TÜBİTAK
Uluslararası İşbirliği Daire Başkanlığı

Ufuk Avrupa Programı
Dijital, Endüstri ve Uzay Kümesi
Endüstri Alanı

Dr. Hale AY
Ulusal İrtibat Noktası

Ufuk Avrupa Programı

Horizon Europe

Çözüm gerektiren güçlüklerin merkezde olduğu yaklaşımlar birlikte izleniyor

Nitelikli Bilgi, Nitelikli İnsan

Çözüm Gerektiren Güçlükler

Birlikte Geliştirme (Co-Creation)

Bilimsel Mükemmeliyet

- Avrupa Araştırma Konseyi
- MSCA Eylemleri
- Altyapılar

Küresel Sorunlar ve Endüstriyel Rekabet

- Sağlık
- Kültür, yaratıcılık ve kapsayıcı toplumlar
- Sivil güvenlik
- Dijital, endüstri ve uzay
- İklim, enerji ve mobilite
- Gıda, biyoekonomi, doğal kaynaklar, tarım ve Çevre

Ortak Araştırma Merkezi

Yenilikçi Avrupa

- Avrupa Yenilik Konseyi
- Avrupa Yenilik Ekosistemi
- Avrupa Teknoloji ve Yenilik Enstitüsü

Katılımın Yaygınlaştırılması ve ERA'nın Güçlendirilmesi

- Mükemmeliyetin Paylaşımı ve Yayılımı
- Avrupa Araştırma & Yenilik Sisteminin Reformu ve Geliştirilmesi

Küme 4: Dijital, Endüstri ve Uzay

Genel Amacı

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

Desteklenecek Konular

- Dijital kilit teknolojiler
- Veri, yapay zeka ve robotik
- Yeni nesil internet
- Uydu haberleşmesi
- Yer gözlemi
- Uzay ulaşımı
- İmalat teknolojileri
- İleri malzemeler
- Döngüsel endüstriler
- Düşük karbonlu ve temiz endüstriler
- Ham maddeler

Bütçe

- **15,3 Milyar Avro (%16)**

Öngörülen Çağrı Takvimi

TWIN-TRANSITION, RESILIENCE Çağrıları
19.09.2023-07.02.2024 (Tek aşamalı)
19.09.2023-07.02.2024 (1.aşama), 24.09.2024 (2.aşama)

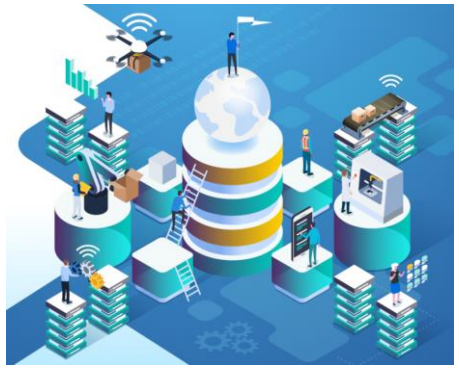
DATA, DIGITAL EMERGING, HUMAN Çağrıları
15.11.2023-19.03.2024 (Tek aşamalı)

SPACE Çağrıları
21.11.2023-20.02.2024 (Tek aşamalı)

İlgili UİN İletişim

- **Dr. Hale AY** → TWIN-TRANSITION, RESILIENCE
- **Dr. Özlem GEZİCİ KOÇ** — DATA, DIGITAL-EMERGING HUMAN
- **H. Burak TİFTİK** — DATA, DIGITAL-EMERGING HUMAN

(ncpdis@tubitak.gov.tr)



Küme 4 (Dijital, Endüstri ve Uzay) Hedefleri

ENDÜSTRİ

1. İklim nötr, döngüsel ve dijitalleştirilmiş üretim
2. Dayanıklı endüstri için kilit stratejik değer zincirlerinde artan özerklik

DİJİTAL

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

DİJİTAL

6. Dijital ve endüstriyel teknolojilerin insan merkezli ve etik gelişimi

Avrupa Yeşil Mutabakatı, 11 Aralık 2019

"Avrupa Birliği'ni 2050 yılında net sera gazı emisyonlarının olmadığı ve ekonomik büyümenin kaynak kullanımından ayrıştırıldığı, modern, kaynak-verimli ve rekabetçi bir ekonomiye sahip, adil ve müreffeh bir topluma dönüştürmeyi amaçlayan yeni bir büyüme stratejisidir."

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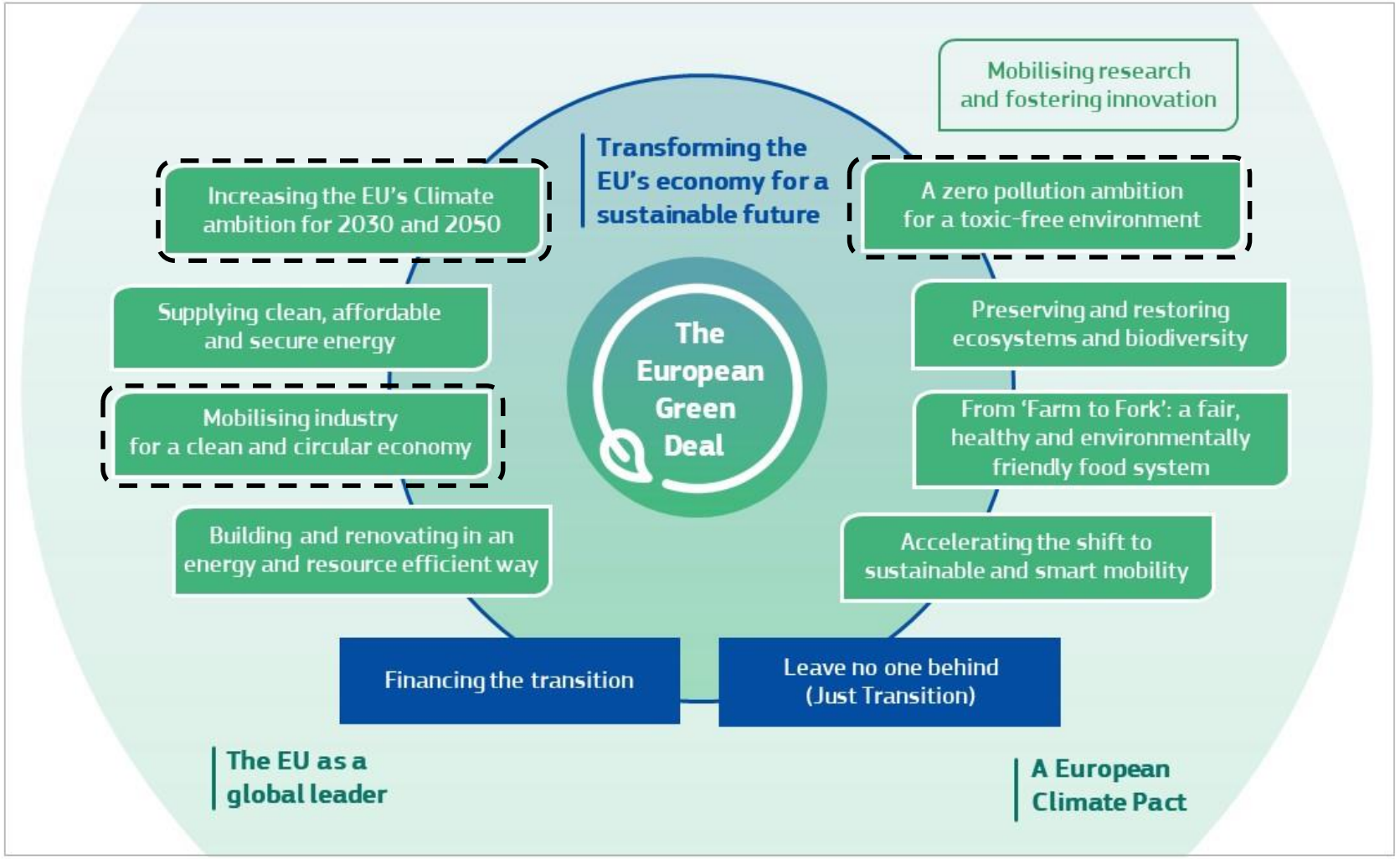
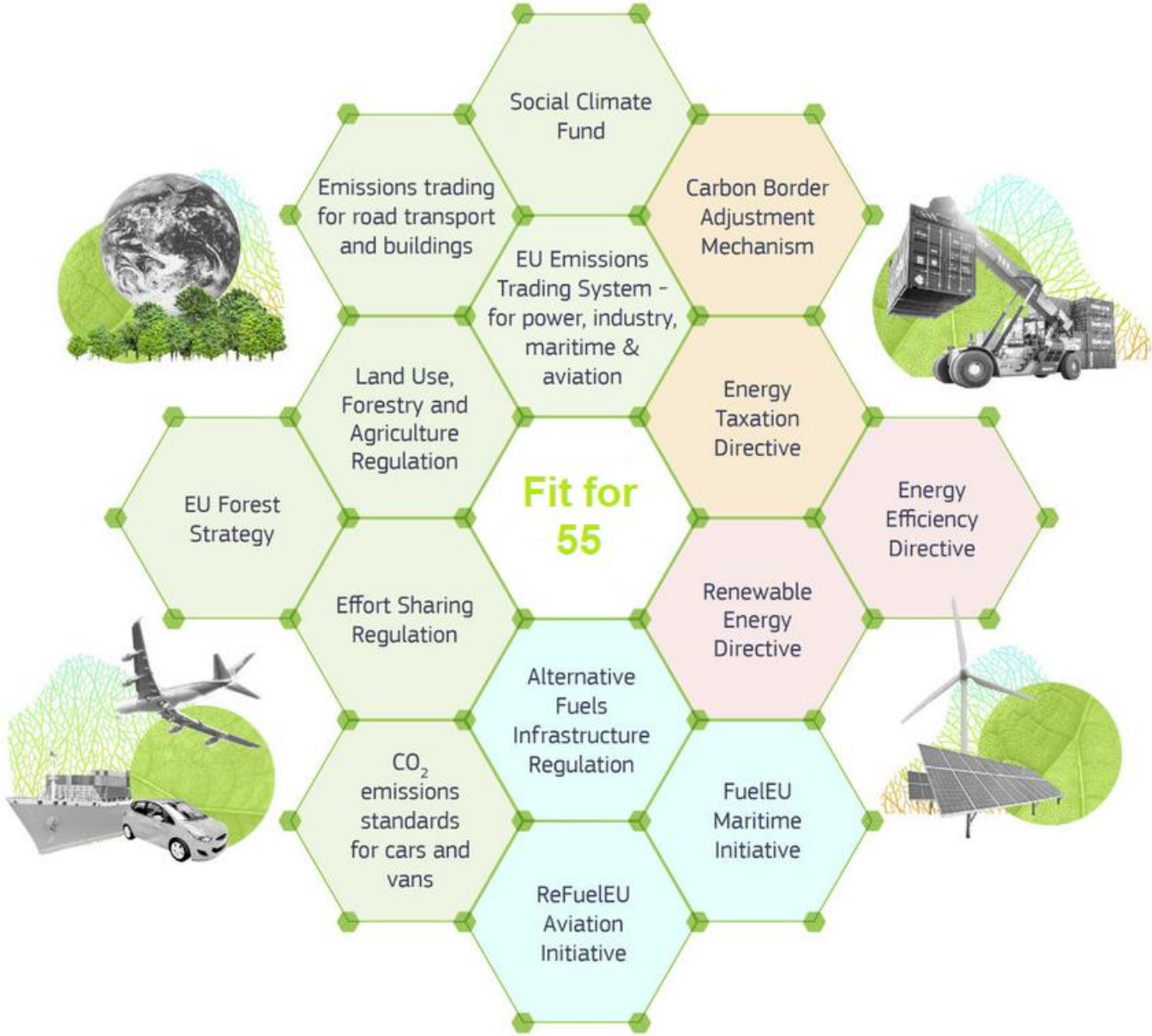


