

# APRE

Agenzia per la Promozione  
della Ricerca Europea

## Climate, Energy and Mobility

Steven Frigerio

18/10/2021

APRE



# Steven Frigerio

- National Contact Point for Cluster 5 «Climate, energy and mobility» - Horizon Europe



# Agenda

09:40 - 10:15	Destination 1– Climate sciences and responses for the transformation towards climate neutrality <u>Presenter: Steven Frigerio (APRE)</u>	via Zoom
10:15 - 11:15	Destination 3- Sustainable, secure and competitive energy supply (Energy System, CCUS and Cross Cutting Call Topics) <u>Presenter: Steven Frigerio (APRE)</u>	via Zoom

# Horizon Europe

Horizon Europe is the EU's funding programme for research and innovation from 2021-2027 with budget of €95.5 billion.



## Science & technology

- Fuel EU's scientific and technological excellence and the strengthen the ERA



## Society

- tackle policy priorities, including green and digital transitions and SDGs



## Economy

- boost Europe's innovation uptake , competitive ness and jobs



# Rules for Participation

Source: Regulation establishing Horizon Europe

# Entities eligible for participation



*Art. 18: «Any legal entity, regardless of its place of establishment, including legal entities from non associated third countries or international organisation may participate in actions under the Programme, provided that the conditions laid down in this Regulation have been met together with any conditions laid down in the work programme or call»*

## **New eligibility condition: Gender Equality Plan (applicable only from 2022 on)**

Participants that are public bodies, research organisations or higher education establishments from Members States and Associated countries **must have a gender equality plan**, covering minimum process-related requirements.

- A self-declaration will be requested at proposal stage (for all types of participants).
- Included in the entity validation process (based on self-declaration)

# Entities eligible for funding

## EU COUNTRIES

- Member States (MS) including their outermost regions
- The Overseas Countries and Territories (OCTs) linked to the MS.

## NON-EU COUNTRIES

- Countries associated to Horizon Europe (AC)
- Low and middle income countries: See [HE Programme Guide](#).
- Other countries when announced in the call or exceptionally if their participation is essential

## SPECIFIC CASES

- Affiliated entities established in countries eligible for funding.
- EU bodies
- International organisations (IO):
  - International European research organisations are eligible for funding.
  - Other IO are not eligible (only exceptionally if participation is essential)
  - IO in a MS or AC are eligible for funding for Training and mobility actions and when announced in the call conditions



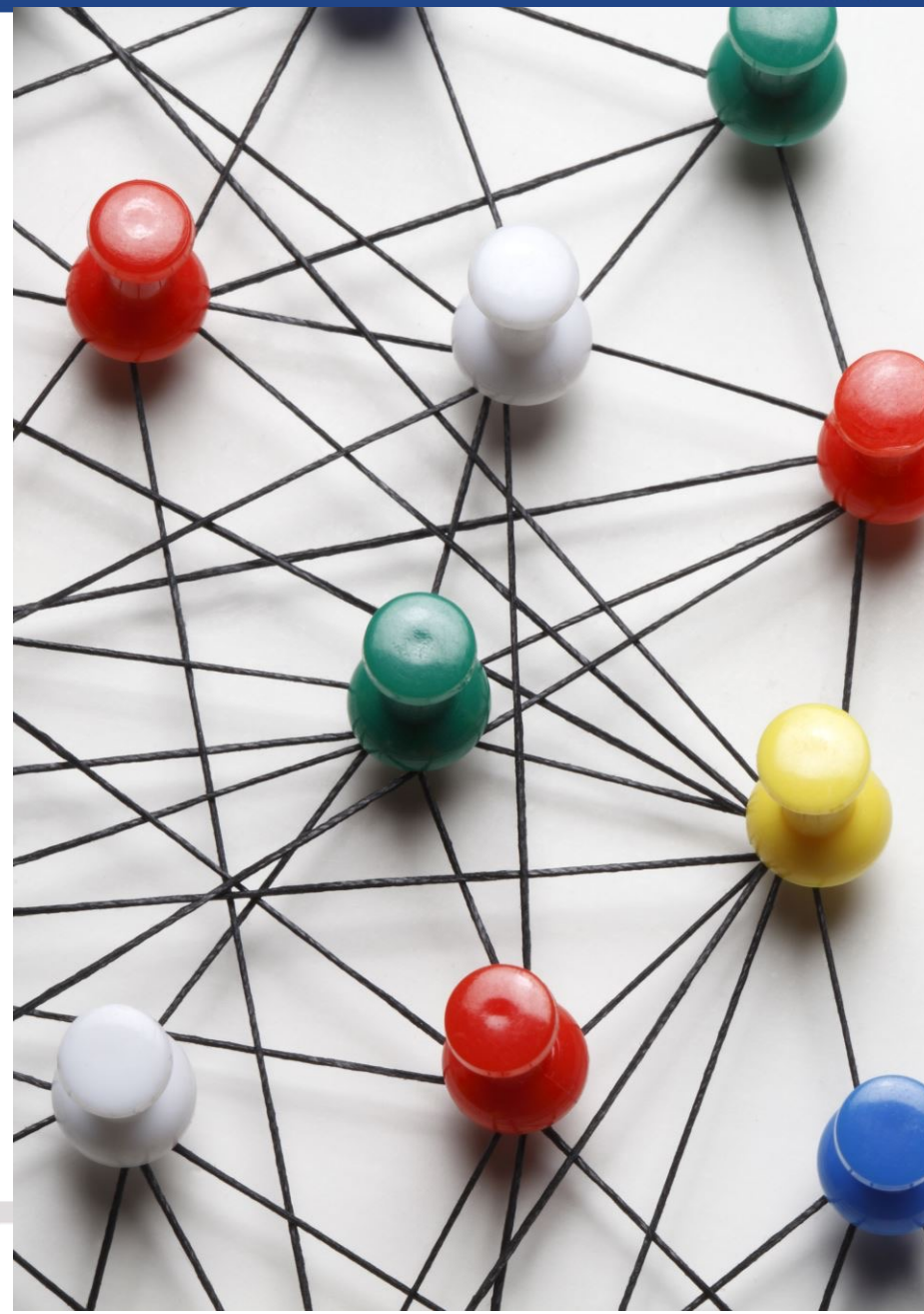


## Minimum requirements

- Art. 18: «Entities shall be part of a consortium that shall include at least three independent legal entities each established in a different Member State or associated country and with at least one of them established in a Member State, unless:  
(a) the work programme provides otherwise, if duly justified”

**SPECIAL/ADDITIONAL CONDITIONS**

MAY BE OUTLINED IN THE WORK PROGRAMME (No of participants, type of participants)





## Eligible activities (Main types of action)

### RESEARCH AND INNOVATION ACTION (RIA)

Activities aiming primarily to establish new knowledge or to explore the feasibility of a new or improved technology, product, process, service or solution.

This may include basic and applied research, technology development and integration, testing, demonstration and validation on a small-scale prototype in a laboratory or simulated environment.

***Funding rate: 100% of eligible costs***

### INNOVATION ACTION (IA)

Activities directly aimed at producing plans and arrangements or designs for new, altered or improved products, processes or services, possibly including prototyping, testing, demonstrating, piloting, large-scale product validation and market replication.

***Funding rate: 70% (except for non-profit legal entities, where the funding rate is up to 100%) of the total eligible costs***

