Platforms for Circular, Innovative and Resilient Municipalities through PCP](#)
- Olgun Çelik Sanayi ve Ticaret A.Ş.: [Fully Recyclable Hybrid Bio-composite for Transport Applications](#)
- Mercedes-Benz Türk A.Ş.: [Advanced lightweight materials FOR Energy-efficient Structures](#)
- İstanbul Teknik Üniversitesi, Ereğli Demir ve Çelik Fabrikaları Türk A.Ş., Erdemir Mühendislik Yönetim ve Danışmanlık Hizmetleri A.Ş. ve Memsis Çevre Teknolojileri Araştırma ve Geliştirme Ltd Şti.: [Customised membranes for green and resilient industries](#)
- Kansai Altan Boya Sanayi A.Ş.: [An Open Innovation Ecosystem for exploitation of materials for building envelopes towards zero energy buildings](#)
- Denge Kimya ve Sun Tekstil San. ve Tic. A.Ş.: [New Routes of Safe and Sustainable by Design Water and Oil Repellent Biobased Coatings](#)
- Fankom Mühendislik Makine Enerji ve Bilgisayar Ticaret Ltd. Şti.: [Open Innovation Platform for Optimising Production Systems by Combining Product Development, Virtual Engineering Workflows and Production Data](#)

## Ülkemizden 15 Farklı Projede Yer Alan 23 Proje Ortağına Toplam 8.5 Milyon Avro Hibe

- Tofaş Türk Otomobil Fabrikası A.Ş.: [Flexible Laser-based manufacturing through precision photon distribution](#)
- Farplas Otomotiv A.Ş., Profen İletişim Teknolojileri ve Hizmetleri Sanayi Ticaret A.Ş. ve Türk Havacılık Uzay Sanayii A.Ş.: [Circularity and Remanufacturing-Enabling Digital Twins](#)
- Navtek Denizcilik Teknolojileri A.Ş.: [Sustainable Remanufacturing solution with increased automation and recycled content in laser and plasma-based process](#)
- Arçelik A.Ş., İlpea Plastik ve Kauçuk Ürünleri San. ve Tic. Ltd. Şti. ve Smartopt Bilişim Teknolojileri A.Ş.: [Manufacturing as a Service to Increase Resilience in Value Networks](#)
- Smartopt Bilişim Teknolojileri A.Ş., Arçelik A.Ş. ve Karel Elektronik Sanayi ve Ticaret A.Ş.: [Technologies for Manufacturing as a Service Ecosystems](#)
- İstanbul Maden ve Metaller İhracatçı Birlikleri, Türkiye Petrol Rafinerileri A.Ş. ve Arçelik A.Ş.: [Sustainable Circular Economy Transition: From Industrial Symbiosis to Hubs for Circularity](#)
- Organik Kimya Sanayi ve Ticaret A.Ş.: [Industrial Water Circularity: Reuse, Resource Recovery and Energy Efficiency for Greener Digitised EU Processes](#)
- Arçelik A.Ş.: [Flexible remanufacturing using AI and advanced robotics for circular value chains in EU industry](#)
- Orta Doğu Teknik Üniversitesi.: [Decarbonized Titanium Recovery from Aluminium and Titanium Production Residues](#)
- Ford Otomotiv Sanayi A.Ş.: [Recycling technologies for ELV components to create a sustainable source of market grade materials for EU applications](#)
- Korteks Mensucat Sanayi ve Ticaret A.Ş.: [Safe and Sustainable by Design framework for the next generation of Chemicals and Materials](#)
- Oyak Renault Otomobil Fabrikaları A.Ş.: [AI-driven multiscale methodology to develop Transparent Wood as sustainable functional material](#)
- Martur Sünger ve Koltuk Tesisleri Ticaret San. A.Ş.: [Sustainable, Biobased and Bio-Inspired Materials for Smart Technical Textiles](#)
- IND Yazılım Bilisim Teknolojileri San. ve Tic. A.Ş. : [Innovative modelling and assessment capabilities through MaaS for Manufacturing Ecosystem resiliency](#)
- Arçelik A.Ş.: Digitally-enhanced multi-level solution for smart human-centric remanufacturing