55'e Uyum Paketi, 14 Temmuz 2021

Avrupa'nın 2030 İklim Hedefi'ni Hızlandırma Planı, 17 Eylül 2020

55'e Uyum Paketi, 14 Temmuz 2021



Yeni Döngüsel Ekonomi Eylem Planı, 11 Mart 2020

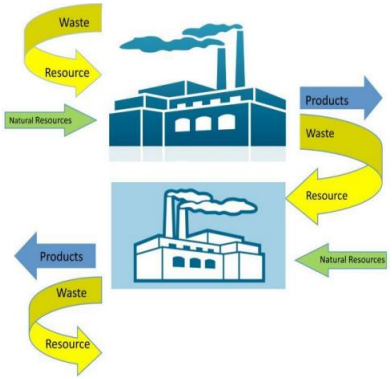
SUSTAINABLE PRODUCT POLICY FRAMEWORK

Up to **80%** of products' environmental impacts are determined at the design phase

Designing sustainable products

Public authorities' purchasing power represents **14%** of EU GDP

Empowering consumers and public buyers



Circularity in production processes

KEY PRODUCT VALUE CHAINS

Electronics and ICT

Batteries and vehicles

Packaging

Plastics

Textiles

Construction and buildings

LESS WASTE MORE VALUE

Avrupa için Yeni Sanayi Stratejisi, 10 Mart 2020

GREEN TRANSITION

The European Green Deal is Europe's new growth strategy.

At the heart of it is the goal of becoming the world's **first climate-neutral continent** by 2050.

GLOBAL COMPETITIVENESS

The right conditions are needed for entrepreneurs to turn their ideas into products and services and for companies of all sizes to thrive and grow.

The EU must leverage the impact, the size and the integration of its single market to make its voice count in the world and **set global standards**.

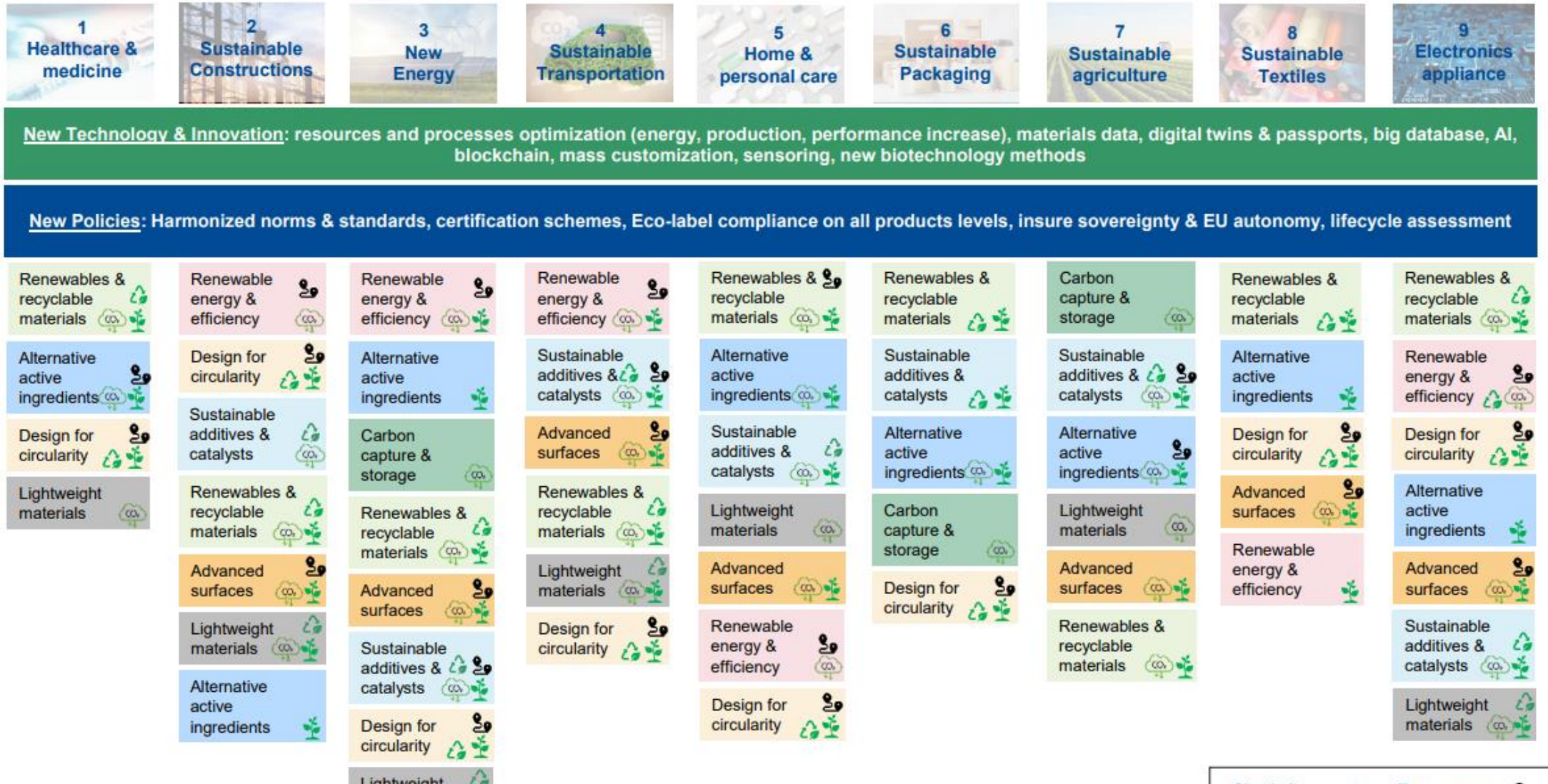
DIGITAL TRANSITION

Digital technologies are changing the face of industry and the way we do business.

They allow **economic players** to be more proactive, provide workers with new skills and support the decarbonisation of our economy.

Achieving industrial transformation

MATERIALS 2030 MANIFESTO



Küme 4 – Endüstri Alanı Hedefleri, Hedef 1

Hedef 1: "İklim nötr, döngüsel ve dijitalleştirilmiş üretim"

- Manufacturing Industry
- Energy Intensive Process Industries
- Accelerating disruptive change in construction

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

JRC Reference Report, Best Available Techniques (BAT) Reference Document for Iron and Steel Production Industrial Emissions Directive 2010/75/EU (Integrated Pollution Prevention and) Control

JRC Science for Policy Report: Digital Transformation in Transport, Construction, Energy, Government and Public Administration

Küme 4 - Hedef 1: "İklim nötr, döngüsel ve dijitalleştirilmiş üretim"

MANUFACTURING INDUSTRY

HORIZON-CL4-2024-TWIN-TRANSITION-01-01: Bio-intelligent manufacturing industries (Made in Europe Partnership) (RIA)
HORIZON-CL4-2024-TWIN-TRANSITION-01-03: Manufacturing as a Service: Technologies for customised, flexible, and decentralised production on demand (Made in Europe Partnership) (RIA)
HORIZON-CL4-2024-TWIN-TRANSITION-01-05: Technologies/solutions to support circularity for manufacturing (Made in Europe Partnership) (RIA)

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

SCOPE

The biological transformation of industry is a pioneering frontier that the industry of the Union and Associated Countries can harness to enhance circularity and sustainability, while advancing production efficiency and competitiveness.

The biological transformation of industry involves the integration of bio-intelligent structures, processes, organisms or materials into technology by systematically applying knowledge from biology.
This should lead to a necessary convergence of biotechnology with mechanical engineering, production technology and information technology with new possibilities for the flexible adaptation of production and value creation processes to requirements, especially in the context of sustainability.

This transformation can also aid in reducing the carbon footprint of production and products, and foster circularity, while contributing to the competitiveness and digitalisation of the industry of the Union and Associated Countries.

- Proposals need to demonstrate the development of digital and green technologies that facilitate the upscaled manufacturing of bio-based or bio-intelligent products in one manufacturing value chain.

- Proposals should address either
  - advanced manufacturing techniques (e.g. additive manufacturing, extrusion, moulding etc.) to process bio-materials or bio-intelligent components for upscaled production; or
  - bio-intelligent production technologies; or combinations of these two approaches.

- *The focus of this topic is on manufacturing. The development of materials beyond the manufacturing context is excluded.*

- Research must build on existing standards or contribute to standardisation. Interoperability for data sharing should be addressed, leveraging on existing ontologies and metadata

HORIZON-CL4-2024-TWIN-TRANSITION-01-03: Manufacturing as a Service: Technologies for customised, flexible, and decentralised production on demand (Made in Europe Partnership) (RIA)

SCOPE

Manufacturing as a Service (MaaS) is a distributed system of production in which resources (including data and software) are offered as services, allowing manufacturers to access distributed providers to implement their manufacturing processes.

The servitisation of manufacturing resources contributes significantly to production flexibility and responsiveness, enabling production on demand for many product categories.

Suppliers of manufacturing systems and of integration technologies design and offer interoperable services in close partnership with manufacturing companies, while other providers in the value chain can offer additional services.

Secure, real-time data exchange between the companies involved enables quick response times.

- This topic aims at further developing and integrating the technologies needed for the successful implementation of MaaS allowing to manufacture "on demand" a large choice of customised products, with high flexibility and short lead time.