### COORDINATION AND SUPPORT ACTION (CSA)

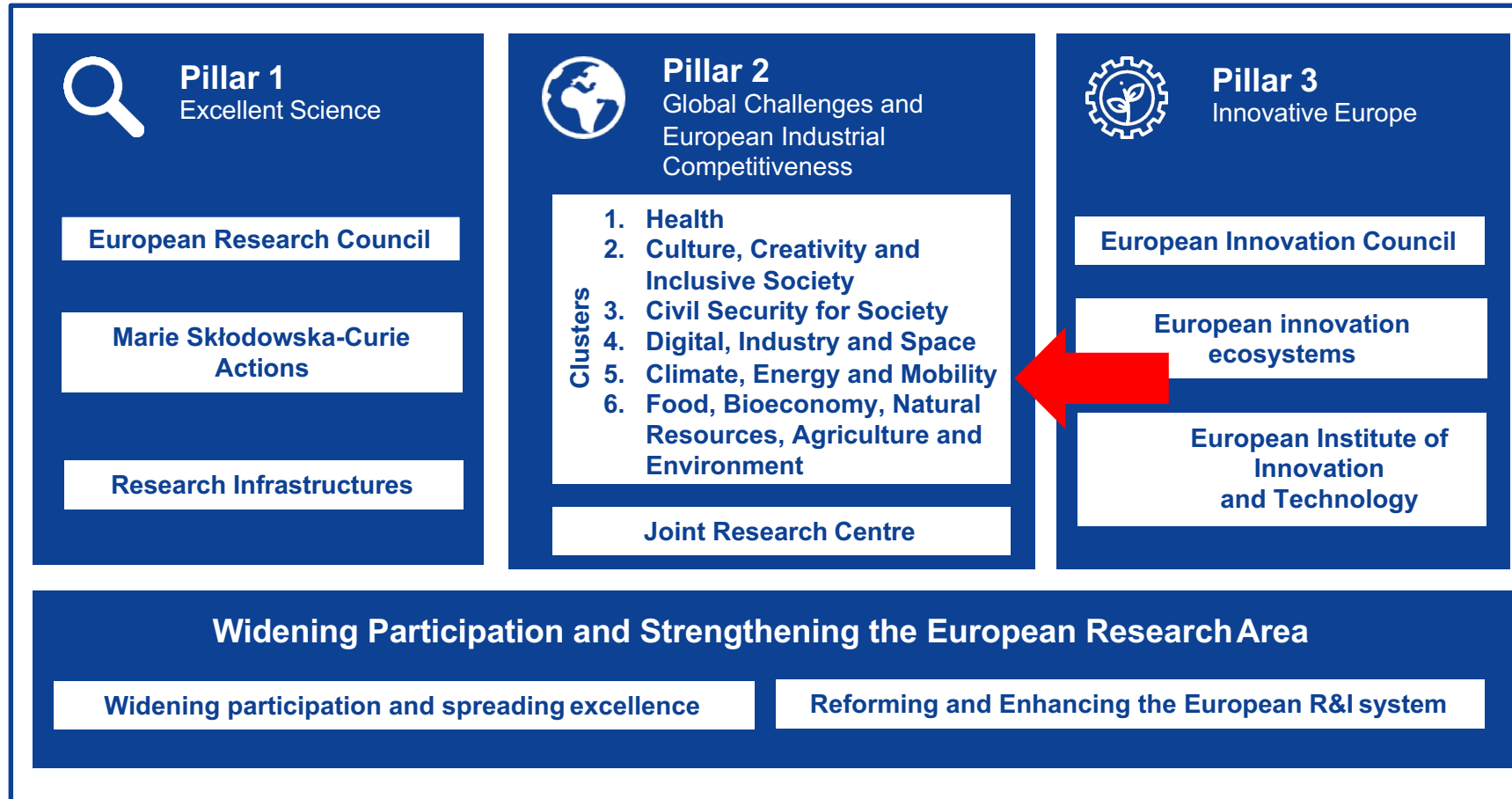
Activities contributing to the objectives of the Horizon Europe Programme, excluding R&I activities (e.g. networking, awareness raising, coordination, stakeholder engagement)

***Funding rate: 100% of the total eligible costs***

The image features a large, dark blue, irregular shape that resembles a splatter or a drop of ink. This shape is centered on a white background and has several smaller, lighter blue splatters around its edges. The word "Structure" is written in a white, sans-serif font, centered within the dark blue shape.

Structure

# Horizon Europe: structure





# Cluster 5

*DISCLAIMER: Information included in this presentation on Cluster 5 work programme 2021 2022 is provisional since it has not been adopted nor endorsed by the European Commission.*



# CL5: Climate, energy and mobility

- aims to fight climate change by better understanding its causes, evolution, risks, impacts and opportunities, and by making the energy and transport sectors climate neutral, environment-friendly, efficient, competitive, smarter, safer, resilient and useful for citizens and society.
- Cluster 5 supports the EU's strategic objectives through activities included in its work programme and through the support of Institutional European Partnerships which are implemented through dedicated structures.
- R&I activities under CL5 will contribute to the objectives of the European Green Deal related to the Climate Pact, the Clean energy strategy, the Strategic Energy Technology (SET) Plan, the Strategic Transport Research and Innovation Agenda (STRIA), European Circular Economy Action Plan

Intervention Areas
Climate sciences and solutions
Energy systems and grids
Energy supply
Buildings and industrial facilities in energy transitions
Energy storage
Communities and cities
Smart mobility
Clean, safe and accessible transport and mobility

Transition to a climate-neutral resilient society and economy enabled through **climate science, pathways and responses to climate change (mitigation and adaptation) and behavioural transformations.**



Climate sciences and responses for the transformation towards climate neutrality

Transition of the energy and transport sectors towards climate neutrality facilitated by **innovative crosscutting solutions.**



Cross-sectoral solutions for the climate transition

More efficient, clean, sustainable, secure and competitive energy supply through **new solutions for smart grids and energy systems based on more performant renewable energy solutions.**



Sustainable, secure and competitive energy supply

Efficient and sustainable **use of energy**, accessible for all is ensured through a clean energy system and a just transition.



Efficient, sustainable and inclusive energy use

Towards climate-neutral mobility through **clean solutions across all transport modes** while increasing global competitiveness of the EU transport sector.



Clean and competitive solutions for all transport modes

Safe, seamless, smart, inclusive, resilient, climate neutral and sustainable **mobility systems for people and goods** thanks to user-centric technologies and services including digital technologies and advanced satellite navigation services.



Safe, Resilient Transport and Smart Mobility services for passengers and goods

**All actions funded under CL5 destinations must help to deliver the respective main impacts.**



## CL5 Work Programme 2021-2022 - budget distribution per destination

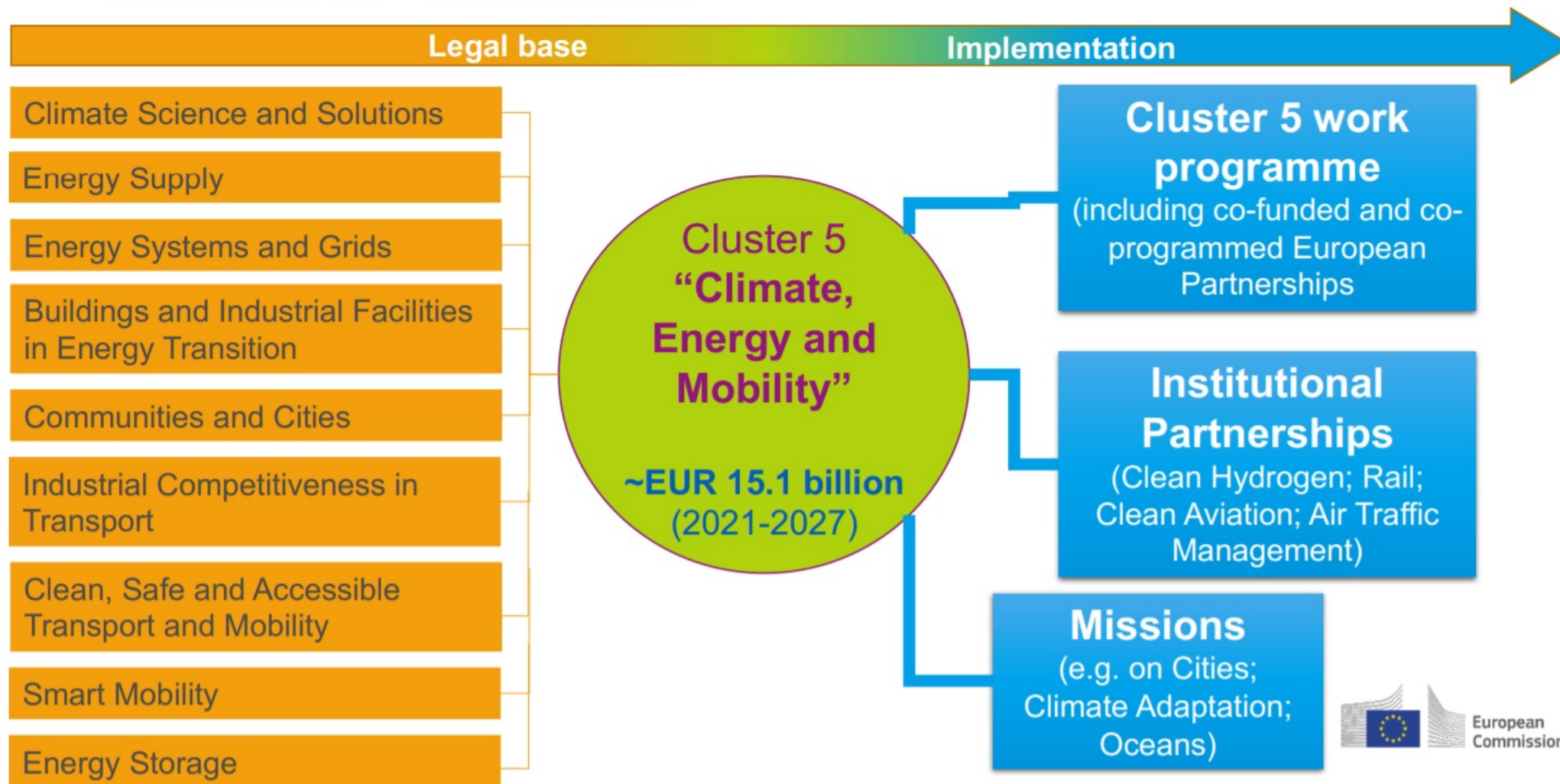
Destination	Number of topics	Budget mln EUR]	% Share
<b>D1</b> Climate sciences and responses for the transformation towards climate neutrality	17	274	9%
<b>D2</b> Cross-sectoral solutions for the climate transition	27	388,5	13%
<b>D3</b> Sustainable, secure and competitive energy supply	67	1.226,3	40%
<b>D4</b> Efficient, sustainable and inclusive energy use	18	244	8%
<b>D5</b> Clean and competitive solutions for all transport modes	31	511	17%
<b>D6</b> Safe, Resilient Transport and Smart Mobility services for passengers and goods	28	380	12%
Other actions	35	44,97	2%
Total	223	3077,39	100%



