



# Cluster 5: Climate, Energy and Mobility

Bob Flynn | 25<sup>th</sup> March 2021

HORIZON  
EUROPE



THE EU RESEARCH & INNOVATION  
PROGRAMME 2021 - 2027

#HorizonEU



An Roinn Breiseoideachais agus Ardoideachais,  
Taighde, Nuálaíochta agus Eolaíochta  
Department of Further and Higher Education,  
Research, Innovation and Science





# Cluster 5

## Climate, Energy and Mobility

€15 Billion Funding - 177 Topics 2021-2022

1. Destination 1 – *Climate sciences and responses*
  2. Destination 2 – *Cross-sectoral solutions for the climate transition - Including batteries*
  3. Destination 3 – *Sustainable, secure and competitive energy supply*
  4. Destination 4 – *Efficient, sustainable and inclusive energy use*
  5. Destination 5 – *Clean and competitive solutions for all transport modes*
  6. Destination 6 - *Safe, resilient transport and smart mobility services for passengers and goods*
- + Institutional Partnerships





# Climate, Energy and Mobility

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

- Improved understanding of greenhouse gas fluxes
- The circular economy and climate change mitigation
- Maximising the impact and synergy of European climate change research and innovation
- Enhanced integrated assessment in pursuit of global climate goals
- Climate change impacts and risks, mitigation and adaptation options
- Climate services
- Improved economic methods for decision-making on climate and environmental policies
- Restoration of natural wetlands, peatlands and floodplains
- The contribution of forest management to climate action
- Carbon Dioxide Removal (CDR) approaches
- Socio-economic risks of climate change in Europe
- Social science for land-use strategies in the context of climate change and biodiversity
- Verification and reconciliation of estimates of climate forcers
- Development of high-resolution Earth system models
- Improvement of Integrated Assessment Models
- Improved climate predictions in Europe and beyond
- Rewilding landscapes

## Destination 2 - Cross-sectoral solutions for the climate transition

### A competitive and sustainable European battery value chain

- Sustainable processing, refining and recycling of raw materials including graphite
- Battery physics and interfaces
- Advanced high-performance Generation 3 & 4 Lithium batteries
- Next generation batteries for mobile and transport applications
- Battery design, component manufacture and processing technologies
- Battery management
- Reuse and recycling

### Emerging breakthrough technologies for a climate neutral Europe

- Non-CO2 greenhouse gas removal & Atmospheric carbon capture
- Methane cracking

### Citizens and stakeholder engagement

- Strengthening Social Sciences and Humanities (SSH) research communities in climate, energy and mobility disciplines

### Communities and cities

- Future urban mobility innovation





# Climate, Energy and Mobility

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

The transition of the energy system will rely on reducing the overall energy demand and making the energy supply side climate neutral.

### Global leadership in renewable energy

- Renewable Technologies – wind, ocean energy, photovoltaics , csp etc.
- Grid Integration
- Digitalisation
- Carbon capture, utilisation and storage (CCUS)
- Industry
- Agriculture and Forestry
- Renewable fuels

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

Technological and socio-economic breakthroughs for achieving climate neutrality and the transition to zero pollution of the building stock by 2050

### Highly energy-efficient and climate neutral European building stock

- Performance Assessment
- Deep renovation
- Smarter Buildings & Energy Positive Homes
- Heating & Cooling
- Built4people



# Climate, Energy and Mobility

## Destination 5 – Clean and competitive solutions for all transport modes

### Zero-emission road transport (2ZERO)

- Nextgen vehicles and EV components
- Optimised Smart EV Charging and V2X flexibility in mass-deployment conditions

### Aviation

- Next generation digital aircraft transformation in design, manufacturing, integration and maintenance
- Digital technologies for new aviation business models, services, emerging global threats and industrial competitiveness

### Enabling low-carbon, clean, smart, and competitive waterborne transport (ZWERT)

- Innovative on-board energy saving solutions and storage systems
- Computational tools for shipbuilding
- Vessel battery charging systems
- Integration of fuel cells in ship design
- Exploiting renewable energy for shipping

## Destination 6 - Safe, resilient transport and smart mobility services for passengers and goods

### Connected, Cooperative and Automated Mobility (CCAM)

- On-board perception and decision-making technologies
- Physical and Digital Infrastructure (PDI), connectivity and cooperation
- Safety validation of CCAM systems
- Occupant protection technologies and HMI solutions
- Cyber secure and resilient CCAM
- Large-scale demonstration pilots
- Artificial Intelligence (AI): Explainable and trustworthy concepts, techniques and models for CCAM

### Multimodal and sustainable transport systems for passengers and goods

- New delivery methods and business/operating models to green the last mile

### Safety and resilience - across all transport modes

- Safe automation and human factors in aviation
- Testing safe lightweight vehicles
- Safe human-technology interaction in the future traffic system
- Controlling infection on large passenger ships



**HORIZON EUROPE'S  
NEXT-GENERATION EUROPEAN  
PARTNERSHIPS**

... and their contribution to a greener  
and more digital Europe

↓

**YOU CAN TEAM UP WITH A EUROPEAN PARTNERSHIP TO  
MAKE THE GREEN AND DIGITAL TRANSITIONS HAPPEN!**

**GET INVOLVED AND FIND OUT MORE  
ABOUT THE CURRENT 49 CANDIDATES**





**Research and  
Innovation**

   
#HorizonEU  
@EUScienceInnov

# Climate, Energy and Mobility

## Institutional Partnerships

Clean Aviation

Clean Hydrogen

Transforming the European Rail System

Transforming European Air Traffic  
Management (SESAR)

Expected Launch Q3/Q4 2021



# Climate, Energy and Mobility

Irish National Contact Points (NCP's) for Cluster 5

**Bob Flynn**

T: +353 (0) 61 77 7050

Email [bob.flynn@enterprise-ireland.com](mailto:bob.flynn@enterprise-ireland.com)

**Philip Cheasty**

T: +353 (0) 21 4800216

Email [philip.cheasty@enterprise-ireland.com](mailto:philip.cheasty@enterprise-ireland.com)

**Mark Sweeney**

T: +353 (0) 1 727 2616

Email [mark.sweeney@enterprise-ireland.com](mailto:mark.sweeney@enterprise-ireland.com)

**Kerri Sheahan**

T: +353 (0)1 808 2070

Email [Kerrie.Sheehan@seai.ie](mailto:Kerrie.Sheehan@seai.ie)

## Upcoming Events: Cluster 5

Cluster 5: European Commission Information Webinar (TBC)

Call opening : TBC

Institutional Partnership Launch Q3

## Documentation

Draft WP now available: <https://ec.europa.eu/transparency/regexpert/index.cfm?do=groupDetail.groupMeetingDoc&docid=49068>

Cluster 5 Final Documentation – European Funding & Tenders Portal [Funding & tenders \(europa.eu\)](https://ec.europa.eu/funding-tenders-portal/)

Proposal Template – [https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/temp-form/af/af\\_he-ria-ia\\_en.pdf](https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/temp-form/af/af_he-ria-ia_en.pdf)

Mission - Climate neutral and smart cities [Climate Neutral and Smart Cities-and-smart-cities](#)

European Partnerships - [European Partnerships in Horizon Europe | European Commission \(europa.eu\)](#)

# THANK YOU