- Integration with digital design, development of design libraries and workflow templates, and advanced technologies such as digital twins, real-time AI-based decision support systems, and next-generation Manufacturing Execution Systems should also be considered where appropriate, with the objective to optimise the entire life-cycle of the product in terms of circularity, sustainability and reusability.

- Interoperability is a core requirement for MaaS; for this reason, research will build on existing standards or contribute to standardization

- Results should be demonstrated through at least two realistic use cases, based on different supply chains or industry sectors.

HORIZON-CL4-2024-TWIN-TRANSITION-01-05: Technologies/solutions to support circularity for manufacturing (Made in Europe Partnership) (RIA)

SCOPE

Manufacturing plays a key role in achieving the twin transition goal through enhancing circularity, facilitating decarbonisation whilst enhancing competitiveness. A broad range of digital technologies and engineering tools can be employed to achieve the systemic circularity of the European manufacturers.

Data pooling and sharing among sectors and across the whole value chain, as well as the use of external environmental impact data such as LCA-data, would facilitate recycling and remanufacturing, by modelling and monitoring the life cycle of products and components. Such data pooling would enable a better insight into the environmental footprint, including the CO_2-footprint, of products and components.

The transition to the circular manufacturing requires a new mindset and expertise. All the technological improvements of the manufacturing process should always support the human aspect in order to uptake these improvements through upskilling and reskilling of the manufacturing workforce.

Proposals should cover all of the following aspects:

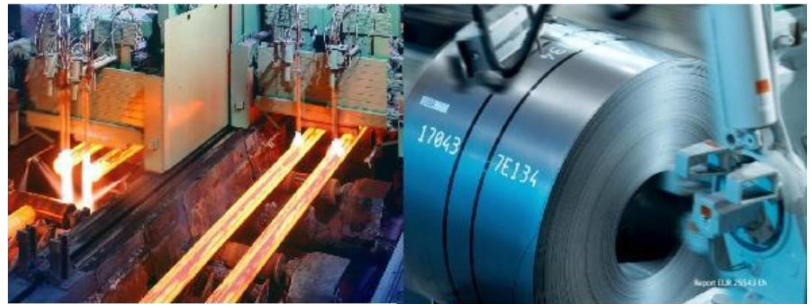
- Develop new approaches of Artificial Intelligence to forecast the environmental impact, also considering the quantity and state of products after their use;
- Develop innovative simulation and modelling software or built on existing solutions fostering new manufacturing capabilities with a view to a more efficient and more sustainable product design. This optimization process should consider the various steps of the value chain focusing on the environmental impact. Additional ecological impacts arising from the use of the modelling or simulation software should be considered;
- Develop digital platforms/ tools build on existing interoperability architectures, that will enable the manufacturers to implement the Digital Product Passport initiative. The proposals should focus on gathering relevant data, material and product tracking and tracing, certification protocols for secure re-used materials and components among sectors;
- Enhance the human involvement in the development of the circularity aspects and new technologies.

Küme 4 - Hedef 1: "İklim nötr, döngüsel ve dijitalleştirilmiş üretim"

ENERGY INTENSIVE PROCESS INDUSTRIES

HORIZON-CL4-2024-TWIN-TRANSITION-01-32: Optimisation of thermal energy flows in the process industry (Processes4Planet partnership) (IA)
HORIZON-CL4-2024-TWIN-TRANSITION-01-34: Renewable hydrogen used as feedstock in innovative production routes (Processes4Planet Partnership) (RIA)
HORIZON-CL4-2024-TWIN-TRANSITION-01-35: Turning CO_2 emissions from the process industry to feedstock (Processes4Planet partnership) (IA)
HORIZON-CL4-2024-TWIN-TRANSITION-01-38: Hubs for circularity for industrialised urban peripheral areas (Processes4Planet partnership) (IA)
HORIZON-CL4-2024-TWIN-TRANSITION-01-41: Breakthroughs to improve process industry resource efficiency (Processes4Planet partnership) (RIA)
HORIZON-CL4-2024-TWIN-TRANSITION-01-44: Digital transformation and ensuring a better use of industrial data, which can optimise steel supply chains (Clean Steel Partnership) (IA)
HORIZON-CL4-2024-TWIN-TRANSITION-01-46: CO_2-neutral steel production with hydrogen, secondary carbon carriers and electricity OR innovative steel applications for low CO_2 emissions (Clean Steel Partnership) (RIA)

https://ec.europa.eu/environment/industry/stationary/index.htm



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

HORIZON-CL4-2024-TWIN-TRANSITION-01-32: Optimisation of thermal energy flows in the process industry (Processes4Planet partnership) (IA)

SCOPE

More than 60% of the overall energy used in the process industry is process heating.

The topic focuses on highly process-integrated technologies that allow heat recovery and use of high temperature installations.

Heat storage, when needed, should be intermediary only.

One example could be the adaptation and integration of heat pumps for high temperature (150-250 °C) applications for large thermal capacity (~1-20 MW), but not only – examples could also encompass the direct use of excess heat by e.g., the adaptation and integration of advanced heat exchangers.

Proposals under this topic should:

- Demonstrate the efficient integration and adaptation of heat exchanger or heat pumps into high temperature processes and equipment taking energy not only from air but also warm materials or liquid flows;
- Use high safety standard technologies and fluids with low environmental impact;
- Consider, where necessary, the use of advanced materials in the process development;
- Demonstrate the decrease of energy intensity of output level (intermediate, final product).

The inclusion of a GHG avoidance methodology is recommended and should provide detailed description of baselines and projected reductions.

The heat power generation is out of the scope of this topic. The proposals should include energy efficiency, techno-economic and life-cycle assessments considering the overall process.

HORIZON-CL4-2024-TWIN-TRANSITION-01-34: Renewable hydrogen used as feedstock in innovative production routes (Processes4Planet Partnership) (RIA)

SCOPE

Hydrogen is an important enabler for meeting the 2050 climate neutrality goal.

In the energy intensive process industries, hydrogen can be used either as feedstock (chemical or reducing agent) or as an energy carrier.

The integration of renewable hydrogen into new production routes as a feedstock will lead to major GHG emission reductions across several European industry sectors

Currently, hydrogen is largely used in industrial sectors such as the chemical industries and refineries. In addition to the current processes, there are different production pathways under development using hydrogen as a chemical feedstock in low-carbon industrial processes.

Hydrogen could be used as reducing agent in the production and recovery of metals, biogenic and circular carbon optimisation or in new process routes to produce platform chemicals (e.g., carbon-based waste and side streams or biomass).

Proposals under this stopic should:

- Develop innovative production routes using hydrogen as feedstock;
- Evaluate the efficient integration of the new production process into the processing line, including downstream and upstream;
- Design production process coupled/integrated with renewable hydrogen by making the best use of simulation, modelling and IT tools;
- Include energy efficiency, techno-economic and life-cycle assessments considering the efficient use of the hydrogen as well as the value of the by-products, and the value chain from hydrogen production, storage, distribution and usage.

HORIZON-CL4-2024-TWIN-TRANSITION-01-35: Turning CO_2 emissions from the process industry to feedstock (Processes4Planet partnership) (IA)

SCOPE

The proposals submitted under this topic are expected to demonstrate the economic viability of the efficient capture and utilisation of CO/CO_2 streams from point sources (e.g., large and medium industrial installations such as steel, cement, refining and chemical plants) converting the streams into added value chemicals and materials in near to production size systems.

The **semi-industrial scale demonstrators** proposed should:

- Process significant amounts of CO/CO_2 containing emissions from energy intensive process industries;
- Demonstrate process and cost efficient environmentally friendly technologies for: capture and fit for purpose purification approaches while ensuring the maximum process efficiency;
- Demonstrate the cost efficient environmentally friendly conversion of CO/CO_2 into chemicals and materials including any relevant auxiliary required for the process (such the formulation of reliable catalyst at the required scale) and if relevant process-integrated downstream products;
- Evaluate the energy efficiency for the overall CCU process and where relevant flexibility considerations for the efficient use of renewable energy for capture and conversion;
- Encompass the use of advanced monitoring and control techniques and integration of advanced digital technologies, which enable optimisation of the overall system;
- Contribute to an integration effort to realize fully integrated capture and utilization systems, including the optimization of materials, process interfaces, and ultimately device architectures and to promote maximum energy efficiency;
- Include techno-economic analysis, including social and environmental impact.

HORIZON-CL4-2024-TWIN-TRANSITION-01-38: Hubs for circularity for industrialised urban peripheral areas (Processes4Planet partnership) (IA)

SCOPE

Urban areas with high volumes of waste (household and end of life consumer waste) should closely interact with adjacent industries to

- jointly minimize their CO_2 footprint and
- improve their waste management,
- thus contributing together to the valorisation of secondary materials and overall circularity.

The concept of Industrial-Urban Symbiosis (I-US) should be demonstrated at semi-industrial scale, by systemically re-integrating the flow of urban wastes in process industries and, where applicable downstream in manufacturing, construction, and other industries.

Full attention should be paid on upcycling of secondary materials or products instead of downcycling.

Proposals are expected to adress:

- A systemic solution for a H4C: closing circularity loops for mixed/combined materials streams based on upcycling and process-based approach to a range of recycling solutions including conversion and downstream, complex multi-material streams, valorisation of waste streams
- Proposals can address either materials, water or energy, or a combination of those.
- Digital tool, recycling and sensor-based waste sorting, modelling tools, including material passport and information on material streams,
- Establish IT infrastructures and tools that provide a secure basis for the integrated management and the preservation of confidentiality of sensitive data,
- Consider when applicable the co-development of industrial decarbonization strategies with urban district heating networks,
- Use established reporting methodologies for the assessment of industrial symbiosis activities and exchanges,
- Plan in detail the replication and adaption of the concept, including the simulation and the business case and exploitation strategy

HORIZON-CL4-2024-TWIN-TRANSITION-01-41: Breakthroughs to improve process industry resource efficiency (Processes4Planet partnership) (RIA)

SCOPE

Process industries will greatly benefit from radically new approaches that will lead to a

- much higher resource efficiency (including higher selectivity),
- producing less low-value by-products and waste
- enabling the handing of a higher feedstock variability,
- and ultimately leading to lower level of GHG emissions linked to the process industries.

To reach ambitious targets regarding resource efficiency, disruptive process technologies must be developed in addition to process efficiency options for existing technologies.