## Cluster 5 WP calls structure

DESTINATION	Call ID 2021 one stage	Call ID 2022 one stage	Call ID 2022 two stage
D1 Climate sciences and responses for the transformation towards climate neutrality	HORIZON-CL5-2021-D1-01	HORIZON-CL5-2022-D1-02	HORIZON-CL5-2022-D1-01-two-stage
D2 Cross-sectoral solutions for the climate transition	HORIZON-CL5-2021-D2-01		HORIZON-CL5-2022-D2-01
D3 Sustainable, secure and competitive energy supply	HORIZON-CL5-2021-D3-01 HORIZON-CL5-2021-D3-02	HORIZON-CL5-2022-D3-01 HORIZON-CL5-2022-D3-02 HORIZON-CL5-2022-D3-03	
D4 Efficient, sustainable and inclusive energy use	HORIZON-CL5-2021-D4-01 HORIZON-CL5-2021-D4-02	HORIZON-CL5-2022-D4-01 HORIZON-CL5-2022-D4-02	
D5 Clean and competitive solutions for all transport modes	HORIZON-CL5-2021-D5-01	HORIZON-CL5-2022-D5-01	
D6 Safe, Resilient Transport and Smart Mobility services for passengers and goods	HORIZON-CL5-2021-D6-01	HORIZON-CL5-2022-D6-01 HORIZON-CL5-2022-D6-02	

# Cluster 5 - overview



## Expected impacts of cluster 5

Transition to a climate-neutral and resilient society and economy enabled through **advanced climate science**, pathways and responses to climate change (mitigation and adaptation) and behavioural transformations

Clean and sustainable transition of the energy and transport sectors towards climate neutrality facilitated by innovative **crosscutting solutions**

More efficient, clean, sustainable, secure and competitive **energy supply** through new solutions for smart grids and energy systems based on more performant renewable energy solutions

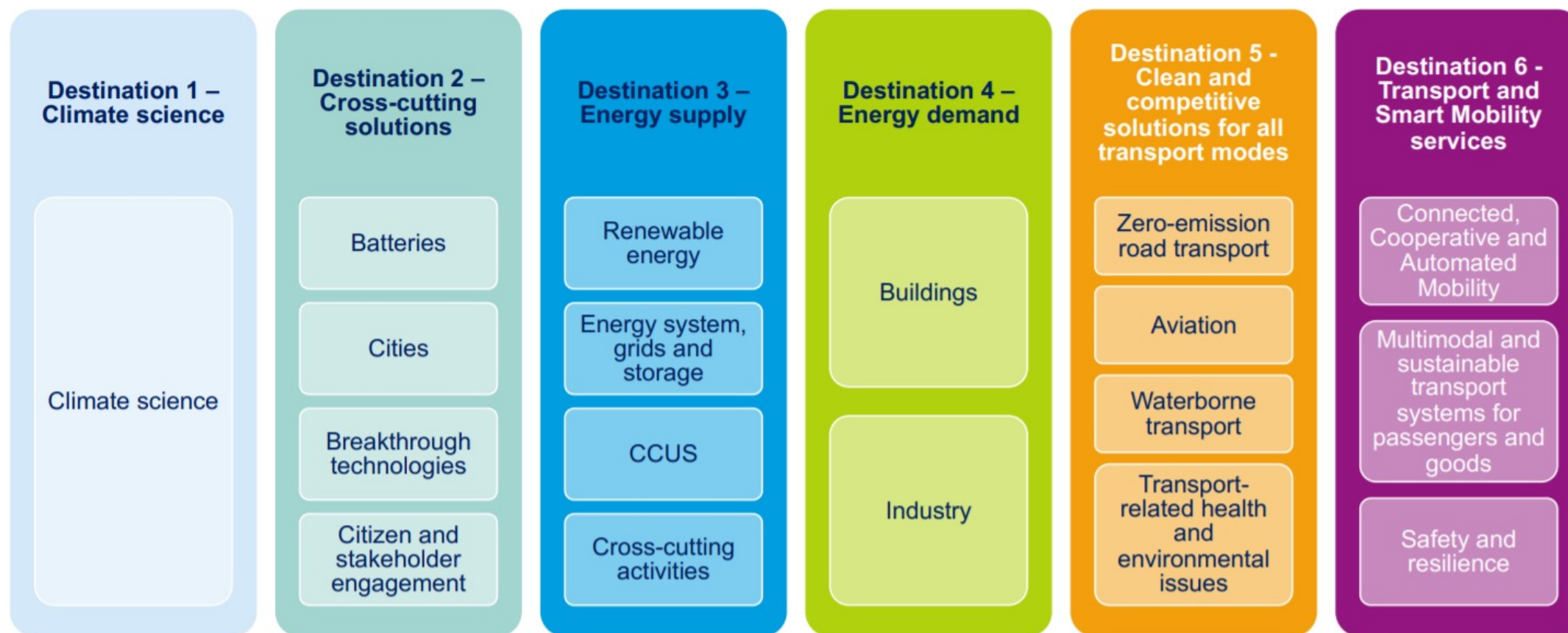
Efficient and sustainable **use of energy**, accessible for all is ensured through a clean energy system and a just transition

Towards climate-neutral and environmental friendly mobility through **clean solutions** across all transport modes while increasing **global competitiveness** of the **EU transport sector**

Safe, seamless, smart, inclusive, resilient, climate neutral and sustainable **mobility systems** for people and goods thanks to user-centric technologies and services including digital technologies and advanced satellite navigation services

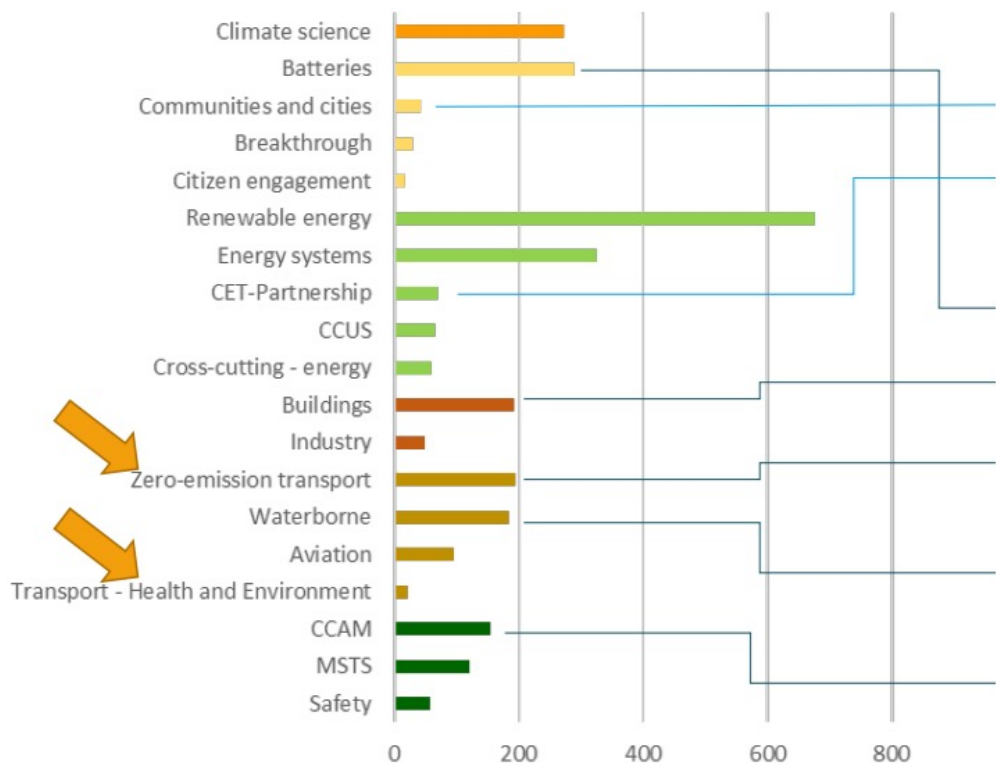


# Cluster 5 Work programme - overview



# Cluster 5 Work programme - budgets

EU contribution per thematic area  
(2021-2022, in Mio EUR)



58 out 186 topics (31% of all) implement European Partnerships (2021-2022)

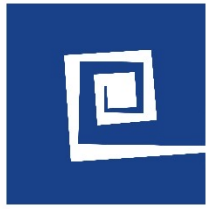
## Co-funded Partnerships:

- **Driving Urban Transition:** 1 topic (37 M€ for 2021-2022)
- **Clean Energy Transition:** 1 topic (70 M€ for 2021-2022)

## Co-programmed Partnerships:

- **Batteries:** 17 topics (EUR 293 million)
- **Built4People:** 8 topics (EUR 124 million)
- **Towards Zero-Emission Road Transport:** 8 topics (EUR 199 million)
- **Zero-Emission Waterborne Transport:** 12 topics (EUR 167.5 million)
- **Connected, Cooperative and Automated Mobility:** 11 topics (EUR 162 million)