## Ülkemizden 12 Farklı Projede Yer Alan 1 Koordinatör ve 21 Proje Ortağına Toplam 7.9 Milyon Avro Hibe

- **Sabancı Üniversitesi, TUSAŞ-Türk Havacılık ve Uzay Sanayii A.Ş., Coşkunöz Kalıp Makina San. ve Tic. A.Ş.:** Demonstration of a sustainable circular-by-design manufacturing system based on additive manufacturing
- **Arçelik A.Ş.:** Enabling Circular Value Chains via Production Digitization and Human Empowerment
- **Teknopar Bilişim:** Streamlining the optimisation of Sustainable Thermal Energy systems and Prototype technologies in process industries
- **Türkiye Petrol Rafinerileri A.Ş.:** Innovative electrochemical CO<sub>2</sub> Conversion to Versatile Feedstock
- **TUSAŞ-Türk Havacılık ve Uzay Sanayii A.Ş.:** Resource efficient materials for Additive Manufacturing
- **Tofaş Türk Otomobil Fabrikası A.Ş.:** Seamless digital integration in steel value chain for high quality final products
- **AdBioInk Biyosistem Teknoloji A.Ş.:** ADvAnced 4D biomAterialS for mucosa and sub-mUcosa treatment in patients affected by intestinal diSeases
- **Baştaş Başkent Çimento San. ve Tic. A.Ş., Ekodenge Mühendislik Mimarlık Danışmanlık Ticaret A.Ş., Ensensei Mühendislik Danışmanlık Limited Şirketi, Intract Inovasyon Danışmanlık Limited Şirketi, Minova Proses Madencilik Limited Şirketi, Tepe Betopan Yapı Malzemeleri San. ve Tic. A.Ş., İnşaat Malzemesi Sanayicileri Derneği:** Networked industrial-urban symbiosis value chain demonstrators for biomaterials, C&DW, circular water loops & WWTPs, driven by Hubs 4 Circularity
- **Ereğli Demir ve Çelik Fabrikaları Türk A.Ş.:** Decarbonized Steel Production with Novel Processes
- **Ford Otomotiv Sanayi A.Ş.:** PERmanent MAgnet Network for the European Transition
- **Arçelik A.Ş.:** Development and manufacture of new, more sustainable and safer materials using biobased functionalised additives based on ligin and tannins to improve fire resistance
- **Huhtamaki Flexibles İstanbul (Elif Plastik Ambalaj San. ve Tic. A.Ş.), Pınar Entegre Et ve Un San. A.Ş. ve Pınar Süt Mamülleri San. A.Ş.:** Innovative bio-based biodeGradable Recyclable safE and cirCular foOd packaging

## PILLAR II - Global challenges & European industrial competitiveness

CLUSTER 1: Health	CLUSTER 2: Culture, creativity, inclusive societies	CLUSTER 4: Digital, industry and space	CLUSTER 5: Climate, energy and mobility	CLUSTER 6: Food, bioeconomy, natural resources, agriculture and environment
Innovative Health Initiative	Resilient Cultural Heritage*	Chips (formerly KDT)	Clean Hydrogen	Circular Bio-based Europe
Global Health Partnership	Social Transformations and Resilience*	Smart Networks & Services	Clean Aviation	R&I in the Mediterranean Area (PRIMA, Art. 185)**
Transformation of Health and Care Systems		High Performance Computing	Single European Sky ATM Research 3	Biodiversa+
Chemicals Risk Assessment		European Metrology (Art. 185)	Europe's Rail	Climate Neutral, Sustainable & Productive Blue Economy
ERA for Health		AI-Data-Robotics	Connected, Cooperative and Automated Mobility (CCAM)	Water4All
Rare Diseases*		Photonics	Batt4EU	Animal Health and Welfare
One-Health Anti Microbial Resistance*	★	Made in Europe	Zero-emission waterborne transport	Accelerating Farming Systems Transitions
Personalised Medicine	★	Clean Steel – Low-Carbon Steelmaking	Zero-emission road transport	Agriculture of Data*
Pandemic Preparedness*	★	Processes4Planet	Built4People	Safe and Sustainable Food System*
Brain Health*		Globally Competitive Space Systems*	Solar Photovoltaics*	Forests and Forestry for a sustainable Future*
	★	Innovative Materials for EU (I AM for EU)*	Clean Energy Transition	
		Virtual Worlds*	Driving Urban Transitions	
	★	Textiles of the Future*		
	★	Raw Materials for the Green and Digital Transition*		

