Session 2 – Climate, Energy, and Industry

Conall McGinley
UK NCP for Cluster 5: Energy

Anshumaan Krishnan Ayyangar MIET
UK NCP for Cluster 4: Industry
Agenda

1 Introduction
UKRI, today’s speakers from Innovate UK, Horizon Europe, update on the association agreement and funding possibilities

2 Climate & Energy
Overview – UK NCP for Cluster 5: Energy
Case Study – Andrew Flagg (Element Energy Ltd)

3 Industry
Overview – UK NCP for Cluster 4: Industry
Case Study – HyProMag Ltd

4 Q&A
Based on the content covered by the NCPs and the case studies presented by successful participants
We work with the government to invest over £7 billion a year in research and innovation by partnering with academia and industry to make the impossible, possible. Through the UK’s nine leading academic and industrial funding councils, we create knowledge with impact.
Conall McGinley

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• +44 (0)7564 048 887
FP9: Horizon Europe

€53.8bn

€24.9bn

€13.4bn

N.B.: Budget figures exclude UK and other Associate Country contributions
On 7th September 2023, the Prime Minister announced a new UK-EU agreement on the UK’s association to Horizon Europe and Copernicus.

As of 1st January 2024, the United Kingdom has become an associated country to Horizon Europe.

UK applicants are eligible to apply to Horizon Europe calls, now and in the future. The government strongly encourages researchers/innovators to do so.

All calls within the Horizon Europe work programme 2024 and beyond will be covered by the UK’s association to Horizon Europe with European Commission funds.

The UK government Horizon Europe guarantee has been extended to cover all remaining Horizon Europe grant calls that are funded under work programme 2023 irrespective of the call closing or grant signature date.
What UK’s Association from 2024 means in practice

All calls with 2021, 2022 or 2023 in the call identifier (e.g., HORIZON-CL5-2023-D5-01) regardless of call dates

- All UK legal entities fully eligible to apply for Horizon Europe other than a very few specific Topics as identified in the Topic description
- UK Government Guarantee funds all successful UK organisations for the full duration of the project [https://www.ukri.org/apply-for-funding/apply-for-horizon-europe-guarantee-funding/](https://www.ukri.org/apply-for-funding/apply-for-horizon-europe-guarantee-funding/)
- UK organisations **MUST** request funding from the EU as potential Beneficiaries and **MUST** be listed as Partners (NOT Associated Partners) in all proposals
- EU evaluation process treats UK organisations as if UK fully associated (as has always been the case)
- UK organisations may coordinate proposals but **NOT** projects and so another consortium partner must take this role in successful collaborative projects
- UK organisations **DO NOT** sign the Grant Agreement but at that stage they apply for UK Guarantee funding and only then change to be Associated Partners in collaborative proposals

All calls with 2024, 2025, 2026 or 2027 in the call identifier (e.g., HORIZON-CL5-2024-D5-01) regardless of call dates

- All UK legal entities fully eligible to apply for Horizon Europe other than a very few specific Topics as identified in the Topic description
- UK organisations **MUST** request funding from the EU as potential Beneficiaries and **MUST** be listed as Partners (NOT Associated Partners) in all proposals
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- UK organisations **MUST** request funding from the EU as potential Beneficiaries and **MUST** be listed as Partners (NOT Associated Partners) in all proposals
- EU evaluation process treats UK organisations as if UK fully associated (as has always been the case)
- UK organisations may coordinate proposals **AND** projects
- UK organisations **DO** sign the Grant Agreement
- UK organisations **CAN** apply for ‘EIC Accelerator Grant Only’. UK has **NOT** associated to the ‘EIC Accelerator Fund’
Funding rates and main types of Action

**Research and Innovation Action (RIA)**
- Typically, low(ish) Technology Readiness Level.
- Consortium of at least three different legal entities from three different eligible countries (all UK legal entities are classed as eligible). At least one consortium member must be from a Member State (MS).
- All participants receive 100% of eligible direct costs plus 25% for indirect costs.

**Innovation Action (IA)**
- Typically, high(er) Technology Readiness Level.
- Consortium of at least three different legal entities from three different eligible countries. At least one must be from a MS.
- All not-for-profit participants receive 100% of eligible direct costs plus 25% for indirect costs.
- All for-profit participants receive 70% (60% if co-programmed partnerships) of eligible direct costs plus 25% for indirect costs.