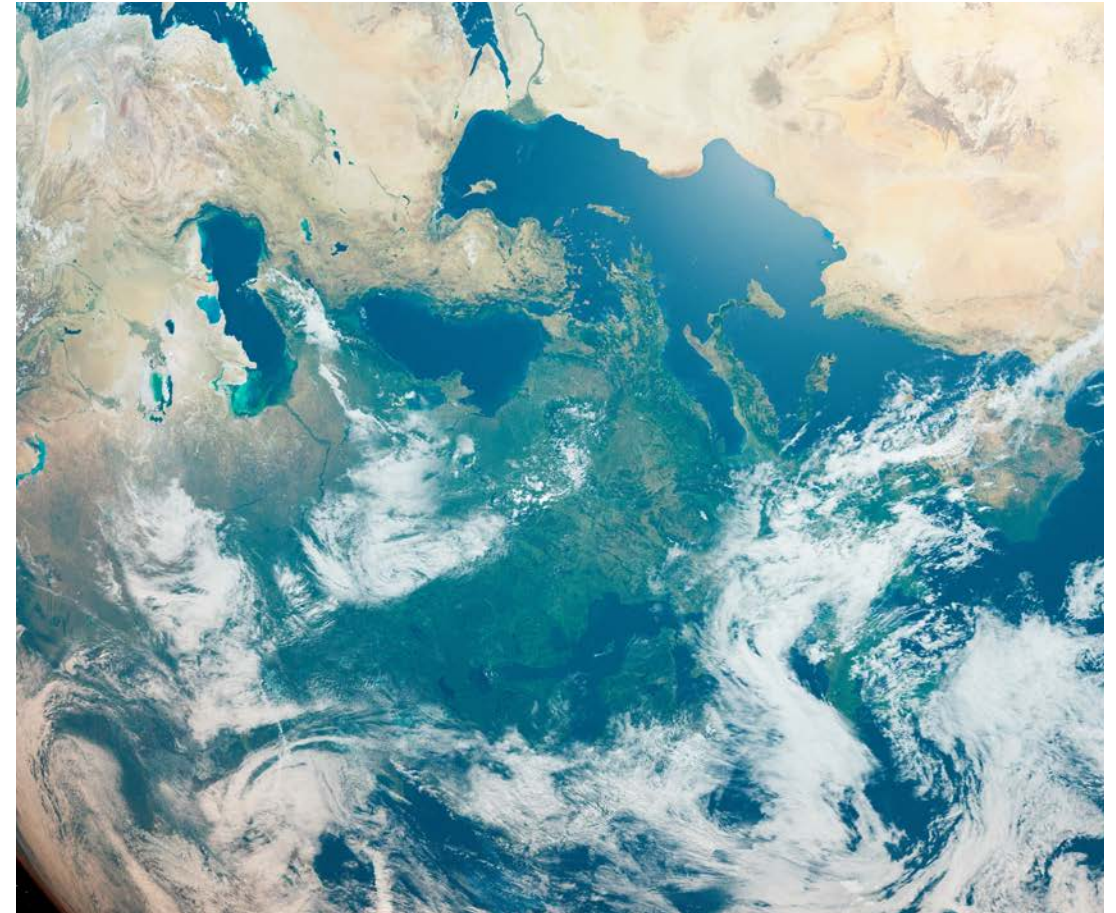
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## DESTINATION 1

## Destination 1: Climate sciences and responses for the transformation towards climate neutrality

- Includes topics on: Earth system science; pathways to climate neutrality; climate change adaptation including climate services; social science for climate action; and better understanding of climate-ecosystems interactions.
- Synergies with Cluster 6 by planning for adequate resources for co-ordination and clustering activities [CL5 Destination 1 concentrates on climate science and modelling, CL6 supports R&I on the implementation of climate change mitigation and adaptation solutions.]



# Destination 1: Climate sciences and responses for the transformation towards climate neutrality

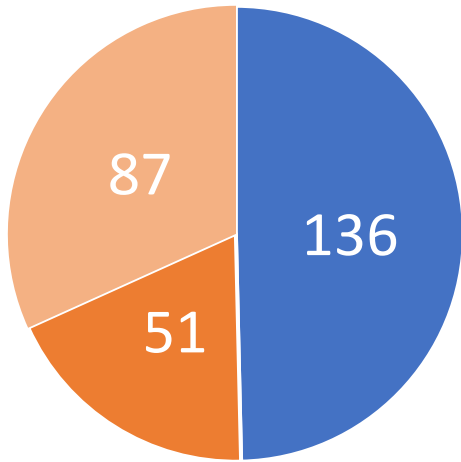
Expected impact of this Destination is to contribute to the “Transition to a climate-neutral and resilient society and economy enabled through advanced climate science, pathways and responses to climate change (mitigation and adaptation) and behavioural transformations”, notably through:

- Advancing knowledge and providing solutions in the any of following areas: Earth system science; pathways to climate neutrality; climate change adaptation including climate services; social science for climate action; and better understanding of climate ecosystems interactions.
- Contributing substantially to key international assessments such as those of the Intergovernmental Panel on Climate Change (IPCC) or the European Environment Agency (e.g. European environment state and outlook reports, SOER).
- Strengthening the European Research Area on climate change.



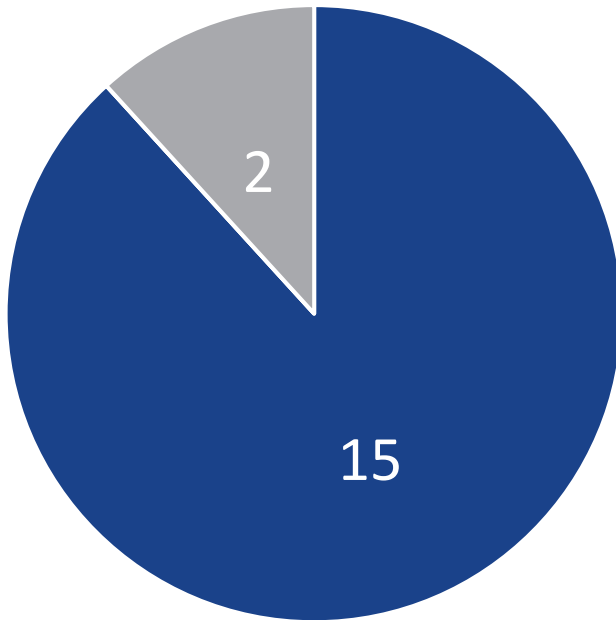
# Destination 1: Climate sciences and responses for the transformation towards climate neutrality

Destination 1 - budget mil €



- 2021 HORIZON-CL5-2021-D1-01
- 2022 HORIZON-CL5-2022-D1-01-two-stage
- 2022 HORIZON-CL5-2022-D1-02

Destination 1 - types of action



- RIA
- CSA

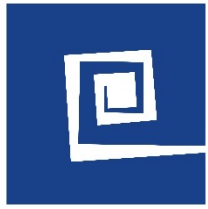


# Topics – Destination 1

- HORIZON-CL5-2022-D1-01-01-two-stage: Carbon Dioxide Removal (CDR) approaches
- HORIZON-CL5-2022-D1-01-02-two-stage: Socio-economic risks of climate change in Europe
- HORIZON-CL5-2022-D1-01-03-two-stage: Social science for land-use strategies in the context of climate change and biodiversity challenges
- HORIZON-CL5-2022-D1-02-01: Verification and reconciliation of estimates of climate forcings HORIZON-CL5-2022-D1-02-02: Development of high-resolution Earth system models for global and regional climate change projections
- HORIZON-CL5-2022-D1-02-03: Improvement of Integrated Assessment Models in support of climate policies
- HORIZON-CL5-2022-D1-02-04: Supporting the formulation of adaptation strategies through improved climate predictions in Europe and beyond
- HORIZON-CL5-2022-D1-02-05: Let nature help do the job: Rewilding landscapes for carbon sequestration, climate adaptation and biodiversity support

Topics	Type of Action	Budgets (EUR million)	Expected EU contribution per project (EUR million) <sup>36</sup>	Number of projects expected to be funded
		2022		
Opening: 12 Oct 2021				
Deadline(s): 10 Feb 2022 (First Stage), 27 Sep 2022 (Second Stage)				
HORIZON-CL5-2022-D1-01-01-two-stage	RIA	21.00	Around 7.00	3
HORIZON-CL5-2022-D1-01-02-two-stage	RIA	10.00	Around 5.00	2
HORIZON-CL5-2022-D1-01-03-two-stage	RIA	20.00	6.00 to 7.00	3
Overall indicative budget		51.00		

Topics	Type of Action	Budgets (EUR million)	Expected EU contribution per project (EUR million) <sup>42</sup>	Number of projects expected to be funded
		2022		
Opening: 12 Oct 2021 Deadline(s): 10 Feb 2022				
HORIZON-CL5-2022-D1-02-01	RIA	15.00	Around 5.00	3
HORIZON-CL5-2022-D1-02-02	RIA	20.00	Around 10.00	2
HORIZON-CL5-2022-D1-02-03	RIA	15.00	Around 5.00	3
HORIZON-CL5-2022-D1-02-04	RIA	20.00	Around 10.00	2
HORIZON-CL5-2022-D1-02-05	RIA	17.00	8.00 to 9.00	2
Overall indicative budget		87.00		



