



DESTINATION 2
INCREASED AUTONOMY IN KEY
STRATEGIC VALUE CHAINS FOR
RESILIENT INDUSTRY

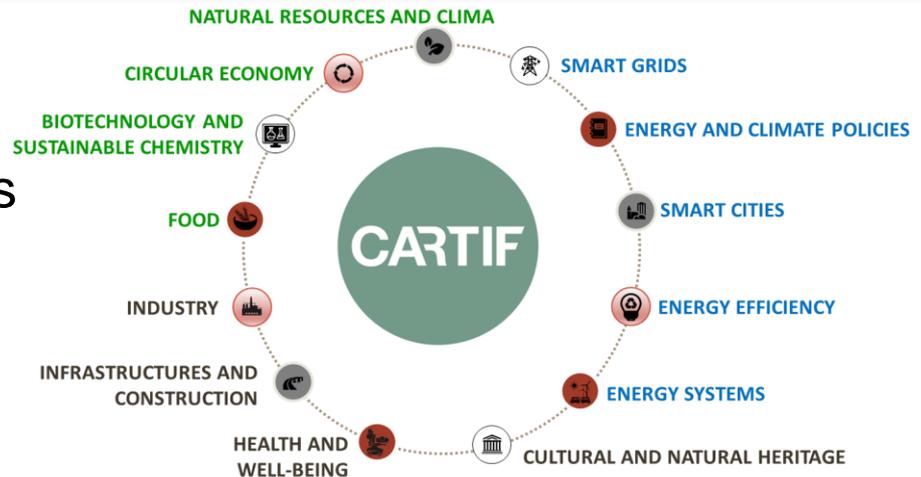
Marta HERRERO
28th October 2021

FUNDACION CARTIF (ES)

- **RTO non-profit** specialized in offering global solutions to companies
- Over 25 years of experience in developments, processes, systems and products.

- **69 on-going international projects**

(and 1 more H2020 in negotiation stage), including 56 H2020 on goings projects (13 as coordinator), 6 LIFE projects (2 as coordinator), 5 Interreg projects and 2 CYTED.



HE – CLUSTER 4

HORIZON EUROPE

EURATOM



* The European Institute of Innovation & Technology (EIT) is not part of the Specific Programme

Source: [EC](#)



HE – CLUSTER 4: Digital, Industry and Space

DESTINATION 1 – CLIMATE
NEUTRAL, CIRCULAR AND
DIGITISED PRODUCTION

DESTINATION 2 – INCREASED
AUTONOMY IN KEY STRATEGIC
VALUE CHAINS FOR RESILIENT
INDUSTRY

DESTINATION 3 – WORLD
LEADING DATA AND
COMPUTING TECHNOLOGIES

DESTINATION 4 – DIGITAL AND
EMERGING TECHNOLOGIES FOR
COMPETITIVENESS AND FIT FOR
THE GREEN DEAL

DESTINATION 5 – OPEN
STRATEGIC AUTONOMY IN
DEVELOPING, DEPLOYING AND
USING GLOBAL SPACE-BASED
INFRASTRUCTURES, SERVICES,
APPLICATIONS AND DATA

DESTINATION 6 – A HUMAN-
CENTRED AND ETHICAL
DEVELOPMENT OF DIGITAL AND
INDUSTRIAL TECHNOLOGIES

***DESTINATION 2 – INCREASED
AUTONOMY IN KEY STRATEGIC
VALUE CHAINS FOR RESILIENT
INDUSTRY***

HE – CLUSTER 4- DESTINATION 2

Strategic Plan

KSO C, 'Making Europe the first digitally led circular, climate-neutral and sustainable economy through the transformation of its mobility, energy, construction and production systems.'

KSO A, 'Promoting an open strategic autonomy by leading the development of key digital, enabling and emerging technologies, sectors and value chains to accelerate and steer the digital and green transitions through human-centred technologies and innovations.'

KSO D, 'Creating a more resilient, inclusive and democratic European society, prepared and responsive to threats and disasters, addressing inequalities and providing high-quality health care, and empowering all citizens to act in the green and digital transitions.'