Proposals should:

- Develop **disruptive process technologies**

– to improve resource efficiency, such as those based on: process intensification (e.g., 3D printed processes equipment, coupling of process steps, new processes that integrate multiple reaction steps, activation of molecules using renewable energy via alternative processes e.g. microwave, plasma);

– or to prevent and minimise waste generation by, e.g. processes that adjust in real time to feedstock changes or that have tighter processing control solutions to ensure higher yields from complex and fluctuating raw material feeds;

- Where relevant advanced process technologies and their combinations need to be developed and supported by advanced materials innovation and the implementation of enabling digital technologies including advanced concepts on process control and data driven Artificial Intelligence.

HORIZON-CL4-2024-TWIN-TRANSITION-01-44: Digital transformation and ensuring a better use of industrial data, which can optimise steel supply chains (Clean Steel Partnership)

Multidisciplinary research activities should address one or more of the following topics:

- Novel sensors, soft sensors and related models and approaches to reduce the carbon footprint by merging the use of sensors and data processing capabilities for huge volumes of heterogeneous data streams; systems / tools enabling the transition from legacy into new architectures capable to supply data in a seamless way "when, where and what" including the development and testing of implementation guidelines.

- Statistics coupled with outstanding analytical capabilities to improve data quality and to help steel plant operators to increase the process yield and to improve the quality of intermediates and final steel products, while addressing the best approach to limit carbon emissions;

- The application of combinations of advanced digital technologies, such as but not limited to model-based, knowledge-based and data-based methods, artificial intelligence (AI), supercomputing, edge computing, cloud systems and internet of things (IoT) to develop decision-supported planning and process monitoring tools for clean steel manufacturing operable in offline or online modes;

- Involvement of operators and process experts in the design and development phases of digital technology integration, ensuring the uptake of human experiences and a user- friendly processing of results for easier industrial integration. This may also include issues of skilling and standardisation and man-machine interaction by deploying Virtual and Augmented Reality techniques.

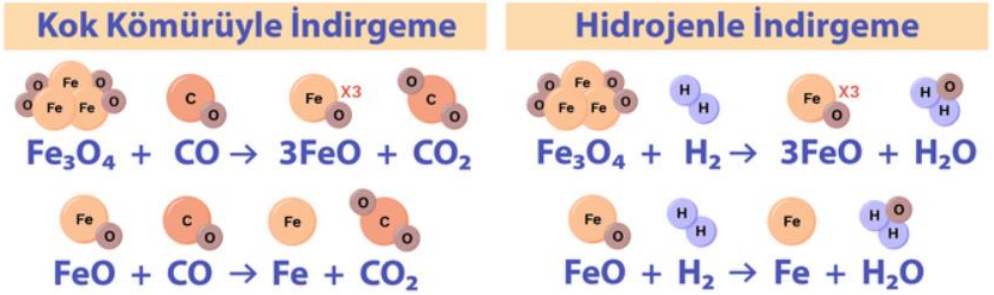
HORIZON-CL4-2024-TWIN-TRANSITION-01-46: CO_2-neutral steel production with hydrogen, secondary carbon carriers and electricity OR innovative steel applications for low CO_2 emissions (Clean Steel Partnership) (RIA)

Projects outcomes will enable achieving the objectives of the Clean Steel Partnership by contributing to one of the following 2 aspects:

1. Enhance CO_2-neutral steel production with hydrogen, secondary carbon carriers and electricity;
2. Contribute to innovative steel applications for low CO_2 emissions.

Proposals under this topic are expected to:

- Provide concepts addressing the modifications of the existing and new installations for steel production, such as:
  - Blast furnace–basic oxygen furnace (BF-BOF);
  - Electric arc furnace (EAF);
  - Direct reduced iron (DRI) process:
  - Alternative reduction processes
  - Heating and treatment of semi-finished products.
- Such modifications could also concern the internal and external flows of energy and materials to re-use e.g., metallurgical gases and to upgrade them with new sources, e.g., by replacement of fossil carbon, both as reducing agent, and heat sources with hydrogen and alternative carbon sources;
- Consider the integrated preparation of external carbon-lean gases or internally recycled CO/CO_2 streams for efficient use as reducing agent, but not limited to or for use in heating process.



https://climatescience.org/tr/advanced-steel-climate

The use of hydrogen in the iron and steel industry, Ed Green, U.S. Department of Energy

Küme 4 - Hedef 1: "İklim nötr, döngüsel ve dijitalleştirilmiş üretim"

A NEW WAY TO BUILD, ACCELERATING DISRUPTIVE CHANGE IN CONSTRUCTION

HORIZON-CL4-2024-TWIN-TRANSITION-01-12: Enhanced assessment, intervention and repair of civil engineering infrastructure (RIA)

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

HORIZON-CL4-2024-TWIN-TRANSITION-01-12: Enhanced assessment, intervention and repair of civil engineering infrastructure (RIA)

SCOPE

Regular maintenance and repair of civil engineering infrastructure extends their service life, which in turn reduces the need for their demolition and replacement and the related negative economic, environmental and climate impacts.

However, it can be difficult and cumbersome to identify and address maintenance or repair needs, especially in locations that are difficult to access such as large or tall structures, deep shafts, or where elements are hidden from view. Intervention for maintenance and repair can also involve unnecessary risks to health and safety of workers.

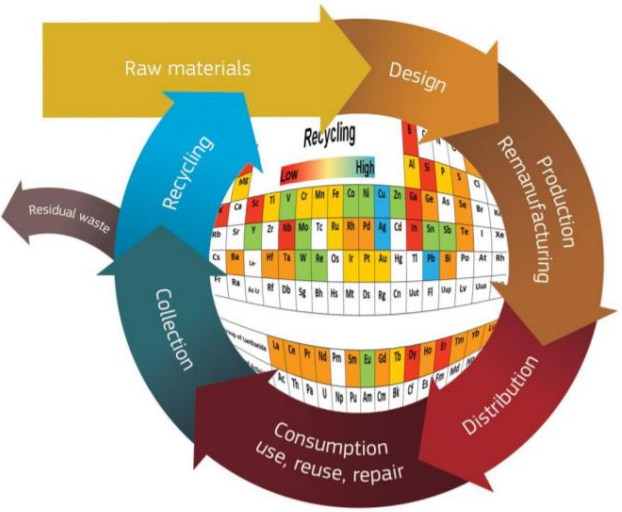
Proposals should:

- Develop new technologies and solutions that facilitate timely identification of maintenance and repair issues in existing civil engineering infrastructure. Examples may include structural weaknesses, unacceptable deformation and fatigue, issues related to moisture including mould growth and corrosion, the effects of weathering and of weather-related events, faults in technical systems, leaks of water or chemicals, or other issues.
- Develop new solutions to monitor and to quickly and accurately analyse and assess the need for intervention, for example via digital twin and simulation technology
- Develop solutions that would intelligently recommend and prioritise relevant and timely action to address the identified maintenance and repair issues. This should include a risk assessment and application of state-of-the-art quality controls and documentation.
- Address ways to reduce the risks involved with maintenance and repair, including the health and safety of workers

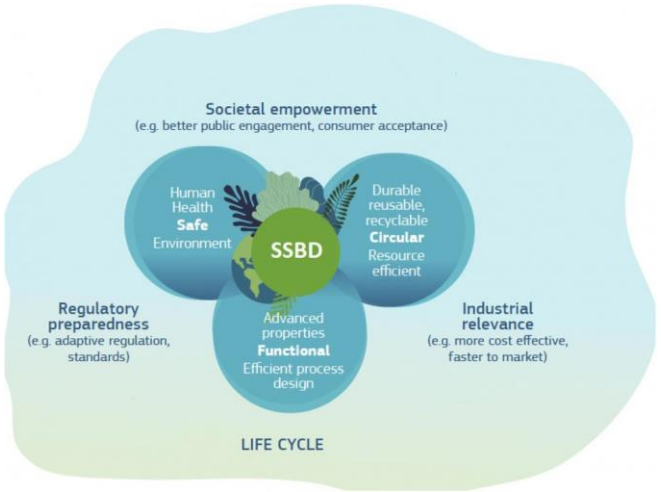
Küme 4 – Endüstri Alanı Hedefleri, Hedef 2

Hedef 2: "Dayanıklı endüstri için kilit stratejik değer zincirlerinde artan özerklik"

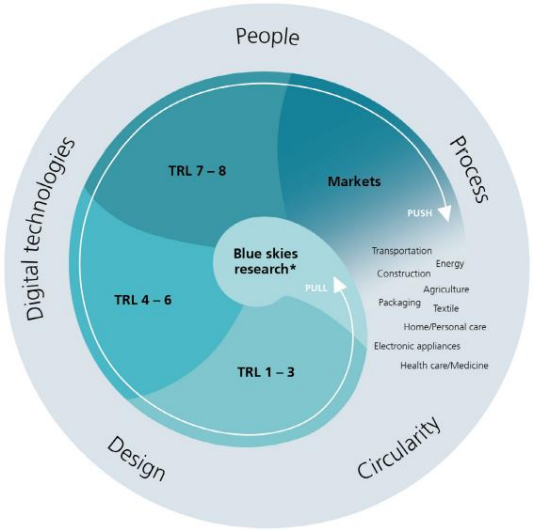
- Raw Materials for EU open strategic autonomy
- Safe and Sustainable by Design Chemicals and Materials
- Strategic innovation markets driven by advanced materials
- Improving the resilience of EU businesses, esp. SMEs and start-ups



JRC Science for Policy Report, Critical raw materials and the circular economy, December 2017



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



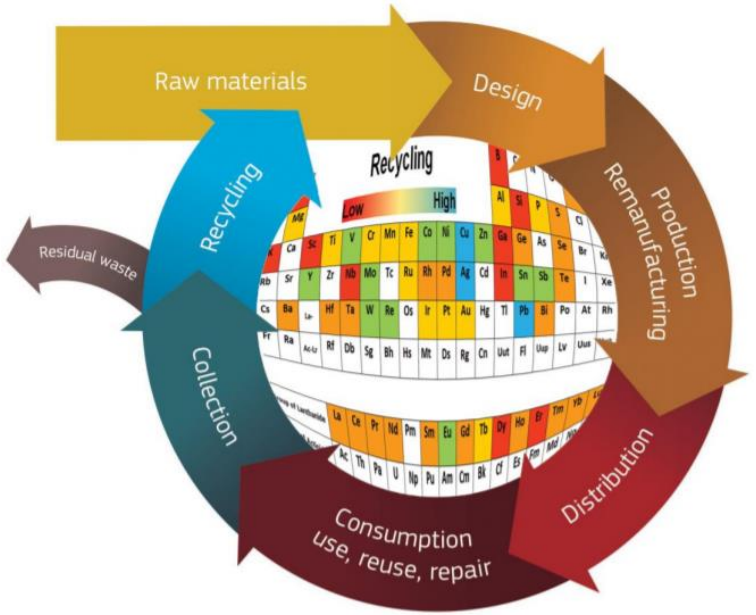
MATERIALS 2030 MANIFESTO Systemic Approach of Advanced Materials for Prosperity – A 2030 Perspective

https://clustercollaboration.eu/news/eu5m-call-aims-help-smes-adopt-new-technologies