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## DESTINATION 3



## Destination 3: Sustainable, secure and competitive energy supply

- ✚ includes activities in the areas of **renewable energy**, incl. wind energy, photovoltaics or bioenergy, and advanced renewable fuels, incl. synthetic and sustainable advanced biofuels
- ✚ **energy system, grids and storage** – incl. energy system planning and operation, electricity system reliability and resilience, storage development and integration and digitalisation of the energy system.
- ✚ development of **Carbon capture, utilisation and storage (CCUS)** in electricity generation and industry applications
- ✚ integration of climate neutral, renewable energy carriers, such as **clean hydrogen** (Innovative energy storage solutions, incl. chemical, mechanical, electrical and thermal storage, are a key element);



## Destination 3: Sustainable, secure and competitive energy supply

Contribute to “More efficient, clean, sustainable, secure and competitive energy supply through new solutions for smart grids and energy systems based on more performant renewable energy solutions”, notably through:

- Fostering European global leadership in affordable, secure and sustainable renewable energy technologies
- Ensuring cost-effective uninterrupted and affordable supply of energy to households and industries in a scenario of high penetration of variable renewables and other new low carbon energy supply.
- Accelerating the development of Carbon Capture, Use and Storage (CCUS) as a CO<sub>2</sub> emission mitigation option in electricity generation and industry applications (including also conversion of CO<sub>2</sub> to products) (more detailed information below).





## Destination 3: Sustainable, secure and competitive energy supply

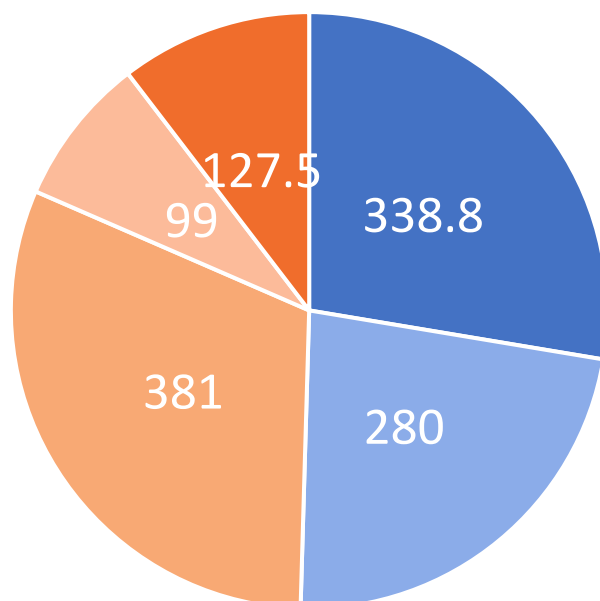
Topics include:

- *Fostering the European global leadership in affordable, secure and sustainable renewable energy technologies*
- *Energy systems, grids and storage*
- *Carbon capture, utilisation and storage (CCUS)*



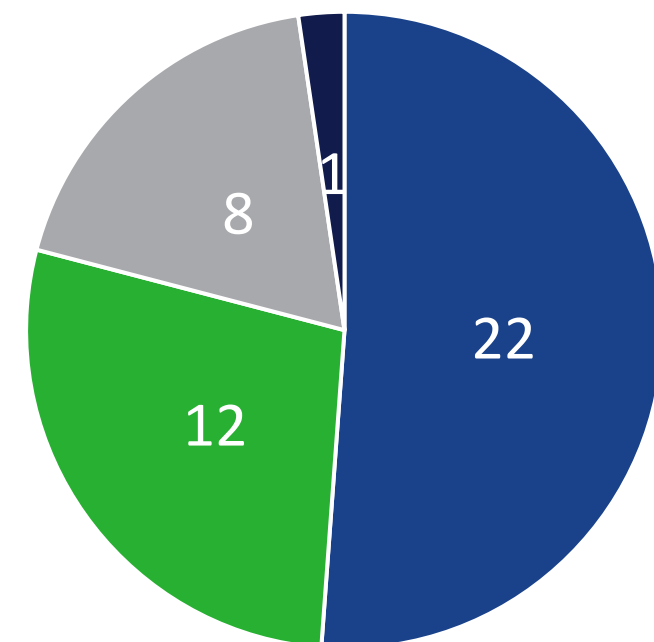
# Destination 3: Sustainable, secure and competitive energy supply

Destination 3 - budget mil €



- 2021 HORIZON-CL5-2021-D3-01 ■ 2021 HORIZON-CL5-2021-D3-02
- 2022 HORIZON-CL5-2022-D3-01 ■ 2022 HORIZON-CL5-2022-D3-02
- 2022 HORIZON-CL5-2022-D3-03

Destination 3 - types of action



- RIA ■ IA ■ CSA ■ Co-fund



# Topics – Destination 3

- HORIZON-CL5-2021-D3-02-01: Demonstration of wave energy devices to increase experience in real sea condition
- HORIZON-CL5-2021-D3-02-02: Sustainability and educational aspects for renewable energy and renewable fuel technologies
- HORIZON-CL5-2021-D3-02-03: Market Uptake Measures of renewable energy systems
- HORIZON-CL5-2021-D3-02-04: Novel tandem, high efficiency Photovoltaic technologies targeting low cost production with earth abundant materials
- HORIZON-CL5-2021-D3-02-05: Energy Sector Integration: Integrating and combining energy systems to a cost-optimised and flexible energy system of systems
- HORIZON-CL5-2021-D3-02-06: Increasing energy system flexibility based on sector-integration services to consumers (that benefits system management by DSOs and TSOs)
- HORIZON-CL5-2021-D3-02-07: Reliability and resilience of the grid: Measures for vulnerabilities, failures, risks and privacy
- HORIZON-CL5-2021-D3-02-08: Electricity system reliability and resilience by design: High-Voltage, Direct Current (HVDC)-based systems and solutions
- HORIZON-CL5-2021-D3-02-09: Demonstration of superconducting systems and elpipes
- HORIZON-CL5-2021-D3-02-10: Demonstration of advanced Power Electronics for application in the energy sector
- HORIZON-CL5-2021-D3-02-11: Reinforcing digitalisation related know how of local energy ecosystems
- HORIZON-CL5-2021-D3-02-12: Integration of CCUS in hubs and clusters, including knowledge sharing activities
- HORIZON-CL5-2021-D3-02-13: Cost reduction of CO2 capture (new or improved technologies)
- HORIZON-CL5-2021-D3-02-14: Support to the activities of the European Geological Services
- HORIZON-CL5-2021-D3-02-15: Support to the activities of the ETIPs and technology areas of the SET Plan

Deadline(s): 05 Jan 2022				
HORIZON-CL5-2021-D3-02-01	IA	15.00 <sup>80</sup>	Around 15.00	1
HORIZON-CL5-2021-D3-02-02	CSA	10.00	Around 2.50	4
HORIZON-CL5-2021-D3-02-03	CSA	10.00	Around 2.00	5
HORIZON-CL5-2021-D3-02-04	RIA	20.00	Around 5.00	4
HORIZON-CL5-2021-D3-02-05	IA	30.00 <sup>81</sup>	9.00 to 10.00	3
HORIZON-CL5-2021-D3-02-06	IA	25.00 <sup>82</sup>	Around 8.00	3
HORIZON-CL5-2021-D3-02-07	IA	15.00 <sup>83</sup>	7.00 to 8.00	2
HORIZON-CL5-2021-D3-02-08	RIA	15.00	7.00 to 8.00	2
HORIZON-CL5-2021-D3-02-09	IA	15.00 <sup>84</sup>	Around 15.00	1
HORIZON-CL5-2021-D3-02-10	IA	10.00 <sup>85</sup>	Around 5.00	2
HORIZON-CL5-2021-D3-02-11	CSA	4.00	Around 4.00	1
HORIZON-CL5-2021-D3-02-12	CSA	2.00	Around 2.00	1
HORIZON-CL5-2021-D3-02-13	RIA	30.00	10.00 to 15.00	2
HORIZON-CL5-2021-D3-02-14	CSA	20.00	Around 20.00	1
HORIZON-CL5-2021-D3-02-15	CSA	9.80	Around 1.00	10
Overall indicative budget		230.80		

# Topics – Destination 3

- HORIZON-CL5-2021-D3-03-01: AU-EU Water Energy Food Nexus
- HORIZON-CL5-2021-D3-03-02: Next generation of renewable energy technologies
- HORIZON-CL5-2021-D3-03-03: Hybrid catalytic conversion of renewable energy to carbon-neutral fuels
- HORIZON-CL5-2021-D3-03-04: Physics and aerodynamics of atmospheric flow of wind for power production HORIZON-CL5-2021-D3-03-05: Wind energy in the natural and social environment
- HORIZON-CL5-2021-D3-03-06: Novel approaches to concentrated solar power (CSP)
- HORIZON-CL5-2021-D3-03-07: Stable high-performance Perovskite Photovoltaics
- HORIZON-CL5-2021-D3-03-08: Cost-effective micro-CHP and hybrid heating systems
- HORIZON-CL5-2021-D3-03-09: Carbon-negative sustainable biofuel production
- HORIZON-CL5-2021-D3-03-10: Innovative foundations, floating substructures and connection systems for floating PV and ocean energy devices
- HORIZON-CL5-2021-D3-03-11: Development of hydropower equipment for hidden hydropower
- HORIZON-CL5-2021-D3-03-12: Innovation on floating wind energy deployment optimized for deep waters and different sea basins (Mediterranean Sea, Black Sea, Baltic Sea, North-east Atlantic Ocean)
- HORIZON-CL5-2021-D3-03-13: Demonstration pilot lines for alternative and innovative PV technologies (Novel c-Si tandem, thin film tandem, bifacial, CPV, etc.)
- HORIZON-CL5-2021-D3-03-14: Demonstration of large-scale CHP technologies for a shift to the use of biogenic residues and wastes
- HORIZON-CL5-2021-D3-03-15: Solutions for more sustainable geothermal energy
- HORIZON-CL5-2021-D3-03-16: Innovative biomethane production as an energy carrier and a fuel