★ Industry Area Partnerships

## PILLAR III – Innovative Europe

EIT	EUROPEAN INNOVATION ECOSYSTEMS
InnoEnergy	Innovative SMEs
Climate	
Digital	
Food	
Health	
Raw Materials	
Manufacturing	
Urban Mobility	
Cultural and Creativity*	
Water, Marine and Maritime Sectors and Ecosystem*	

## Cross - PILLARS I and II

European Open Science Cloud

- Institutionalised Partnerships (Art. 185/7)
- Institutionalised Partnerships / EIT KICs
- Co-programmed
- Co-funded
- Proposed new candidate European Partnerships under the Horizon Europe Plan 2025-2027

\* Partnership not yet launched

\*\* Direct continuation of a H2020 partnership

**Made in Europe  
Partnership**



**Processes4Planet  
Partnership**



**Clean Steel  
Partnership**



**Innovative Advanced Materials  
for EU Partnership**

**Innovative Advanced  
Materials for Europe**

**Textiles of the Future  
Partnership**





EFFRA üye listesi

<https://www.effra.eu/members/>



A New Industrial Strategy for Europe (EU Policy):

*1. European Leadership & manufacturing excellence*

European Green Deal (EU Policy):

*2. Circular and climate-neutral manufacturing*

Made in Europe  
General  
Objectives

Europe fit for the digital age (EU Policy):

*3. Digital transformation of manufacturing industry*

Economy that works for people (EU Policy):

*4. Attractive value-added manufacturing jobs*

Specific Objectives	Research & Innovation Objectives
1. Efficient, responsive and smart factories and supply chains	<ol style="list-style-type: none"><li>1. Data 'highways' and data spaces in support of smart and real-time connected factories in dynamic and robust value networks</li><li>2. Scalable, reconfigurable and flexible first-time right manufacturing</li><li>3. Zero-defect and zero-down-time high precision manufacturing, including predictive quality and non-destructive inspection methods</li><li>4. Artificial intelligence for productive, excellent, robust and agile manufacturing chains</li><li>5. Advanced manufacturing processes for smart and complex products</li><li>6. High precision manufacturing for miniaturisation and functional integration</li></ol>
2. Circular products & Climate-neutral manufacturing	<ol style="list-style-type: none"><li>1. Ultra-efficient, low energy and carbon-neutral manufacturing</li><li>2. De-manufacturing, re-manufacturing and recycling technologies for circular economy</li><li>3. Manufacturing with new and substitute materials</li><li>4. Virtual end-to-end life-cycle engineering and manufacturing from product to production lines, factories, and networks</li><li>5. Digital platforms and data management for circular product and production-systems life-cycles</li></ol>
3. New integrated business, product-service and production approaches; new use models	<ol style="list-style-type: none"><li>1. Collaborative product-service engineering for customer driven manufacturing value networks</li><li>2. Manufacturing processes and approaches near to customers or consumers</li><li>3. Transparency, trust and data &amp; IP integrity, open systems and cybersecurity along the product and manufacturing life-cycle</li></ol>
4. Human-centered and human-driven manufacturing innovation	<ol style="list-style-type: none"><li>1. Digital platforms and engineering tools supporting creativity and productivity of R&amp;D processes</li><li>2. Advanced human-device interaction</li><li>3. Human &amp; technology complementarity and excellence in manufacturing</li><li>4. Manufacturing Innovation and change management</li><li>5. Technology validation and migration paths towards full industrial deployment of advanced manufacturing technologies by SMEs</li></ol>



## Türkiye'den EFFRA'ya üye olan kurum/kuruluşlar

- Arçelik
- Coşkunöz Kalıp Makine
- Ford Otosan
- Robo Otomasyon
- Sabancı Üniversitesi
- Teknopar
- Türkiye Metal Sanayicileri Sendikası
- WiserSense

EFFRA üye listesine <https://www.effra.eu/members/> linkinden ulaşabilirsiniz.