Küme 4 - Hedef 2: "Dayanıklı endüstri için kilit stratejik değer zincirlerinde artan özerklik"

RAW MATERIALS FOR EU OPEN STRATEGIC AUTONOMY AND SUCCESSFUL TRANSITION TO A CLIMATE-NEUTRAL AND CIRCULAR ECONOMY

HORIZON-CL4-2024-RESILIENCE-01-01: Exploration of critical raw materials in deep land deposits (RIA)
HORIZON-CL4-2024-RESILIENCE-01-04: Technologies for processing and refining of critical raw materials (IA)
HORIZON-CL4-2024-RESILIENCE-01-08: Rare Earth and magnets innovation hubs (IA)
HORIZON-CL4-2024-RESILIENCE-01-10: Addressing due diligence requirements in raw materials supply chains (CSA)
HORIZON-CL4-2024-RESILIENCE-01-11: Technologies for extraction and processing of critical raw materials (IA)



JRC Science for Policy Report, Critical raw materials and the circular economy, December 2017

HORIZON-CL4-2024-RESILIENCE-01-01: Exploration of critical raw materials in deep land deposits (RIA)

Expected Outcome

-Develop innovative technologies for exploration of critical raw materials in deep land deposits in the EU and non-EU countries;

-Increase the resources and reserves of various primary critical raw materials within the EU and non-EU countries;

-Accelerate development of EU domestic critical raw materials exploration projects integrating innovative technologies;

-Strengthen EU autonomy and ethical sourcing of raw materials by developing socially and environmentally acceptable means of discovery of primary raw materials.

-Improve responsible supply of raw materials to the EU in line with the EU principles for sustainable raw materials,

-Promote the utilisation of UNFC (United Nations Framework Classification for Resources) and UNRMS (United Nations Resource Management System) in the raw materials sector

SCOPE

- Actions should map Europe's primary raw materials potential and raw materials production, using geoscientific approaches and refining capacities in a harmonised form, using UNFC (United Nations Framework Classification for Resources) and UNRMS (United Nations Resource Management System).

-Develop and deploy new or improved highly efficient, sustainable exploration technologies, such as UAV assisted geological exploration in remote areas, geophysics, 3D modelling, new drilling techniques, models of whole mineral systems related to critical raw materials, high resolution laboratory techniques, artificial intelligence and data processing to identify deep seated mineral deposits of critical raw materials.

HORIZON-CL4-2024-RESILIENCE-01-04: Technologies for processing and refining of critical raw materials (IA)

Expected Outcome

-Increase recovery rates of valuable raw materials, particularly critical raw materials from low grade or complex ores and/or from extractive waste;

-Significantly increase economic performance in terms of higher material-, water-, energy- and cost-efficiency and flexibility in minerals processing and metallurgical processes;

-Significantly improve the health, safety and environmental performance of the operations throughout the whole life cycle which is considered, including a reduction in waste, wastewater and emissions generation and a better recovery of resources from generated waste;

-Improve responsible supply of raw materials to Europe in line with the EU principles for sustainable raw materials, which are a non-regulatory set of principles based on the EU acquis.

SCOPE

Actions should demonstrate new or improved systems integrating relevant processing and refining technologies for better recovery of raw materials from low grade and/or complex ores from extractive wastes, less waste, higher energy efficiency.

The solution proposed should be flexible enough to adapt to different or variable primary and secondary raw materials grades and should be supported by efficient and robust process control.

Actions should develop intelligent and innovative production systems which better utilise natural resources by minimising losses during waste-rock separation in an optimised and energy-efficient process and by minimising use of water.

Recycling of end-of-life products is excluded from this topic, though joint processing of waste streams originating from end-of-life products recycling could be included and has to be duly justified.

HORIZON-CL4-2024-RESILIENCE-01-08: Rare Earth and magnets innovation hubs (IA)

Expected Outcome

-Significantly improve supply security and reduced environmental footprint of rare earth value chains in the EU

-Broad access to materials development facilities and services across Europe through a single entry point – innovation hub;

-Accelerate development of products and processes for a faster market entry;

-Reduce costs for both industry and users and increased return on investment in research;

-Improve access to end users and easier marketability of products in Europe;

-Improve responsible supply of raw materials to Europe in line with the EU principles for sustainable raw materials, which are a non-regulatory set of principles based on the EU acquis.

SCOPE

The action should create an innovation hub that enables the development, demonstration and testing of new processes for production of rare earths and related products, particularly neodymium permanent magnets in the industrial environments.

The hub should demonstrate its functionality on a range of concrete developments up to the TRL levels 6-7 to be executed within the duration of the action.

Demonstrations could cover novel, cost-effective and environmentally sound rare earths extraction, processing and separation routes; consider unconventional rare earth sources, like low grade ores, non-ferrous metals beneficiation tailings and iron ore tailings, metallurgical waste apatite; and/or recycling, re-use, refurbishment and/or repurposing of end-of-life products and components containing rare earth magnets.

HORIZON-CL4-2024-RESILIENCE-01-011: Technologies for extraction and processing of critical raw materials (IA)

Expected Outcome

-Strengthen EU cooperation with resource rich countries;

-Provide new relevant life cycle inventory data sets based on requirements for Environmental Footprint compliant datasets and in line with the 2021 Recommendation on the use of the Environmental Footprint methods

-To evaluate the environmental performance of the technologies a Product Environmental Footprint (PEF) study will be produced.

-Improved industrial viability, safety and environmental impacts of the operation in a way that leads to measureable improvements;

-Improved diversification EU sourcing of critical raw materials from third countries;

-Improved responsible supply of raw materials to Europe in line with the EU principles for sustainable raw materials, which are a non-regulatory set of principles based on the EU acquis.

SCOPE

Actions are expected to develop and demonstrate extraction and processing technologies to facilitate exploitation of the primary raw critical raw materials (minerals and metals only) for the EU to strengthen the EU supply chains.

Actions have to collaborate with Canada or Ukraine, following the strategic partnership on raw materials established in 2021 between the EU and Canada and with Ukraine.

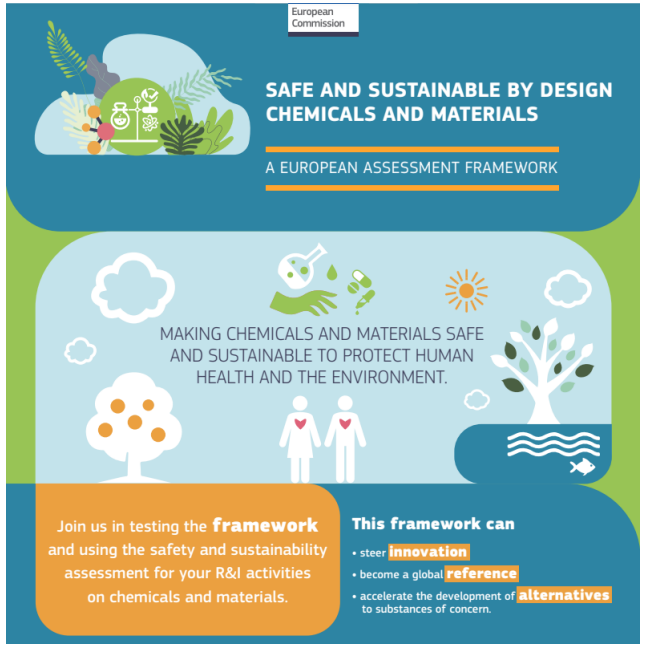
The consortia should contain raw materials industry from at least one of the partner countries and raw materials users from the EU. Technology should be demonstrated on the resources of the partner country.

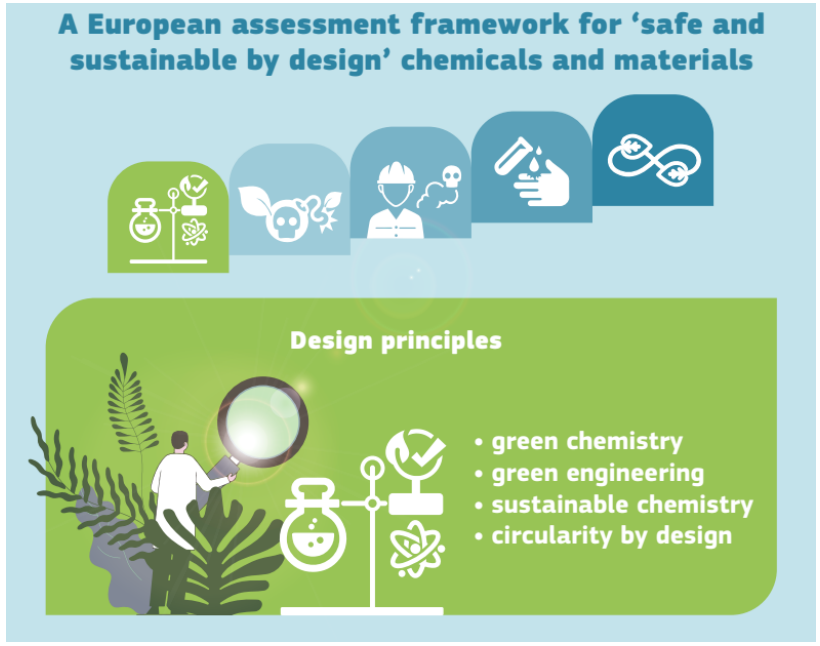
Actions should envisage clustering activities with other relevant selected projects for cross-projects co-operation, consultations and joint activities on cross-cutting issues and share of results as well as participating in joint meetings and communication events.