CL4 expected impact

Industrial leadership and increased autonomy in key strategic value chains with security of supply in raw materials, achieved through breakthrough technologies in areas of industrial alliances, dynamic industrial innovation ecosystems and advanced solutions for substitution, resource and energy efficiency, effective reuse and recycling and clean primary production of raw materials, including critical raw materials, and leadership in the circular economy

HE – CLUSTER 4 - DESTINATION 2 - IMPACTS

To **increased autonomy in key strategic value chains for resilience industry**, and more specifically to one or several of the following impacts:

- Resilient, sustainable and secure (critical) **raw materials value chains** for EU industrial ecosystems, in support of the twin green and digital transformations.
- New **sustainable-by-design materials** with enhanced functionalities and applications in a wide range of industrial processes and consumer products.
- Leadership in producing materials that provide **solutions for clean, toxic/pollutant free environment, decarbonising industry**, and safeguarding civil infrastructures.
- Leadership **in circular economy** that strengthens cross-sectorial cooperation along the value chain and enable SMEs to transform their activities and business models.
- Increased adoption of **key digital and enabling technologies** in industrial value chains and strategic sectors, paying particular attention to SMEs and start-ups.

DESTINATION 2 – Focus Areas

Raw materials

- Dependence on third countries for CRM
- tackle the vulnerabilities in the entire EU raw materials value chain

Advanced materials

- to strengthen its capacity to produce and use chemicals
- OITBs

Circular value chains

- Complementary to D1
- Technological and non-technological elements

Preparedness of business/SMEs/startups

- Increase the uptake on new and digital technologies in these types of companies

DESTINATION 2 – Headings

Novel paradigms to establish resilient and circular value chains

Raw materials for EU open strategic autonomy and successful transition to a climate-neutral and circular economy

Green and Sustainable Materials

Materials for the benefit of society and the environment and materials for climate neutral Industry

Materials and data cross-cutting actions

Improving the resilience and preparedness of EU businesses, especially SMEs and Startups

HE – CLUSTER 4 - DESTINATION 2

- **Do Not Significant Harm**
- Link to other parts of HE:
 - CL4-D1 and D3: to ensure Europe’s productivity growth and competitiveness
 - CL4-D6: economic and social resilience, quality employment and social inclusion
 - EIC and Pillar III: SMEs
 - Other synergies: InvestEU; the Digital Europe Programme (DEP); links to the EIT (Manufacturing and Digital KICs); and links to Single Market programme, and the thematic smart specialisation platform on industrial modernisation.
- Proposals should demonstrate the expected impact by including **a *business case and exploitation strategy for industrialisation***
- For TRLs 7-8, a credible strategy to achieve **future full-scale manufacturing** in the EU is expected, indicating the commitments of the industrial partners
- In some cases, **training materials** for workers is expected

HE – CLUSTER 4 - DESTINATION 2

Call	Budgets (EUR million)		Deadline(s)
	2021	2022	
HORIZON-CL4-2021-RESILIENCE-01	355.20		23 Sep 2021
HORIZON-CL4-2021-RESILIENCE-02	10.00		25 Jan 2022
HORIZON-CL4-2022-RESILIENCE-01		402.20	30 Mar 2022
HORIZON-CL4-2022-RESILIENCE-02-PCP		9.00	30 Mar 2022
Overall indicative budget	365.20	411.20	

Novel paradigms to establish resilient and circular value chains

[HORIZON-CL4-2022-RESILIENCE-01-01: Circular and low emission value chains through digitalisation](#)

- RIA
- Budget: 6-8M€ - up to 4 projects (25.3M€)
- Processes4Planet Partnership
- Efficient use in the value chain in order to close the loop or reuse in other industries, can be ensured only through a transparent information system.
- Designing and piloting an information system throughout the whole value chain of process industries

Raw materials for EU open strategic autonomy and successful transition to a climate-neutral and circular economy

increasing access to primary raw materials, in particular critical raw materials for EU industrial value chains and strategic sectors

NEW SOURCES

HORIZON-CL4-2022-RESILIENCE-01-02: Monitoring and supervising system for exploration and future exploitation activities in the deep sea

GOOD PRACTICES

HORIZON-CL4-2022-RESILIENCE-01-03: Streamlining cross-sectoral policy framework throughout the extractive life-cycle in environmentally protected areas

- HORIZON-CL4-2022-RESILIENCE-01-04: Developing digital platforms for the small scale extractive industry
- HORIZON-CL4-2022-RESILIENCE-01-05: Technological solutions for tracking raw material flows in complex supply chains
- HORIZON-CL4-2022-RESILIENCE-01-06: Sustainable and innovative mine of the future
- HORIZON-CL4-2022-RESILIENCE-01-07: Innovative solutions for efficient use and enhanced recovery of mineral and metal by-products from processing of raw materials
- HORIZON-CL4-2022-RESILIENCE-01-08: Earth observation technologies for the mining life cycle in support of EU autonomy and transition to a climate-neutral economy