Topics	Type of Action	Budgets (EUR million)	Expected EU contribution per project (EUR million) <sup>147</sup>	Number of projects expected to be funded
		2022		
Opening: 26 May 2022 Deadline(s): 27 Oct 2022				
HORIZON-CL5-2022-D3-02-01	RIA	9.00	Around 3.00	3
HORIZON-CL5-2022-D3-02-02	RIA	5.00	Around 2.50	2
HORIZON-CL5-2022-D3-02-03	IA	10.00 <sup>148</sup>	Around 10.00	1
HORIZON-CL5-2022-D3-02-04	RIA	10.00	3.00 to 5.00	2
HORIZON-CL5-2022-D3-02-05	IA	20.00 <sup>149</sup>	Around 10.00	2
HORIZON-CL5-2022-D3-02-06	RIA	10.00	3.00 to 5.00	2
HORIZON-CL5-2022-D3-02-07	IA	15.00 <sup>150</sup>	Around 7.50	2
HORIZON-CL5-2022-D3-02-08	IA	20.00 <sup>151</sup>	Around 10.00	2
Overall indicative budget		99.00		





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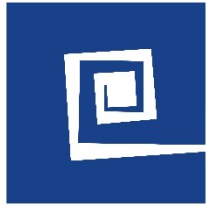
**Steven Frigerio**

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# Agenda

Tuesday, October 19, 2021	Content	Venue
<u>Date &amp; Time (CET)</u>	<u>Sessions – Day 2</u>	
09:30 - 11:00	<p>Destination 3- Sustainable, secure and competitive energy supply (Global Leadership Renewable Call Topics)</p> <p>Destination 4 - Efficient, sustainable and inclusive energy use</p> <p>Presenters:</p> <p><u>Piero De Bonis (European Commission)</u></p> <p><u>Steven Frigerio (APRE)</u></p>	via Zoom



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## Cluster 5 in Missions & Partnerships

# European Partnerships

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- bring the European Commission and private and/or public partners together to address Europe's most pressing challenges through concerted research and innovation initiatives.
- help to avoid the duplication of investments and contribute to reducing the fragmentation of the research and innovation landscape in the EU.

## Co-programmed

Based on Memoranda of Understanding / contractual arrangements; implemented independently by the partners and by HE

## Co-funded

Based on a joint programme agreed and implemented by partners; commitment of partners for financial and in-kind contributions

## Institutionalised

Based on long-term dimension and need for high integration; partnerships based on Articles 185 / 187 of TFEU and the EIT-Regulation supported by HE

# Overview of 49 candidate European Partnerships

## PILLAR II - Global challenges & European industrial competitiveness

CLUSTER 1: Health	CLUSTER 4: Digital, Industry & Space	CLUSTER 5: Climate, Energy & Mobility
Innovative Health Initiative	Key Digital Technologies	Clean Hydrogen
Global Health Partnership	Smart Networks & Services	Clean Aviation
Transformation of health systems	High Performance Computing	Single European Sky ATM Research 3
Chemicals risk assessment	European Metrology (Art. 185)	Europe's Rail
ERA for Health	AI-Data-Robotics	Connected and Automated Mobility (CCAM)
Rare diseases*	Photonics	Batteries
One-Health Anti Microbial Resistance*	Made in Europe	Zero-emission waterborne transport
Personalised Medicine*	Clean steel – low-carbon steelmaking	Zero-emission road transport
Pandemic Preparedness* <i>Co-funded or co-programmed</i>	Processes4Planet	Built4People
	Global competitive space systems**	Clean Energy Transition
		Driving Urban Transitions

- Institutionalised Partnerships (Art 185/7)
- Institutionalised partnerships / EIT KICs
- Co-Programmed
- Co-Funded

## PILLAR III - Innovative Europe

EIT	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

\* Calls with opening dates in 2023-24

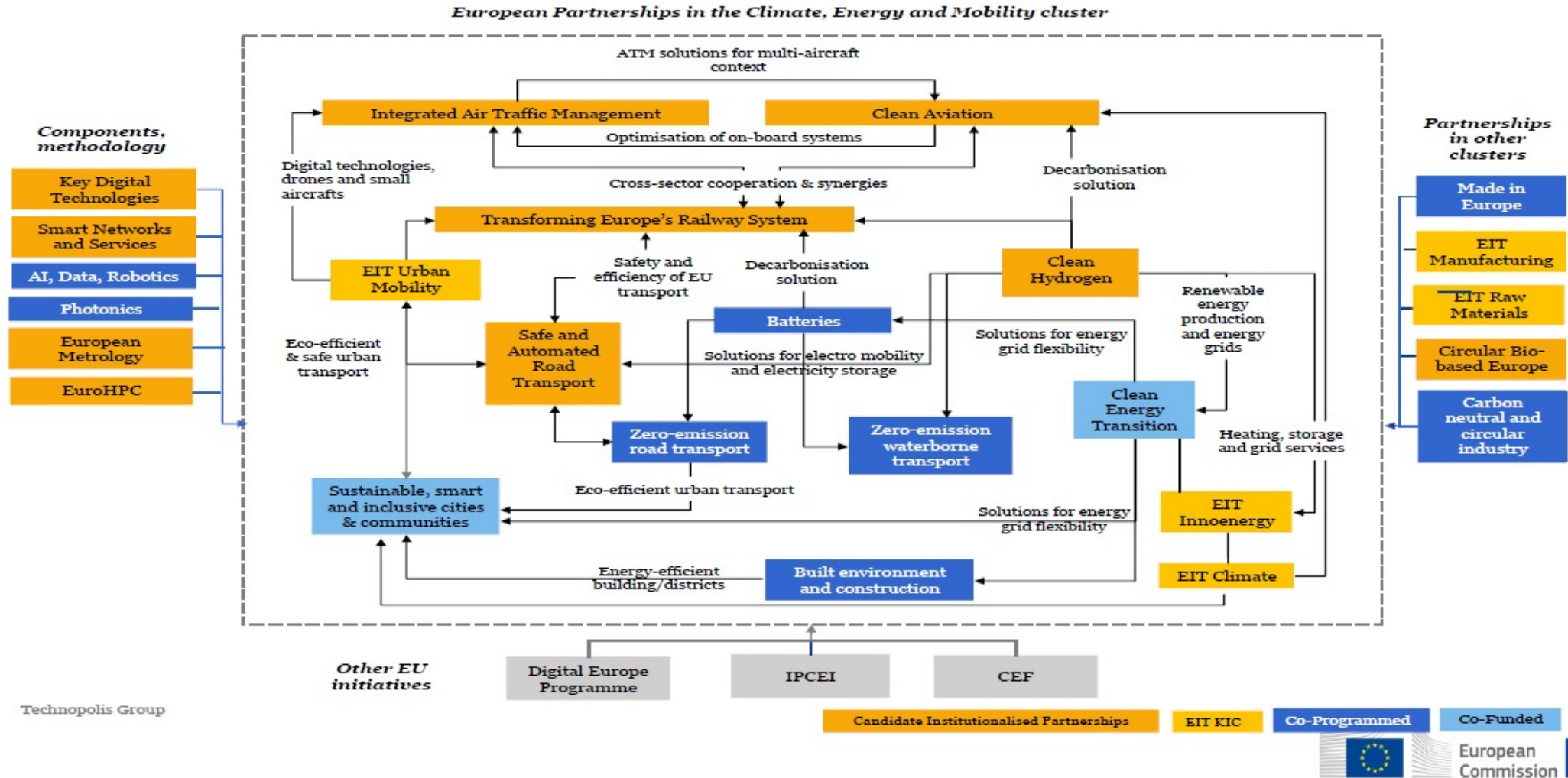
\*\* Calls with opening dates not before 2022



European  
Commission



# Links among Cluster 5 candidate partnerships



# Missions

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- **portfolios of actions across disciplines** intended to achieve a measurable goal within a set timeframe.
- bold and inspirational, and hence have wide societal or economic relevance;
- **Gain strong visibility and impact.**
- spark activity across disciplines, sectors and actors;
- open to multiple, bottom-up solutions.
- programmed within the Global Challenges and European Industrial Competitiveness pillar (II), but may also benefit from actions carried out within other parts of the Programme as well as complementary actions carried out under other Union funding programmes.