**Made in Europe Ortaklığı** kapsamında açılan 2021-2024 yılı çağrılarında ülkemizden paydaşlarımızın yer aldığı **19 farklı projede 9,55 Milyon Avroluk** proje bütçesine ulaşılmıştır.

**AI-PRISM**: Teknopar Endüstriyel Otomasyon San. ve Tic. A.Ş. ve Silverline Endüstri ve Tic. A.Ş.

**ZDZW**: Simularge Bilisim ve Mühendislik Teknolojileri A.Ş., Siemens San. ve Tic. A.Ş. ve Arçelik A.Ş.

**OPeraTIC**: Arçelik A.Ş.

**VITAL**: Arçelik A.Ş., Farplas Otomotiv A.Ş. ve Tofaş Türk Otomobil Fabrikası A.Ş.

**Circular TwAln**: Teknopar Endüstriyel Otomasyon San. ve Tic. A.Ş. ve Socar Türkiye Araştırma Geliştirme ve Inovasyon A.Ş.

**SYNTECS**: Farplas Otomotiv A.Ş.

**HARTU**: Tofaş Türk Otomobil Fabrikası A.Ş.

**AUTO-TWIN**: KOÇ Üniversitesi

**DiCiM**: Arçelik A.Ş.

**FLASH**: Tofaş Türk Otomobil Fabrikası A.Ş.

**CREDIT**: Farplas Otomotiv A.Ş., Profen İletişim Teknolojileri ve Hizmetleri Sanayi Ticaret A.Ş. ve Türk Havacılık Uzay Sanayii A.Ş.

**RESTORE**: Navtek Denizcilik Teknolojileri A.Ş.

**RENEE**: Arçelik A.Ş.

**rEUman**: Arçelik A.Ş.

**MAASive**: Arçelik A.Ş., İlpea Plastik ve Kauçuk Ürünleri San. ve Tic. Ltd. Şti. ve Smartopt Bilişim Teknolojileri A.Ş.