DATA
USE

MINING CYCLE

Raw materials for EU open strategic autonomy and successful transition to a climate-neutral and circular economy

HORIZON-CL4-2022-RESILIENCE-01-02: Monitoring and supervising system for exploration and future exploitation activities in the deep sea

- RIA: to achieve TRL3-5
- Budget: 14M€ - up to 1 project (14M€)
- The expected increase of the global demand for metals needed for the energy transition might become a driver to initiate commercial deep sea mining, paved by the technological advancements the environmental impacts, and how to mitigate them, need to be well understood; a robust legal framework needs to be in place and a reliable and transparent monitoring and supervising system
- 3 mineral deposits (polymetallic nodules, manganese crusts and sulphide deposits)

Raw materials for EU open strategic autonomy and successful transition to a climate-neutral and circular economy

[HORIZON-CL4-2022-RESILIENCE-01-03: Streamlining cross-sectoral policy framework throughout the extractive life-cycle in environmentally protected areas](#)

- CSA
- Budget: 2.4M€ - up to 1 projects (2.4M€)
- Exchange of good practices in permitting procedures related to extractive activities that may have an impact on environmentally protected areas.
- Policy coordination → EU Nature, EU Biodiversity, EU Green Deal

Raw materials for EU open strategic autonomy and successful transition to a climate-neutral and circular economy

[HORIZON-CL4-2022-RESILIENCE-01-04: Developing digital platforms for the small scale extractive industry](#)

- IA: to achieve TRL6-7
- Budget: around 5M€ - up to 3 projects (15M€)
- Digital platforms that integrate Earth Observation data, in situ data and data modelling, to improve data management and decision making during the extractive process.
- to make use of existing EU and Member States data infrastructures

Raw materials for EU open strategic autonomy and successful transition to a climate-neutral and circular economy

[HORIZON-CL4-2022-RESILIENCE-01-05: Technological solutions for tracking raw material flows in complex supply chains](#)

- RIA: to achieve TRL3-5
- Budget: 13.5M€ - up to 1 projects (13.5M€)
- to improve supply chain data transparency and traceability
- industrial users from the downstream side
- Materials passports

[HORIZON-CL4-2022-RESILIENCE-01-06: Sustainable and innovative mine of the future](#)

- IA: to achieve TRL6-7
- Budget: around 12M€ - up to 3 projects (36M€)
- Developing BD and AI methodologies for mining industry requirements
- safer, more sustainable and intelligent extraction of mineral resources
- target minerals and metals and can address individual elements of the raw materials value chain

Raw materials for EU open strategic autonomy and successful transition to a climate-neutral and circular economy

[HORIZON-CL4-2022-RESILIENCE-01-07: Innovative solutions for efficient use and enhanced recovery of mineral and metal by-products from processing of raw materials](#)

- IA: to achieve TRL6-7
- Budget: around 12M€ - up to 3 projects (36M€)
- relevant value chain of non-fuel, non-food raw materials
- energy-, material- and cost-efficient new sustainable mineral processing and/or metallurgical technologies and processes to increase the selectivity and the recovery rates of valuable by-products, particularly critical raw materials

[HORIZON-CL4-2022-RESILIENCE-01-08: Earth observation technologies for the mining life cycle in support of EU autonomy and transition to a climate-neutral economy](#)

- RIA: to achieve TRL3-5
- Budget: around 4.5M€ - up to 3 projects (13.5M€)
- to analyse Earth Observation data, enabling systematic mineral exploration and continuous monitoring of extraction, closure and post closure activities

Green and Sustainable Materials

innovative new components and systems with enhanced and new functionalities and improved performance enabling added value to the European industry in sectors

ELECTRONIC

NEW MATERIAL AND
ADAPT PROCESSES

ADDITIVE
MANUFACTURING

PFAS-FREE
COATINGS

- HORIZON-CL4-2022-RESILIENCE-01-10: Innovative materials for advanced (nano)electronic components and systems
- HORIZON-CL4-2022-RESILIENCE-01-11: Advanced lightweight materials for energy efficient structures
- HORIZON-CL4-2022-RESILIENCE-01-12: Functional multi-material components and structures
- HORIZON-CL4-2022-RESILIENCE-01-23: Safe- and sustainable-by-design organic and hybrid coatings