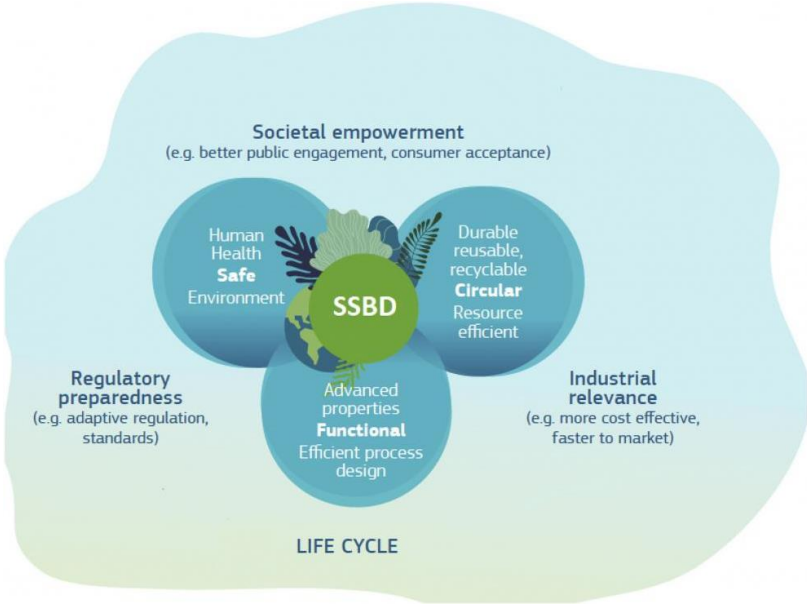
Küme 4 - Hedef 2: "Dayanıklı endüstri için kilit stratejik değer zincirlerinde artan özerklik"

SAFE AND SUSTAINABLE BY DESIGN (SSBD) CHEMICALS AND MATERIALS

HORIZON-CL4-2024-RESILIENCE-01-24: Development of safe and sustainable by design alternatives (IA)

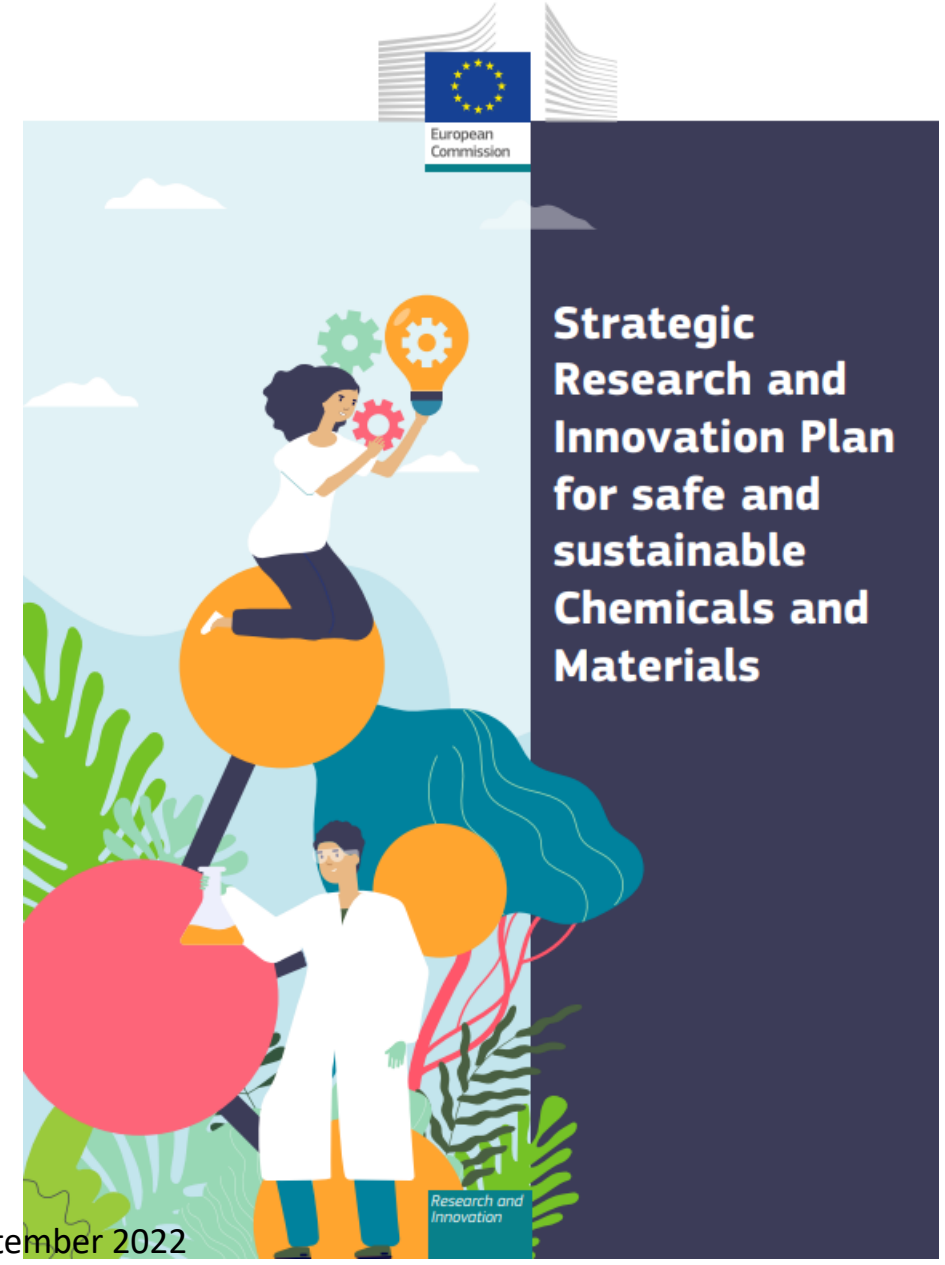






https://joint-research-centre.ec.europa.eu/jrc-news/contributing-greener-eu-safe-and-sustainable-nanomaterials-design-stage-2021-04-19_en

Safe and Sustainable by Design



September 2022

Contents

HORIZON-CL4-2024-RESILIENCE-01-24: Development of safe and sustainable by design alternatives (IA)

SCOPE

Proposals should develop one or more new chemical substances or materials to replace existing substances of concern with surfactant, flame retardant or plasticising functionalities for a chosen application.

Proposals should address at least one industrial application.

The new substances or materials shall be aligned with the Safe and Sustainable by Design (SsbD) framework, and demonstrate improved sustainability and a contribution to lower the impact on climate.

The selected industrial application(s) should be in areas where substitution with safer and more sustainable solutions is not yet in place, or in progress.

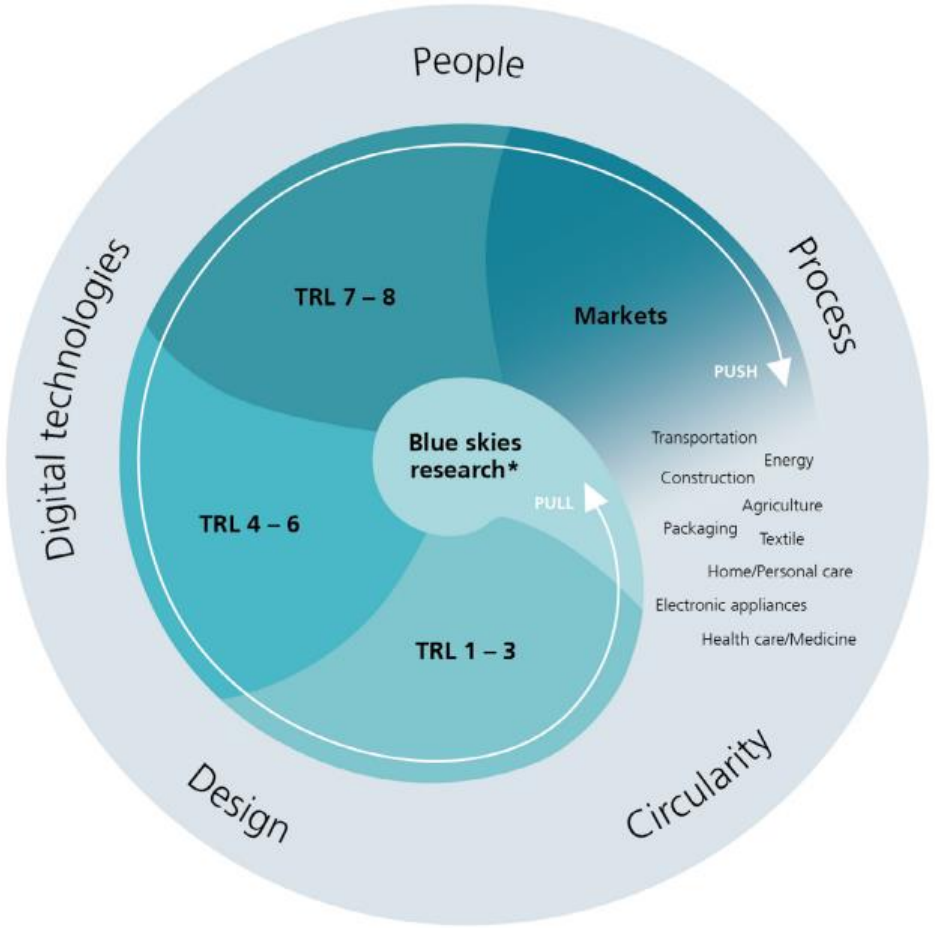
Proposals should address all of the following:

- Proof of concept of the SsbD framework. The developed substances or materials will have to comply with the SsbD framework.
- The selection of the chemical/materials to be developed should be justified with a technology and socio-economic analysis;
- Proposals should involve all relevant actors along the value chain;
- Identify the substitution barriers for the selected applications and propose a driving mechanism for a maximal substitution in the targeted value chains;
- Identify and address challenges for the adaption of existing production lines;
- Explore collaboration with existing Open Innovation Test Beds, where relevant;
- Interoperability for data sharing should be addressed across the entire value chain;
- Communication actions to all stakeholders and specifically citizens about the benefits of the developed SsbD chemicals and materials.

Küme 4 - Hedef 2: "Dayanıklı endüstri için kilit stratejik değer zincirlerinde artan özerklik"

STRATEGIC INNOVATION MARKETS DRIVEN BY ADVANCED MATERIALS

HORIZON-CL4-2024-RESILIENCE-01-35: Biodegradable polymers for sustainable packaging materials (IA)
HORIZON-CL4-2024-RESILIENCE-01-36: Advanced biomaterials for the Health Care (IA)



Systemic Approach to Sustainable Advanced Materials Solutions 2030, Materials 2030 Manifesto

HORIZON-CL4-2024-RESILIENCE-01-35: Biodegradable polymers for sustainable packaging materials (IA)

SCOPE: Proposals **should address at least four of the following activities**:

- Develop new, demonstrate and scale-up novel advanced bio-degradable polymer materials and innovative processes that will allow the bio-degradable polymers to be produced at a large scale with a similar economy of scale to replace present production with PE, PP and PET, and with an improved sustainability profile compared to present production and EoL characteristics.