## 5 Mission areas



**Adaptation to climate change, including societal transformation**

**Cluster 5, Cluster 2**



**Cancer**

**Cluster 1**



**Soil health and food**

**Cluster 6**



**Climate-neutral and smart cities**

**Cluster 5**



**Healthy oceans, seas, coastal and inland waters**

**Cluster 6**

# Mission Board proposals

## **🚩 Conquering Cancer: Mission Possible**

Targets by 2030: more than 3 million more lives saved, living longer and better, achieve a thorough understanding of cancer, prevent what is preventable, optimised diagnosis and treatment, support the quality of life of all people exposed to cancer, and ensure equitable access to the above across Europe.

## **🚩 A Climate Resilient Europe -Prepare Europe for climate disruptions and accelerate the transformation to a climate resilient and just Europe by 2030**

Targets by 2030: prepare Europe to deal with climate disruptions, accelerate the transition to a healthy and prosperous future within safe planetary boundaries and scale up solutions for resilience that will trigger transformations in society.

## **🚩 Mission Starfish 2030: Restore our Ocean and Waters**

Targets by 2030: cleaning marine and fresh waters, restoring degraded ecosystems and habitats, decarbonising blue economy in order to sustainably harness the essential goods and services they provide.

## **🚩 100 Climate-Neutral Cities by 2030 -by and for the citizens**

Targets by 2030: support, promote and showcase 100 European cities in their systemic transformation towards climate neutrality by 2030 and turn these cities into innovation hubs for all cities, benefiting quality of life and sustainability in Europe.

## **🚩 Caring for Soil is Caring for Life**

Targets by 2030: at least 75% of all soils in the EU are healthy for food, people, nature and climate. The proposed mission combines research and innovation, education and training, investments and the demonstration of good practices using “Living labs” (experiments and innovation in a laboratory on the ground) and “Lighthouses” (places to showcase good practices).



## Destination 3: Sustainable, secure and competitive energy supply

- ✚ includes activities in the areas of **renewable energy**, incl. wind energy, photovoltaics or bioenergy, and advanced renewable fuels, incl. synthetic and sustainable advanced biofuels
- ✚ **energy system, grids and storage** – incl. energy system planning and operation, electricity system reliability and resilience, storage development and integration and digitalisation of the energy system.
- ✚ development of **Carbon capture, utilisation and storage (CCUS)** in electricity generation and industry applications
- ✚ integration of climate neutral, renewable energy carriers, such as **clean hydrogen** (Innovative energy storage solutions, incl. chemical, mechanical, electrical and thermal storage, are a key element);







# Topics – Destination 3

- HORIZON-CL5-2022-D3-01-01: Demonstration of cost-effective advanced biofuel technologies utilizing existing industrial plants
- HORIZON-CL5-2022-D3-01-02: Demonstration of innovative materials, supply cycles, recycling technologies to increase the overall circularity of wind energy technology and to reduce the primary use of critical raw materials
- HORIZON-CL5-2022-D3-01-03: Advanced manufacturing of Integrated PV
- HORIZON-CL5-2022-D3-01-04: Demonstrate the use of high temperature geothermal reservoirs to provide energy storage for the energy system
- HORIZON-CL5-2022-D3-01-05: Demonstration of innovative plug-and play solutions for system management and renewables storage in off-grid applications
- HORIZON-CL5-2022-D3-01-06: Novel Agro-Photovoltaic systems
- HORIZON-CL5-2022-D3-01-07: Demonstration of innovative rotor, blades and control systems for tidal energy devices
- HORIZON-CL5-2022-D3-01-08: Supporting the action of consumers in the energy market and guide them to act as prosumers, communities and other active forms of active participation in the energy activities
- HORIZON-CL5-2022-D3-01-09: Real Time Demonstrator of Multi-Vendor Multi- Terminal VSC-HVDC with Grid Forming Capability (in support of the offshore strategy)
- HORIZON-CL5-2022-D3-01-10: Interoperable solutions for flexibility services using distributed energy storage
- HORIZON-CL5-2022-D3-01-11: Demonstration of innovative forms of storage and their successful operation and integration into innovative energy systems and grid architectures
- HORIZON-CL5-2022-D3-01-12: Replicable solutions for a cross sector compliant energy ecosystem
- HORIZON-CL5-2022-D3-01-13: Energy system modelling, optimisation and planning tools
- HORIZON-CL5-2022-D3-01-14: Thermal energy storage solutions
- HORIZON-CL5-2022-D3-01-15: Decarbonising industry with CCUS

Topics	Type of Action	Budgets (EUR million)	Expected EU contribution per project (EUR million) <sup>115</sup>	Number of projects expected to be funded
		2022		
Opening: 14 Oct 2021 Deadline(s): 26 Apr 2022				
HORIZON-CL5-2022-D3-01-01	IA	20.00 <sup>116</sup>	Around 10.00	2
HORIZON-CL5-2022-D3-01-02	IA	40.00 <sup>117</sup>	Around 13.00	3
HORIZON-CL5-2022-D3-01-03	IA	32.00 <sup>118</sup>	Around 16.00	2
HORIZON-CL5-2022-D3-01-04	IA	20.00 <sup>119</sup>	Around 20.00	1
HORIZON-CL5-2022-D3-01-05	IA	10.00 <sup>120</sup>	Around 10.00	1
HORIZON-CL5-2022-D3-01-06	IA	10.00 <sup>121</sup>	Around 5.00	2
HORIZON-CL5-2022-D3-01-07	IA	10.00 <sup>122</sup>	Around 10.00	1
HORIZON-CL5-2022-D3-01-08	IA	18.00 <sup>123</sup>	5.00 to 6.00	3
HORIZON-CL5-2022-D3-01-09	IA	55.00 <sup>124</sup>	Around 55.00	1
HORIZON-CL5-2022-D3-01-10	IA	7.00 <sup>125</sup>	2.00 to 3.00	3
HORIZON-CL5-2022-D3-01-11	IA	30.00 <sup>126</sup>	7.00 to 8.00	4
HORIZON-CL5-2022-D3-01-12	IA	35.00 <sup>127</sup>	8.00 to 9.00	4
HORIZON-CL5-2022-D3-01-13	RIA	6.00	Around 6.00	1
HORIZON-CL5-2022-D3-01-14	IA	30.00 <sup>128</sup>	7.00 to 8.00	4
HORIZON-CL5-2022-D3-01-15	IA	58.00 <sup>129</sup>	Around 29.00	2
Overall indicative budget		381.00		

# Topics – Destination 3

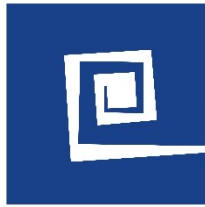
- HORIZON-CL5-2022-D3-02-02: AU-EU Energy System Modelling
- HORIZON-CL5-2022-D3-02-03: Innovative renewable energy carrier production for heating from renewable energies
- HORIZON-CL5-2022-D3-02-04: Technological interfaces between solar fuel technologies and other renewables
- HORIZON-CL5-2022-D3-02-05: Renewable energy carriers from variable renewable electricity surplus and carbon emissions from energy consuming sectors
- HORIZON-CL5-2022-D3-02-06: Direct renewable energy integration into process energy demands of the chemical industry
- HORIZON-CL5-2022-D3-02-07: Renewable energy incorporation in agriculture and forestry
- HORIZON-CL5-2022-D3-02-08: Demonstration of complete value chains for advanced biofuel and non-biological renewable fuel production

Topics	Type of Action	Budgets (EUR million)	Expected EU contribution per project (EUR million) <sup>147</sup>	Number of projects expected to be funded
		2022		
Opening: 26 May 2022 Deadline(s): 27 Oct 2022				
HORIZON-CL5-2022-D3-02-01	RIA	9.00	Around 3.00	3
HORIZON-CL5-2022-D3-02-02	RIA	5.00	Around 2.50	2
HORIZON-CL5-2022-D3-02-03	IA	10.00 <sup>148</sup>	Around 10.00	1
HORIZON-CL5-2022-D3-02-04	RIA	10.00	3.00 to 5.00	2
HORIZON-CL5-2022-D3-02-05	IA	20.00 <sup>149</sup>	Around 10.00	2
HORIZON-CL5-2022-D3-02-06	RIA	10.00	3.00 to 5.00	2
HORIZON-CL5-2022-D3-02-07	IA	15.00 <sup>150</sup>	Around 7.50	2
HORIZON-CL5-2022-D3-02-08	IA	20.00 <sup>151</sup>	Around 10.00	2
Overall indicative budget		99.00		

# Topics – Destination 3

- HORIZON-CL5-2022-D3-03-01: Innovative components and/or sub-systems for CSP plants and/or concentrating solar thermal installations
- HORIZON-CL5-2022-D3-03-02: Best international practice for scaling up sustainable biofuels
- HORIZON-CL5-2022-D3-03-03: Efficient and circular artificial photosynthesis
- HORIZON-CL5-2022-D3-03-04: Integrated wind farm control
- HORIZON-CL5-2022-D3-03-05: Novel Thin Film (TF) technologies targeting high efficiencies
- HORIZON-CL5-2022-D3-03-06: Efficient and low-emission technologies for industrial use of combustion and gasification systems from low-value biogenic residues and wastes
- HORIZON-CL5-2022-D3-03-07: Development of algal and renewable fuels of non- biological origin
- HORIZON-CL5-2022-D3-03-08: Development of digital solutions for existing hydropower operation and maintenance
- HORIZON-CL5-2022-D3-03-09: Recycling end of life PV modules