Green and Sustainable Materials

[HORIZON-CL4-2022-RESILIENCE-01-10: Innovative materials for advanced \(nano\)electronic components and systems](#)

- RIA: TRL3 → TRL5
- Budget: 3-5M€ - up to 4 projects (20M€)
- Electronic components and systems: core enablers of all sectors
- Innovative materials design and processing
- Heterogeneous integration of new materials
- international cooperation (no industrial competitors)

[HORIZON-CL4-2022-RESILIENCE-01-11: Advanced lightweight materials for energy efficient structures](#)

- RIA: TRL3 → TRL5
- Budget: 3-5M€ - up to 5 projects (20M€)
- New materials (including biobased) and adaptation of their manufacturing technologies
- international cooperation (no industrial competitors)

Green and Sustainable Materials

[HORIZON-CL4-2022-RESILIENCE-01-12: Functional multi-material components and structures](#)

- RIA: TRL3 → TRL6
- Budget: 4-6M€ - up to 4 projects (20M€)
- additive manufacturing processes
- international cooperation (no industrial competitors)

[HORIZON-CL4-2022-RESILIENCE-01-23: Safe- and sustainable-by-design organic and hybrid coatings](#)

- RIA: TRL3 → TRL5
- Budget: 3-5M€ - up to 4 projects (20M€)
- PFAS-free materials with inherently surface active functions to be used for multi-industrial sector applications
- international cooperation (no industrial competitors)

Materials for the benefit of society and the environment and materials for climate neutral Industry

Offer sustainable solutions for society in different sectors

BIOMATERIALS - HEALTH

- HORIZON-CL4-2022-RESILIENCE-01-13: Smart and multifunctional biomaterials for health innovations (RIA)

MEMBRANES

- HORIZON-CL4-2022-RESILIENCE-01-14: Membranes for gas separations - membrane distillation (IA)

RETROFITTING

- HORIZON-CL4-2022-RESILIENCE-01-16: Building and renovating by exploiting advanced materials for energy and resources efficient management (IA)

ENERGY

- HORIZON-CL4-2022-RESILIENCE-01-24: Novel materials for supercapacitor energy storage (RIA)

Materials for the benefit of society and the environment and materials for climate neutral Industry

HORIZON-CL4-2022-RESILIENCE-01-13: Smart and multifunctional biomaterials for health innovations

- RIA: TRL3 → TRL5
- Budget: 3-5M€ - up to 3 projects (20M€)
- Multifunctional biomaterials
- Health applications may include but are not limited to tissue engineering, artificial organs, implants, bioinks for bioprinting platforms, microfluidics, bioactive scaffolds, wearable and implantable devices, in-vitro diagnostics etc
- international cooperation (no industrial competitors)

Materials for the benefit of society and the environment and materials for climate neutral Industry

HORIZON-CL4-2022-RESILIENCE-01-14: Membranes for gas separations - membrane distillation

- RIA: TRL4 → TRL7
- Budget: 6-8M€ - up to 6 projects (21M€)
- reductions of industrial emissions in waste stream (water, gas)
- Advanced membrane materials for the recovery of valuable components
- Many uses: Separate gas streams, coupled with RES, desalination, reduce water footprint...
- international cooperation (no industrial competitors)

Materials for the benefit of society and the environment and materials for climate neutral Industry

HORIZON-CL4-2022-RESILIENCE-01-16: Building and renovating by exploiting advanced materials for energy and resources efficient management

- IA: TRL5 → TRL7
- Budget: 5-7M€ - up to 3 projects (21M€)
- New insulation materials: reduce energy, CO₂.. Indoor air quality
- Synergies with existing relevant Open Innovation Test Beds
- Synergies with Build4People partnership

HORIZON-CL4-2022-RESILIENCE-01-24: Novel materials for supercapacitor energy storage

- RIA: TRL3 → TRL6
- Budget: 4-6M€ - up to 4 projects (23M€)
- New materials that at least double the energy density over current technologies reduce cost and minimise or eliminate use of CRMs
- International cooperation (no industrial competitors)

Materials and data cross-cutting actions

CHARACTERISATION

- HORIZON-CL4-2022-RESILIENCE-01-19: Advanced materials modelling and characterisation (RIA)

OITBs

- HORIZON-CL4-2022-RESILIENCE-01-20: Climate Neutral and Circular Innovative Materials Technologies Open Innovation Test Beds (IA)

DIGITALISATION

- HORIZON-CL4-2022-RESILIENCE-01-25: Optimised Industrial Systems and Lines through digitalisation (IA)