- Develop sustainable additives and catalysts to support the production of bio-degradable polymers.

- Provide evidence with life cycle and techno-economic assessment that the cost for the novel advanced biodegradable polymer products are not significantly higher compared to existing polymer products (PE, PP, PET) on the market.

- Scale up the production of packaging materials at pilot level.

- Identify and test the biodegradability pathways in all environmentally relevant conditions (for the application of the developed material in relevant shape or form); and extensive quantified risk analysis from both a human and environmental perspective for all the different intermediate and end products of biodegradation, including quantification of the contribution to GHG emissions.

- Demonstrate complete biodegradability in all relevant conditions and environmental compartments (e.g. landfill, compost site, litter in marine-freshwater-sediment-soil) within acceptable timeframes, determination of the main influencing environmental conditions; and assessment of the impact on the environment. Integrate a holistic sustainability assessment, accounting for the full life cycle (including sourcing of feedstock).

HORIZON-CL4-2024-RESILIENCE-01-36: Advanced biomaterials for the Health Care (IA)

SCOPE: Proposals **should address at least four of the following activities**:

- To enable a fast development of new advanced novel injectable biomaterials, digital tools such as modelling, simulation and characterisation techniques (including those provided by analytical infrastructures) assisted by advanced methods e.g. physics-based methods, machine learning or artificial intelligence.

- The innovation market of medical applications is fast growing and dependent on advanced biocompatible materials that can be printed or injected. The 4D materials will change their 3D structures after external impact such as thermic, electric, mechanical or radiation treatment.

- Proposals shall demonstrate new engineering strategies that present functional characteristics beyond bio-compatibility, and express properties that can be used to control the physiological environment (shape-memory, self-healing properties) and induce a response.

- Proposals shall address biomaterials with antibacterial properties contributing to the widespread bottleneck of antimicrobial resistance often encountered in clinical care

- Demonstrate the scaling of injectable hydrogels, including those made of nanocomposite, natural and synthetic polymer-based biomaterials, bone cements, bio-ceramics and electronics.

- The design for circularity has to develop, when relevant, bio-degradable or bio-absorbable biomaterials that are gradually eliminated by the body after fulfilling a purpose.

Küme 4 - Hedef 2: "Dayanıklı endüstri için kilit stratejik değer zincirlerinde artan özerklik"

IMPROVING THE RESILIENCE OF EU BUSINESSES, ESPECIALLY SME'S AND STARTUPS

HORIZON-CL4-2024-RESILIENCE-01-41: 'Innovate to transform' support for SME's sustainability transition (CSA)

https://clustercollaboration.eu/news/eu5m-call-aims-help-smes-adopt-new-technologies

https://ec.europa.eu/digital-single-market/en/news/ict-standards-infographic

Ufuk Avrupa Programı Ortaklıkları

Types of partnership

The aim of European Partnerships with EU and associated countries, the private sector, foundations and other stakeholders is to deliver on global challenges and modernise industry.

The Horizon Europe proposal lays down the conditions and principles for establishing European Partnerships. There are 3 types.

Co-Programmed European Partnerships

These are partnerships between the Commission and mostly private (and sometimes public) partners.

A memorandum of understanding is the basis for the cooperation in these partnerships, as it specifies the partnership's objectives, the commitments from both sides and the governance structure.

Co-funded European Partnerships using a programme co-fund action

These are partnerships involving EU countries, with research funders and other public authorities at the core of the consortium.

Institutionalised European Partnerships

These are partnerships in the field of research and innovation between the Union, EU member states and/or industry.

These partnerships require legislative proposals from the Commission and are based on a Council Regulation (Article 187) or a Decision by the European Parliament and Council (Article 185) EN •••. They are implemented by dedicated structures created for that purpose.

Partnerships, candidates and contact details

Horizon Europe Strategic Plan 2021-2014

The current list of candidate European Partnerships can be found in the Horizon Europe Strategic Plan 2021-2024 EN •••.

Results from the structured consultation of EU countries are summarised in the report European Partnerships under Horizon Europe: results of the structured consultation of Member States.

The partnership candidates were collected across 5 areas.

Full details of candidates, draft proposal documents and contact details below.

- health EN •••
- digital, industry and space EN •••
- climate, energy and mobility EN •••
- food, bioeconomy, natural resources, agriculture and environment EN •••
- partnerships across themes EN •••

https://research-and-innovation.ec.europa.eu/funding/funding-opportunities/funding-programmes-and-open-calls/horizon-europe/european-partnerships-horizon-europe_en

Ufuk Avrupa Programı Ortaklıkları

PILLAR II - Global challenges & European industrial competitiveness

CLUSTER 1: Health	CLUSTER 4: Digital, Industry & Space	CLUSTER 5: Climate, Energy & Mobility	CLUSTER 6: Food, Bioeconomy, Agriculture,...
Innovative Health Initiative	Key Digital Technologies	Clean Hydrogen	Circular Bio-based Europe
Global Health Partnership	Smart Networks & Services	Clean Aviation	Rescuing Biodiversity to Safeguard Life on Earth
Transforming Health Care Systems	High Performance Computing	Single European Sky ATM Research 3	Climate Neutral, Sustainable and Productive Blue Economy
Risk Assessment of Chemicals	European Metrology (Art. 185 of the TFEU)	Europe's Rail	Water4All "Water security for the planet"
ERA for Health	Artificial Intelligence, Data and Robotics	Cooperative, Connected and Automated Mobility (CCAM)	Animal Health and Welfare*
Rare Diseases*	Photonics	Batteries "Towards a competitive European industrial battery value chain"	Agroecology "Accelerating Farming Systems Transition"*
One Health / Antimicrobial Resistance*	Made in Europe	Zero-emission Waterborne Transport	Agriculture of Data*
Personalised Medicine*	Clean Steel - Low Carbon Steelmaking	Zero-emission Road Transport (2ZERO)	Safe and Sustainable Food Systems*
Pandemic Preparedness	Processes4Planet	People-centric Sustainable Built Environment (Built4People)	
	Globally Competitive Space Systems**	Clean Energy Transition	
		Driving Urban Transitions to a Sustainable Future	

PILLAR III – Innovative Europe

EIT (KNOWLEDGE & INNOVATION COMMUNITIES)	SUPPORT TO INNOVATION ECOSYSTEMS
InnoEnergy	Innovative SMEs
Climate	
Digital	
Food	
Health	
Raw Materials	
Manufacturing	
Urban Mobility	
Cultural and Creative Industries	

CROSS – PILLARS II and III

European Open Science Cloud (EOSC)

- Institutionalised Partnerships (Art 185 or 187 of the TFEU)
- Institutionalised Partnerships / EIT KICs
- Co-Programmed
- Co-Funded

Ufuk Avrupa Programı Ortaklıkları

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CROSS – PILLARS II and III

European Open Science Cloud (EOSC)

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- Institutionalised Partnerships / EIT KICs
- Co-Programmed
- Co-Funded

"Processes4Planet" Ortak-Programlama Ortaklığı

European Cross-Sectoral association

PRIVATE PARTNER

European Commission

PUBLIC PARTNER

SPIRE PPP (Horizon 2020)

Processes4Planet Co-programmed Partnership (Horizon Europe)

PARTNERSHIP BOARD

Processes4Planet'in Hedefleri

1. Climate neutrality
   Net-zero emissions
2. Circularity
   Near zero landfilling and near zero water discharge
3. Competitive EU process industries

"Processes4Planet" Ortak-Programlama Ortaklığı

Inovasyon Alanları	Inovasyon Programları	
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. Electirification 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. CO_2 capture for utilisation	6a. Flexible CO_2 capture and purification technologies	
7. CO_2 utilization in minerals	7a. CO_2 utilisation in concrete production	7b. CO_2 and CO mineralisation to produce building materials
8. CO_2/CO utilisation in chemicals and fuels	8a. Artificial photosynthesis 8b. Catalytic conversion of CO_2 to chemicals/fuels	8c. Utilisation of CO_2 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

Reference: Processes4Planet SRIA 2050, https://www.aspire2050.eu/sites/default/files/users/user85/p4planet_07.06.2022._final.pdf

"Made in Europe" Ortak-Programlama Ortaklığı

EFFRA
EUROPEAN FACTORIES OF THE FUTURE RESEARCH ASSOCIATION

Manufacturing community mobilised by EFFRA

PRIVATE PARTNER

European Commission

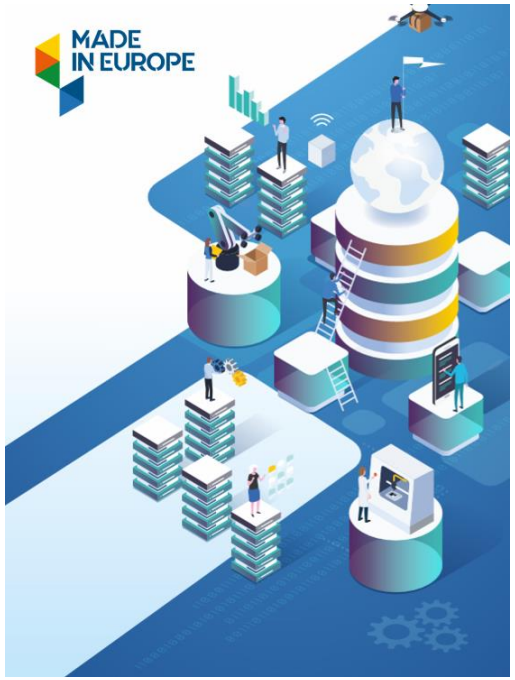
European Commission

PUBLIC PARTNER

Factories of the Future PPP (Horizon 2020)

Made in Europe Co-programmed Partnership (Horizon Europe)

PARTNERSHIP BOARD



Made in Europe General Objectives

A New Industrial Strategy for Europe (EU Policy):

1. European Leadership & manufacturing excellence

European Green Deal (EU Policy):

2. Circular and climate-neutral manufacturing

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

Made in Europe SRIA, https://www.effra.eu/sites/default/files/made_in_europe-sria.pdf