**Tec4MaaSEs**: Smartopt Bilişim Teknolojileri A.Ş., Arçelik A.Ş. ve Karel Elektronik Sanayi ve Ticaret A.Ş.

**DMaaST**: IND Yazılım Bilisim Teknolojileri San. ve Tic. A.Ş.

**DIAMETER**: Sabancı Üniversitesi, TUSAŞ-Türk Havacılık ve Uzay Sanayii A.Ş., Coşkunöz Kalıp Makina San. ve Tic. A.Ş.

**ENCIRCLE**: Arçelik A.Ş.



ESTEP üye listesi

<https://www.aspire2050.eu/aspire/members>

## Processes4Planet'in Hedefleri

1. Climate neutrality  
Net-zero emissions

2. Circularity  
Near zero landfilling and  
near zero water discharge

3. Competitive EU  
process industries



Innovation Areas	Innovation Programmes	
1. Integration of renewable energy and circular feedstocks as energy source	1a. Integration of renewable heat and electricity 1b. Integrating circular carbon into energy applications	1c. Hybrid fuel transition technologies 1d. Flexibility and demand response
2. Heat reuse	2a. Advanced heat reuse	
3. Electrification of thermal processes	3a. Heat pumps	3b. Electricity-based heating technologies
4. Electrically-driven processes	4a. Electrochemical conversion	4b. Electrically driven separation
5. Hydrogen integration	5a. Alternative hydrogen production routes 5b. Using hydrogen in industrial processes	5c. Hydrogen storage
6. CO2 capture for utilisation	6a. Flexible CO2 capture and purification technologies	
7. CO2 utilization in minerals	7a. CO2 utilisation in concrete production	7b. CO2 and CO mineralisation to produce building materials
8. CO2/CO utilisation in chemicals and fuels	8a. Artificial photosynthesis 8b. Catalytic conversion of CO2 to chemicals/fuels	8c. Utilisation of CO2 and CO as building block in polymers 8d. Utilisation of CO to chemicals/fuels
9. Energy and resource efficiency	9a. Next-gen catalysis	9b. Breakthrough efficiency improvement
10. Circularity of materials	10a. Innovative materials of the process industries 10b. Inherent recyclability of materials	10c. Upgrading secondary resources 10d. Wastewater valorisation
11. Industrial-urban symbiosis	11a. Demonstration of Industrial-Urban Symbiosis	
12. Circular regions	12a. European Community of Practice	12b. Development of Hubs for Circularity
13. Digitalisation	13a. Digital materials design 13b. Digital process development and engineering 13c. Digital plant operation	13d. Intelligent material and equipment monitoring 13e. Autonomous integrated supply chain management 13f. Digitalisation of industrial-urban symbiosis
14. Non-technological aspects	14a. Integration of non-technological aspects in calls	14b. Human resources, skills and labour market



European Cross-  
Sectoral association

## Türkiye'den A.SPIRE'a üye olan kurum/kuruluşlar

- Brisa Bridgestone
- Hayat Kimya
- Hitit Üniversitesi
- İstanbul Kimyevi Maddeler ve Mamulleri İhracatçıları Birliği
- Sabancı Üniversitesi
- SOCAR Türkiye
- Teknopar
- Tüpraş

**Processes4Planet Ortaklığı** kapsamında açılan 2021-2024 yılı çağrılarında ülkemizden paydaşlarımızın yer aldığı **8 farklı projede 8,97 Milyon Avroluk** proje bütçesine ulaşılmıştır.

**PLASTICE**: Korteks Mensucat San. ve Tic. A.Ş. ve Sun Tekstil San. ve Tic. A.Ş.

**FLEXIndustries**: Ford Otomotiv San. A.Ş., Türkiye Bilimsel ve Teknolojik Araştırma Kurumu, Sakarya Elektrik Dağıtım Şirketi, Mutlu Akü ve Malz. San. A.Ş. ve Türkiye Petrol Rafinerileri A.Ş.

**IS2H4C**: İstanbul Maden ve Metaller İhracatçı Birlikleri, Türkiye Petrol Rafinerileri A.Ş. ve Arçelik A.Ş.:

**RESURGENCE**: Organik Kimya Sanayi ve Ticaret A.Ş.

**StreamSTEP**: Teknopar Bilişim

**ICO2NIC**: Türkiye Petrol Rafinerileri A.Ş.

**United Circles**: Baştaş Başkent Çimento San. ve Tic. A.Ş., Ekodenge Mühendislik Mimarlık Danışmanlık Ticaret A.Ş., Ensensei Mühendislik Danışmanlık Limited Şirketi, Intract Inovasyon Danışmanlık Limited Şirketi, Minova Proses Madencilik Limited Şirketi, Tepe Betopan Yapı Malzemeleri San. ve Tic. A.Ş., İnşaat Malzemesi Sanayicileri Derneği

**REPAM**: TUSAŞ-Türk Havacılık ve Uzay Sanayii A.Ş.



ESTEP üye listesi

<https://www.estep.eu/members>

## General Objective

Develop technologies at TRL8 to reduce CO2 emissions stemming from EU steel production by 80-95% compared to 1990 levels by 2050, ultimately leading to climate neutrality