Materials and data cross-cutting actions

[HORIZON-CL4-2022-RESILIENCE-01-19: Advanced materials modelling and characterisation](#)

- RIA: TRL3→ TRL5
- Budget: 4-6M€ - up to 3 projects (18M€)
- characterisation methods and computational modelling
- open repository for knowledge transfer
- model-based innovation processes covering all stages
- Improve handling of missing data by means of artificial intelligence/machine learning methods and/or simulation

Materials and data cross-cutting actions

HORIZON-CL4-2022-RESILIENCE-01-20: Climate Neutral and Circular Innovative Materials Technologies Open Innovation Test Beds

- IA: TRL5 → TRL7
- Budget: 10-12M€ - up to 3 projects (34M€)
- Establish Open Innovation Test Beds (OITB) by upgrading existing or developing new materials facilities and pilot lines
- Sustainability of the ecosystem
- reduction of costs for product design, time-to-market and regulatory compliance

HORIZON-CL4-2022-RESILIENCE-01-25: Optimised Industrial Systems and Lines through digitalisation

- IA: to achieve TRL6
- Budget: 4-5M€ - up to 1 projects (15M€)
- robust digital tools integrating materials modelling and process
- development of simulation and optimisation methods
- Improve efficiency, process and product quality and decision-making efficiency

Improving the resilience and preparedness of EU businesses, especially SMEs and Startups

- HORIZON-CL4-2021-RESILIENCE-02-32: Social and affordable housing district demonstrator (IA)
- HORIZON-CL4-2022-RESILIENCE-01-21: Leveraging standardisation in Digital Technologies (CSA)
- HORIZON-CL4-2022-RESILIENCE-01-26: 'Innovate to transform' support for SME's sustainability transition (CSA) .
- HORIZON-CL4-2022-RESILIENCE-02-01-PCP: Boosting green economic recovery and open strategic autonomy in Strategic Digital Technologies through pre-commercial procurement (PCP action)

Improving the resilience and preparedness of EU businesses, especially SMEs and Startups

[HORIZON-CL4-2021-RESILIENCE-02-32: Social and affordable housing district demonstrator](#)

- IA
- Budget: around 2.5M€ - up to 4 projects (10M€)
- “lighthouse districts” → Renovation Wave
- novel symbiotic renovation projects → demonstrators involving multiple industrial sectors (combining non-exhaustively energy, construction, renewables, circular, electronics and creative industries, social housing associations and public authorities)
- Affordable costs
- Both environmental and digital friendly

Deadline 25 Jan 2022

Improving the resilience and preparedness of EU businesses, especially SMEs and Startups

[HORIZON-CL4-2022-RESILIENCE-01-21: Leveraging standardisation in Digital Technologies](#)

- CSA
- Budget: around 4.5M€ - up to 1 project (4.5M€)
- Connecting European stakeholders ecosystems, including SMEs, with European and International standardisation bodies
- Increase the influence of Europe into ICT standardisation

[HORIZON-CL4-2022-RESILIENCE-01-26: 'Innovate to transform' support for SME's sustainability transition](#)

- CSA
- Budget: around 5M€ - up to 2 projects (10M€)
- financial support to third parties (up to 50000€)
- mobilisation of SMEs: connect existing EU specialised business support networks and centres: EEN, clusters, OITBs, DIHs...
- A) Advisory services
- B) Financial support

Improving the resilience and preparedness of EU businesses, especially SMEs and Startups

[HORIZON-CL4-2022-RESILIENCE-02-01-PCP: Boosting green economic recovery and open strategic autonomy in Strategic Digital Technologies through pre-commercial procurement \(PCP action\)](#)

- Pre-commercial procurement
- Budget: around 9M€ - up to 1 projects (9M€)
- To bring to the market new green, digital solutions that can increase Europe's resilience and preparedness to tackle the circular economy and climate challenge
- The topic is thus open to proposals from all domains of public sector activity to address public sector challenges that require innovative ICT based solutions

SUMMARY

If you are going to prepare a proposal...

- Check the F&T's portal regularly for updates on the topic
 - Reference documents
 - FAQs
 - Partners
- Check other Infodays: [recording 2021](#), [documents 2021](#)
- Ask your NCP in case you have any question
- Find the best consortium to apply: cover all roles
- Need to fit all the text in the topic and give solution
- Fill all the parts of the template and take into account the page limitation
- Don't leave the Administrative Part for the last minute

Thank you!

Any question?

Marta HERRERO

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