Topics	Type of Action	Budgets (EUR million)	Expected EU contribution per project (EUR million) <sup>155</sup>	Number of projects expected to be funded
		2022		
Opening: 06 Sep 2022 Deadline(s): 10 Jan 2023				
HORIZON-CL5-2022-D3-03-01	IA	16.50 <sup>156</sup>	Around 5.50	3
HORIZON-CL5-2022-D3-03-02	RIA	9.00	Around 3.00	3
HORIZON-CL5-2022-D3-03-03	RIA	10.00	3.00 to 5.00	2
HORIZON-CL5-2022-D3-03-04	RIA	18.00	Around 6.00	3
HORIZON-CL5-2022-D3-03-05	RIA	20.00	Around 5.00	4
HORIZON-CL5-2022-D3-03-06	RIA	10.00	3.00 to 5.00	2
HORIZON-CL5-2022-D3-03-07	RIA	15.00	Around 5.00	3
HORIZON-CL5-2022-D3-03-08	RIA	9.00	3.00 to 4.50	3
HORIZON-CL5-2022-D3-03-09	IA	20.00 <sup>157</sup>	6.00 to 7.00	3



# APRE

Agenzia per la Promozione  
della Ricerca Europea

## DESTINATION 4



## Destination 4: Efficient, sustainable and inclusive energy use



- ▣ Covers the electrification of demand side sectors (buildings, mobility, industry).
- ▣ Focuses on **Highly energy-efficient and climate neutral European building stock**: go beyond improving the energy and resource efficiency of buildings and include a qualitative, aesthetic and human dimension (new creative design and architectural solutions).
- ▣ Includes topics from the co-programmed Partnership Built4People
- ▣ Focuses on **Industrial facilities in the energy transition**, namely thermal energy management in industry.



## Destination 4: Efficient, sustainable and inclusive energy use

Efficient and sustainable use of energy, accessible for all is ensured through a clean energy system and a just transition”, notably through

- Technological and socio-economic breakthroughs for achieving climate neutrality and the transition to zero pollution of the **building stock** by 2050, based on inclusive and people-centric R&I (more detailed information below).
- Increased energy efficiency in **industry** and reducing industry’s Greenhouse Gas (GHG) and air pollutant emissions through recovery, upgrade and/or conversion of industrial excess (waste) heat and through electrification of heat generation (more information below).



## Destination 4: Efficient, sustainable and inclusive energy use

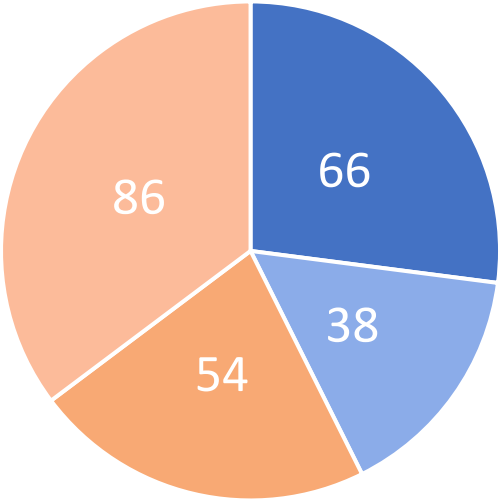
Topics include:

- ***Highly energy-efficient and climate neutral European building stock***
- ***Industrial facilities in the energy transition***



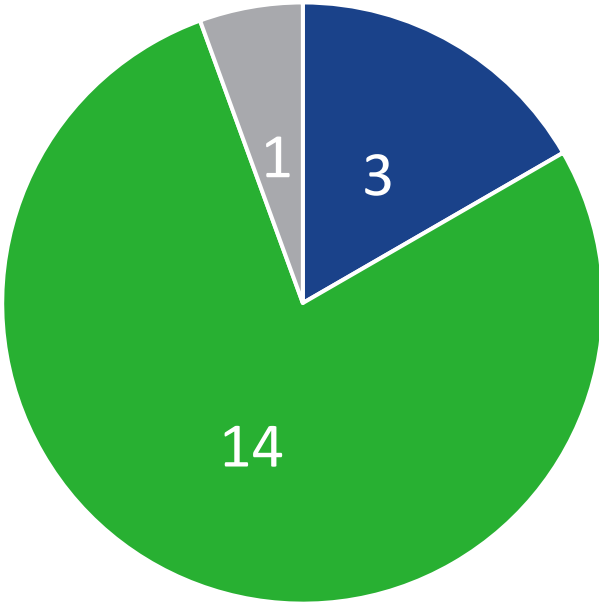
# Destination 4: Efficient, sustainable and inclusive energy use

Destination 4 - budget mil €



■ 2021 HORIZON-CL5-2021-D4-01 ■ 2021 HORIZON-CL5-2021-D4-02  
 ■ 2022 HORIZON-CL5-2022-D4-01 ■ 2022 HORIZON-CL5-2022-D4-02

Destination 4 - types of action



■ RIA ■ IA ■ CSA



# Topics – Destination 4

- HORIZON-CL5-2021-D4-02-01: Demonstrating integrated technology solutions for buildings with performance guarantees (Built4People)
- HORIZON-CL5-2021-D4-02-02: Cost-effective, sustainable multi-functional and/or prefabricated holistic renovation packages, integrating RES and including re-used and recycled materials (Built4People)
- HORIZON-CL5-2021-D4-02-03: Strengthening European coordination and exchange for innovation uptake towards sustainability, quality, circularity and social inclusion in the built environment as a contribution to the new European Bauhaus (Built4People)
- HORIZON-CL5-2022-D4-01-01: Demand response in energy-efficient residential buildings
- HORIZON-CL5-2022-D4-01-02: Renewable-intensive, energy positive homes
- HORIZON-CL5-2022-D4-01-03: Smarter buildings for better energy performance
- HORIZON-CL5-2022-D4-01-04: Development and pilot demonstration of heat upgrade technologies with supply temperature in the range 150-250°C
- HORIZON-CL5-2022-D4-01-05: Development of high temperature thermal storage for industrial applications

Topics	Type of Action	Budgets (EUR million)	Expected EU contribution per project (EUR million) <sup>171</sup>	Number of projects expected to be funded
		2021		
Opening: 02 Sep 2021 Deadline(s): 25 Jan 2022				
HORIZON-CL5-2021-D4-02-01	IA	15.00 <sup>172</sup>	5.00 to 7.50	2
HORIZON-CL5-2021-D4-02-02	IA	22.00 <sup>173</sup>	9.00 to 11.00	2
HORIZON-CL5-2021-D4-02-03	CSA	1.00	Around 1.00	1
Overall indicative budget		38.00		
Opening: 28 Apr 2022 Deadline(s): 06 Sep 2022				
HORIZON-CL5-2022-D4-01-01	IA	12.00 <sup>178</sup>	4.00 to 6.00	2
HORIZON-CL5-2022-D4-01-02	IA	12.00 <sup>179</sup>	4.00 to 6.00 <input checked="" type="checkbox"/>	2
HORIZON-CL5-2022-D4-01-03	IA	12.00 <sup>180</sup>	4.00 to 6.00	2
HORIZON-CL5-2022-D4-01-04	RIA	10.00	3.00 to 5.00	2
HORIZON-CL5-2022-D4-01-05	RIA	8.00	3.00 to 4.00	2
Overall indicative budget		54.00		



# Topics – Destination 4

- HORIZON-CL5-2022-D4-02-01: Designs, materials and solutions to improve resilience, preparedness & responsiveness of the built environment for climate adaptation (Built4People)
- HORIZON-CL5-2022-D4-02-02: Solutions for the sustainable, resilient, inclusive and accessible regeneration of neighbourhoods enabling low carbon footprint lifestyles and businesses (Built4People)
- HORIZON-CL5-2022-D4-02-03: Sustainable and resource-efficient solutions for an open, accessible, inclusive, resilient and low-emission cultural heritage: prevention, monitoring, management, maintenance, and renovation (Built4People)
- HORIZON-CL5-2022-D4-02-04: Smart-grid ready and smart-network ready buildings, acting as active utility nodes (Built4People)
- HORIZON-CL5-2022-D4-02-05: More sustainable buildings with reduced embodied energy / carbon, high life-cycle performance and reduced life-cycle costs (Built4People)

Opening: 06 Sep 2022				
Deadline(s): 24 Jan 2023				
HORIZON-CL5-2022-D4-02-01	IA	15.00 <sup>184</sup>	5.00 to 7.50	2
HORIZON-CL5-2022-D4-02-02	IA	15.00 <sup>185</sup>	5.00 to 7.50	2
HORIZON-CL5-2022-D4-02-03	RIA	20.00	4.00 to 5.00	4
HORIZON-CL5-2022-D4-02-04	IA	18.00 <sup>186</sup>	6.00 to 9.00	2
HORIZON-CL5-2022-D4-02-05	IA	18.00 <sup>187</sup>	6.00 to 9.50	2
Overall indicative budget		86.00		



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