12 building blocks covered by the Clean Steel Partnership

Specific Objectives	Operational Objectives
1. Enabling steel production through carbon direct avoidance (CDA) technologies at a demonstration scale	<ol style="list-style-type: none"> <li>1. Replacing carbon by renewable energy</li> <li>2. Development of H<sub>2</sub>-based reduction and/or melting processes</li> <li>3. Electrolytic reduction</li> </ol>
2. Fostering smart carbon usage (SCU-Carbon capture) technologies in steel making routes at a demonstration scale, thus cutting CO <sub>2</sub> emissions from burning fossil fuels in the existing steel production routes	<ol style="list-style-type: none"> <li>1. Improving process integration with reduced use of carbon (e.g. gas injection in BF), upstream and downstream</li> <li>2. Increasing the use of non-fossil carbon</li> <li>3. Capturing CO<sub>2</sub> for CCU and/or CCS</li> <li>4. Conditioning of metallurgical gases (containing CO<sub>2</sub>, CO, CH<sub>4</sub>, etc.) to meet specifications to finally produce chemical feedstock/alternative fuels</li> </ol>
3. Developing deployable technologies to improve energy and resource efficiency (SCU - Process Integration)	<ol style="list-style-type: none"> <li>1. Increasing the use of prereduced iron carriers</li> <li>2. Developing technologies to reduce the energy required to produce steel</li> </ol>
4. Increasing the recycling of steel scrap and residues, thus improving smart resources usage and further supporting a circular economy model in EU	<ol style="list-style-type: none"> <li>1. Enhancing the recycling and reuse of industrial residues of the steel production process</li> <li>2. Enhancing the recycling of steel scrap</li> </ol>
5. Demonstrating clean steel breakthrough technologies contributing to climate-neutral steelmaking	<ol style="list-style-type: none"> <li>1. Achieving TRL 8 by 2030 in most of the technology building blocks funded by the Partnership</li> <li>2. Demonstrating clean steel breakthrough technologies by 2030 that enable at least a reduction in GHG emission compared to 1990 levels for similar plants</li> </ol>
6. Strengthening the global competitiveness of the EU steel industry in line with the EU industrial strategy for steel	<ol style="list-style-type: none"> <li>1. Creating a new market for 'clean steel' products</li> <li>2. Contributing to the EU's efforts towards ensuring growth and jobs with long-term stability</li> <li>3. Establishing EU steel industry as a leader in low-carbon steel and ensuring standardization and global market uptake of successful technologies developed in the EU</li> <li>4. Fostering R&amp;D collaboration between EU companies and science in the clean steel value chains</li> <li>5. Upskilling steel workforce</li> </ol>