"Made in Europe" Ortak-Programlama Ortaklığı

Specific Objectives	Research & Innovation Objectives
1. Efficient, responsive and smart factories and supply chains	1. Zero-defect and zero-down-time high precision manufacturing, including predictive quality and non-destructive inspection methods 2. Manufacturing for miniaturisation and functional Integration 3. Scalable, reconfigurable and flexible first-time right manufacturing 4. Artificial intelligence for productive, excellent, robust and agile manufacturing chains 5. Advanced manufacturing processes for smart and complex products 6. Data 'highways' and data spaces in support of smart factories in dynamic value networks
2. Circular products & Climate-neutral manufacturing	1. Ultra-efficient, low energy and carbon-neutral manufacturing 2. De-manufacturing, re-manufacturing and recycling technologies for circular economy 3. Manufacturing with new and substitute materials 4. Virtual end-to-end life-cycle engineering and manufacturing from product to production lines, factories, and networks 5. Digital platforms and data management for circular product and production-systems life-cycles 6. Predictive Manufacturing capabilities & Logistics of the future
3. New integrated business, product-service and production approaches; new use models	1. Collaborative product-service engineering for costumer driven manufacturing value networks 2. Manufacturing processes and approaches near to customers or consumers 3. Transparency, trust and data integrity along the product and manufacturing life-cycle 4. Secure communication and IP management for smart factories in dynamic value networks
4. Human-centred and human-driven manufacturing innovation	1. Digital platforms and engineering tools supporting creativity and productivity of R&D processes 2. Improving human device interaction using augmented and virtual reality and digital twins 3. Human & technology complementarity and excellence in manufacturing 4. Manufacturing Innovation and change management 5. Technology validation and migration paths towards full industrial deployment of advanced manufacturing technologies by SMEs

Made in Europe SRIA, https://www.effra.eu/sites/default/files/made_in_europe-sria.pdf

"Clean Steel" Ortak-Programlama Ortaklığı

ESTEP
European Steel Technology Platform

+

European Commission
European Commission

→

CSP
The Clean Steel Partnership

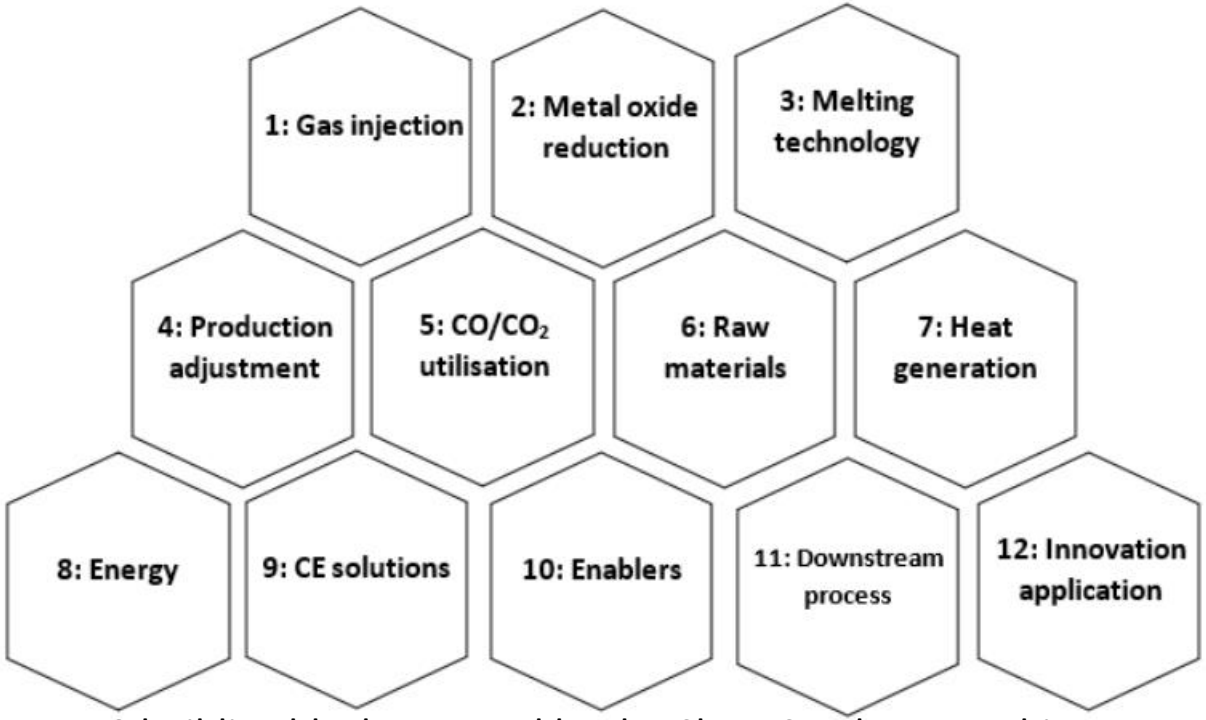
PRIVATE SIDE (on behalf of the entire European steel value chain community)

PUBLIC SIDE

PARTNERSHIP BOARD

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

Clean Steel SRIA, https://www.estep.eu/assets/Uploads/CSP-SRIA-Oct2021-clean.pdf

"Clean Steel" Ortak-Programlama Ortaklığı

Specific Objectives	Operational Objectives
1. Enabling steel production through carbon direct avoidance (CDA) technologies at a demonstration scale	1. Replacing carbon by renewable energy 2. Development of H_2-based reduction and/or melting processes 3. Electrolytic reduction
2. Fostering smart carbon usage (SCU-Carbon capture) technologies in steel making routes at a demonstration scale, thus cutting CO_2 emissions from burning fossil fuels in the existing steel production routes	1. Improving process integration with reduced use of carbon (e.g. gas injection in BF), upstream and downstream 2. Increasing the use of non-fossil carbon 3. Capturing CO_2 for CCU and/or CCS 4. Conditioning of metallurgical gases (containing CO_2, CO, CH_4, etc.) to meet specifications to finally produce chemical feedstock/alternative fuels
3. Developing deployable technologies to improve energy and resource efficiency (SCU - Process Integration)	1. Increasing the use of prereduced iron carriers 2. Developing technologies to reduce the energy required to produce steel
4. Increasing the recycling of steel scrap and residues, thus improving smart resources usage and further supporting a circular economy model in EU	1. Enhancing the recycling and reuse of industrial residues of the steel production process 2. Enhancing the recycling of steel scrap
5. Demonstrating clean steel breakthrough technologies contributing to climate-neutral steelmaking	1. Achieving TRL 8 by 2030 in most of the technology building blocks funded by the Partnership 2. Demonstrating clean steel breakthrough technologies by 2030 that enable at least a reduction in GHG emission compared to 1990 levels for similar plants
6. Strengthening the global competitiveness of the EU steel industry in line with the EU industrial strategy for steel	1. Creating a new market for 'clean steel' products 2. Contributing to the EU's efforts towards ensuring growth and jobs with long-term stability 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 4. Fostering R&D collaboration between EU companies and science in the clean steel value chains 5. Upskilling steel workforce

Clean Steel SRIA, https://www.estep.eu/assets/Uploads/CSP-SRIA-Oct2021-clean.pdf

Ülkemizden Ortaklıklara Üye Olan Kuruluşlar

EFFRA
EUROPEAN FACTORIES OF THE FUTURE RESEARCH ASSOCIATION

Manufacturing community mobilised by EFFRA

PRIVATE PARTNER

European Commission

European Commission

PUBLIC PARTNER

Factories of the Future PPP (Horizon 2020)

Made in Europe Co-programmed Partnership (Horizon Europe)

PARTNERSHIP BOARD

Arçelik, Coşkunöz Kalıp Makina, Ford Otosan, Robo Otomasyon, Sabancı Ünv, Teknopar, WiserSense

ASPIRE

European Cross-Sectoral association

PRIVATE PARTNER

European Commission

European Commission

PUBLIC PARTNER

SPIRE PPP (Horizon 2020)

Processes4Planet Co-programmed Partnership (Horizon Europe)

PARTNERSHIP BOARD

Hayat Kimya, IKMIB, Sabancı Ünv, SOCAR Türkiye, TÜPRAŞ

Küme 4 Endüstri Alanı 2021 Yılı Çağrılarındaki Başarılarımız

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

"Hedef 1: İklim nötr, döngüsel ve dijital üretim"

• **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)

"Hedef 2: Dayanıklı endüstri için kilit stratejik değer zincirlerinde artan özerklik"

• **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-Desinfected 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

Küme 4 Endüstri Alanı 2022 Yılı Çağrılarındaki Başarılarımız

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

"Hedef 1: İklim nötr, döngüsel ve dijital üretim"

• **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

"Hedef 2: Dayanıklı endüstri için kilit stratejik değer zincirlerinde artan özerklik"

• **Mercedes-Benz Türk A.Ş.**: Advanced lightweight materials FOR Energy-efficient STructures

• **İstanbul Teknik Üniversitesi, Ereğli Demir ve Çelik Fabrikaları T.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

• **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

Küme 4 Endüstri Alanı 2023 Yılı Çağrıları İlk Sonuçlarındaki Başarılarımız

Ülkemizden 11 Farklı Projede Yer Alan 19 Proje Ortağına Toplam 7.1 Milyon Avro Hibe

"Hedef 1: İklim nötr, döngüsel ve dijital üretim"

• **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

"Hedef 2: Dayanıklı endüstri için kilit stratejik değer zincirlerinde artan özerklik"

• **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

Ağ Kurma/Proje Pazarı Etkinlikleri

➢ **Fiziksel katılımla ya da online düzenlenen ağ kurma / proje pazarı etkinliklerine katılıp diğer araştırmacılarla tanışın**

https://eugreendeal.b2match.io/

Info | Registration | Pitching Workshops | How it works | The Location | About Reimbursement | Contact | FAQ | Our Project

Welcome to "Towards the Green Future: The European Green Deal" Brokerage Event, Brussels, 16 November 2023

Inspiring plenary sessions, informative workshops, and targeted meetings promise knowledge gain and new partnerships.

The Scientific and Technological Research Council of Türkiye (TÜBİTAK) will host **"Towards the Green Future: The European Green Deal" Brokerage Event in Brussels on November 16, 2023**. EGD 2023 stands firmly dedicated to uniting Europe's and Türkiye's research and innovation communities, providing an ideal platform for collaboration on making Europe the first climate-neutral continent. **This Brokerage event offers** research and industry leaders a stage to explore project ideas and gain insights into upcoming Horizon Europe calls, aligning seamlessly with the priorities of the

Register now
Open until 16 November 2023

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- **WORKSHOP #1** ENERGY AND MOBILITY: A CLEAN AND SUSTAINABLE APPROACH
- **WORKSHOP #2** CIRCULAR ECONOMY AND BIOECONOMY, FOOD & AGRICULTURE, ZERO WASTE
- **WORKSHOP #3** DIGITAL, **INDUSTRY** & RESEARCH INFRASTRUCTURE
- **WORKSHOP #4** SOCIAL SCIENCE INTEGRATION TO GREEN DEAL

Ufuk Avrupa Programı Dijital, Endüstri ve Uzay Kümesi

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