### Advanced Materials?

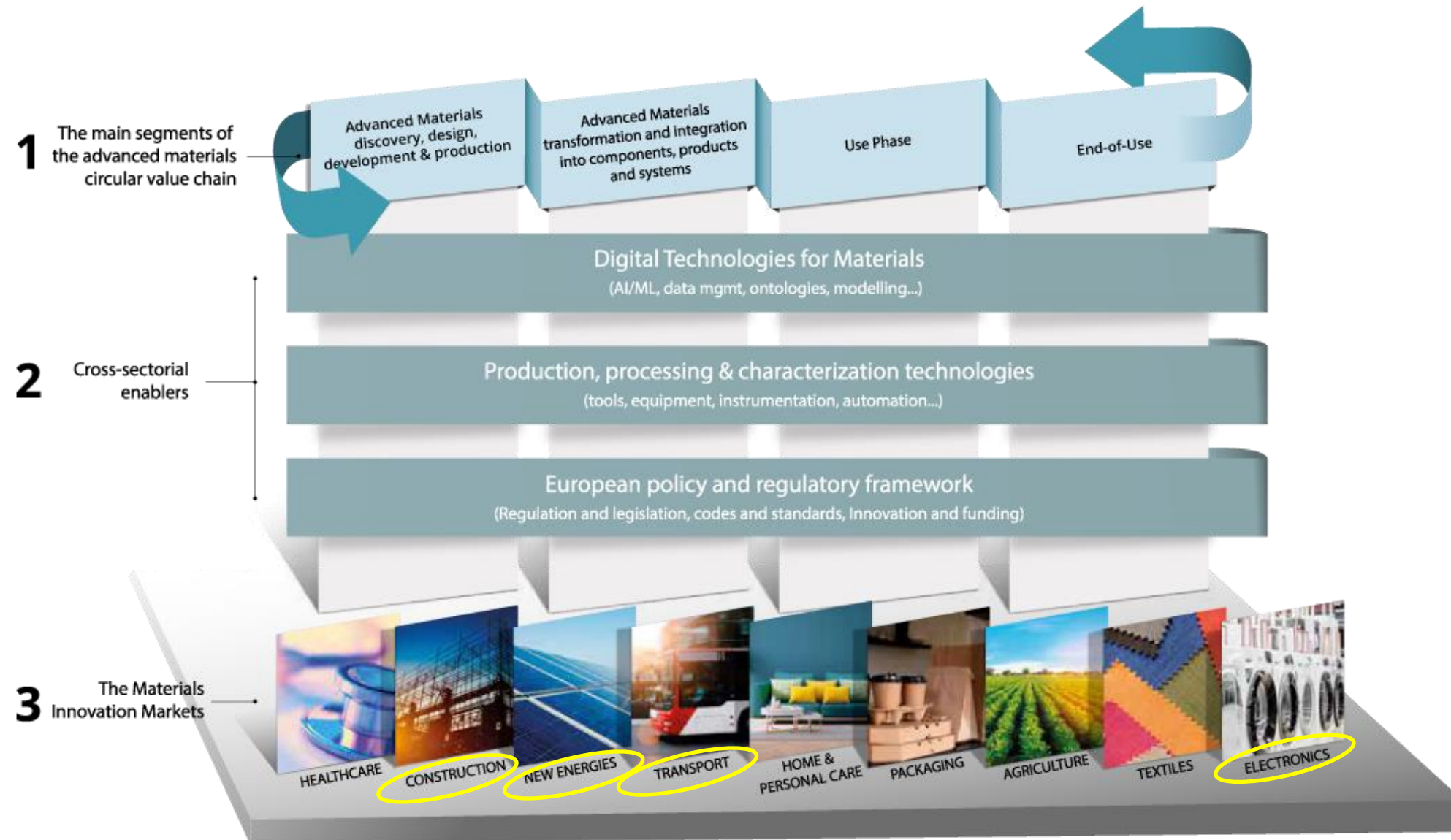
★ *Intentionally designed* and engineered materials to have [1]

- *new or enhanced properties*, and/or
- *targeted or enhanced structural features*

with the objective to achieve specific or improved functional performance

★ Advanced materials include both [1]

- *new emerging* manufactured materials, and
- materials that are *manufactured from traditional materials*



[1] [https://one.oecd.org/document/ENV/CBC/MONO\(2022\)29/en/pdf](https://one.oecd.org/document/ENV/CBC/MONO(2022)29/en/pdf)

### IAM4EU Partnership Research&Innovation Priorities

#### **INNOVATIVE ADVANCED MATERIALS AND ASSOCIATED TECHNOLOGIES**

P#1 - CRM-free/lean and efficient catalysts for energy conversion and CO<sub>2</sub> reduction

P#2 - High-conductivity and durable membranes for efficient H<sub>2</sub> production and conversion

P#3 - Innovative concepts, designs & components for efficient H<sub>2</sub> and thermal energy storage

P#4 - CRM-free/lean magnetic phases for high-performance permanent magnets in circular value chains

P#5 - Innovative electrodes, electrolytes, binders and separators for electrochemical energy storage.

P#6 - Responsive IAMs and smart surfaces & interfaces for multifunctional components & products

P#7 - Innovative surfaces, interfaces and composites for lightweight, durable and sustainable structural systems

P#8 - IAMs to reduce use of CRM and other environmentally harmful materials in electronic devices and their manufacturing processes

P#9 - IAMs for energy efficient, multi-functional photonic and optoelectronic and quantum technologies

P#10 - IAMS based on (Design for) recyclable polymers/polymeric composites

P#11 - IAMS based on PFAS alternatives

#### **CROSS-ENABLING TOOLS AND METHODOLOGIES**

P#12 - Fair and semantic interoperable digital materials data space

P#13 - Predicting life cycle of materials

P#14 - Valid test methods supporting the implementation of SSbD

P#15 - Data management & curation for efficient SSbD

#### **ECOSYSTEM ENABLERS AND SYNERGIES**

P#16 - New business models

P#17 – Augment by an ‘incentive system’

P#18 - Synergy with the “advanced materials academy”

P#19 - Networking and widespread use of technology infrastructures

P#20 - LRI, OITB and MAP integration

P#21 - Contribution to further development of standards & norms



### Vision for 2030

#### The vision and central objective of the Textiles of the Future Partnership

The development and demonstration of new **technologies** and innovative **business models** for competitive **manufacturing** of safe and sustainable textile **products** (and related services) made from low-impact functional **materials** and by clean and digitally connected **processes** in regional, circular and fully traceable **supply chains** for **quality jobs, industrial competitiveness & responsible consumption in Europe.**



<https://textile-platform.eu/news/textile-etp-unveils-the-strategic-research-and-innovation-agenda-for-textiles-of-the-future-european-partnership>

### Textiles of the Future Partnership Research and Innovation Priorities



#### Priority area I

#### Sustainable Materials & Clean Processes

- **S.T. 1:** Sustainable bio-based feedstock
- **S.T. 2:** Sustainable fibres
- **S.T. 3:** Sustainable textile chemistry
- **S.T. 4:** Resource efficient processes
- **S.T. 5:** Efficient end-of-life sorting, separation & recycling

#### Priority area II

#### Digital Supply Chains & New Business Models

- **S.T. 6:** Digitalisation of the textile value chain
- **S.T. 7:** Sustainability & Circular Data Management
- **S.T. 8:** Design for sustainability & circularity
- **S.T. 9:** Circular business models & value-added customer and end-user services

#### Priority area III

#### Advanced Manufacturing & High-performance Textiles

- **S.T. 10:** Automated and AI-supported smart manufacturing
- **S.T. 11:** On demand digital and networked manufacturing
- **S.T. 12:** Safe & sustainable materials for technical applications
- **S.T. 13:** (Multi)functional materials for technical applications

S.T. : Strategic Topic

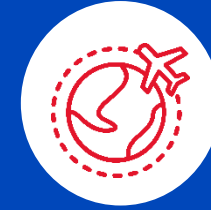
# Ufuk2020 ve Sonrasında Ekosistemimizin Başarılarını Teşvik Ediyoruz

TÜBİTAK Destek Programları ile ekosistem aktörlerimizi cesaretlendiriyor, **başarılarını teşvik ediyoruz.**



## Koordinatörlüğü Destekleme Programı

- **Konsorsiyum kurma amaçlı** seyahat ve organizasyon, proje yazma-sunma eğitimi, proje yazdırma ve proje ön değerlendirme destekleri
  - ✓ Başvuruya konu çağrı kapanışından 60 gün öncesine kadar başvuru sağlanabilmektedir.
  - ✓ İki aşamalı çağrılar ve IEP çağrıları için bu süre 30 gündür.



## Seyahat Desteği Programı

- **Proje yürütücüsü adaylarının** proje pazarları, bilgi günleri, konsorsiyum toplantıları ve diğer uygun toplantı ve etkinliklere katılım sağlanması



## Yabancı Araştırmacı Seyahat Desteği

- Koordinatörlük veya ERC baş araştırmacı/panelist deneyimi olan yabancı araştırmacıların **Türkiye’de yerleşik kuruluşları ziyaret etmesi**



## Ağlara Üyelik Desteği

- **Proje önerilerine dâhil olunması ve önceliklerin belirlenmesinde etkili olan ağlara üyeliğin teşvik edilmesi**
  - ✓ Her yıl özelinde çağrılı olarak destek duyurusuna çıkmaktadır.





T.C. SANAYİ VE  
TEKNOLOJİ BAKANLIĞI



TÜBİTAK

# TEŞEKKÜRLER

TÜBİTAK | TÜRKİYE BİLİMSEL VE TEKNOLOJİK ARAŞTIRMA KURUMU

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