**Coordination and Support Action (CSA)**
- As name suggests, for coordinating and supporting activities such as working groups, networking, regulation review, communications, organising EU conferences, etc.
- Formally do not need a collaborative approach but often do to meet the scope. Must have at least one partner from a MS.
- All participants receive 100% of eligible direct costs plus 25% for indirect costs.
Climate & Energy

• Overview – UK NCP for Cluster 5: Energy
• Case Study – Andrew Flagg (Element Energy Ltd)
The fundamentals of Horizon Europe

- Must apply as part of a consortium representing at least three member states/associate countries
- Proposal preparation can take 6 months or longer
- Projects generally last 2-5 years
- Projects must advance cutting-edge innovation at a European level
- Projects must benefit all Europeans
- “Top Down” approach
Benefits of Horizon Europe

• Collaborate with world leading organisations to learn from the best
  ▪ Access cutting edge technologies, infrastructure, talent & markets
  ▪ Contribute to the dialogue on standards, regulations and research policies
  ▪ Ensure that UK technology development aligns with global market place

• Creating UK jobs, growth and stronger supply chains
What does a National Contact Point do?

Team of sector specific advisors to support UK entities to successfully participate in EU “Framework Programmes” and to shape the direction of EU research agenda.

**Assisting, advising and training** – to improve the quality of Horizon Europe proposals with UK content to increase success rate

**Informing, awareness raising** – on all aspects of Horizon Europe rules, processes and participation

**Thought Leadership** – working with UK Government, sector stakeholders and Commission to shape future direction of R&I

**Signposting and cooperation** – direct to relevant support and work with each other to support consortium development
Energy Innovation Funding Landscape

Global Business Innovation Programme

- Innovate UK Smart Grant
- Targeted Innovate UK/DSIT Calls
- Energy Catalyst Challenge Calls
- Knowledge Transfer Partnership funding
- EIC Accelerator

- Targeted Innovate UK/DSIT Calls
- Horizon Europe
- Eureka Eurostars
- Eureka Eurogia
- OFGEM Strategic Innovation Fund
- Innovate UK Smart Grant

- Scottish Enterprise SMART Grant
- Scottish Enterprise CETP Grant
- Enterprise NI Grants
- Wales SMART Partnerships funding

- Energy Innovation Council Challenges
- Innovate UK Innovation Exchange

Funding Landscape

- Support for market development
- Country/Region specific funding
- Energy Industry Challenges
- Loans
- Grants (Solo applicant)
- Grants (Collaborative)

Innovate UK Innovation Loans
Case Study – CarbOn Neutral cluSters through Electricity-based iNnovations in Capture, Utilisation and Storage

- Aims to provide an industrial plan for a net-zero carbon reality.
- To this aim it will utilise 3 electricity-based innovations:
  - carbon capture based on alkali absorption
  - methods for conversion of CO2 to formate and formic acids for market uses
  - a safe cyclic loading system of CO2 into salt formations and aquifers for storage purposes.
- UK Beneficiaries:
  - Net Zero Technology Centre
  - Robert Gordon University
  - Heriot-Watt University
  - UKRI
- 18 participants representing 7 countries
UK success in Horizon - Energy

- The equivalent sector in the Horizon 2020 programme was “Secure, Clean and Efficient Energy” with a budget of €4.99bn
- The UK attracted €410m of this – equivalent to 8%
- 441 unique UK participants involved in 491 projects
- Of the 441 successful applicants
  - 285 were businesses
  - 58 Universities
  - 29 public agencies
  - 15 Research Centres
  - 54 were miscellaneous
- Horizon Europe has benefited both major corporations, small businesses and micro-businesses in all regions of the UK.
- Top two areas benefiting from this funding were London and Scotland
UK success in Horizon Europe - Energy

• In Horizon 2020, most beneficiaries were Businesses. In Horizon Europe, most beneficiaries have been Universities

• Horizon Europe has benefited both major corporations, small businesses and micro-businesses in all regions of the UK with **£71m of funding so far** for Energy R&D

• Horizon Europe funding
  • 74 Universities/Research Agencies
  • 36 Businesses
  • 7 public sector

• Association means:
  • UK organisations can lead consortia from 2024
  • UK organisations can receive funding **directly from the European Commission**
Upcoming Calls in Horizon Europe - Energy
## Built Environment

<table>
<thead>
<tr>
<th>Call Title</th>
<th>Topic ID</th>
<th>Deadline</th>
<th>Type of action</th>
<th>Budget (€)</th>
<th>Number of projects to be funded</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Industrialisation of sustainable and circular deep renovation workflows</strong> (Built4People Partnership)</td>
<td>HORIZON-CL5-2024-D4-02-01</td>
<td>21-Jan-25</td>
<td>IA</td>
<td>8m</td>
<td>2</td>
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<tr>
<td><strong>Robotics and other automated solutions for construction, renovation and maintenance in a sustainable built environment</strong> (Built4People Partnership)</td>
<td>HORIZON-CL5-2024-D4-02-02</td>
<td>21-Jan-25</td>
<td>RIA</td>
<td>4m</td>
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<tr>
<td><strong>BIM-based processes and digital twins for facilitating and optimising circular energy renovation</strong> (Built4People)</td>
<td>HORIZON-CL5-2024-D4-02-03</td>
<td>21-Jan-25</td>
<td>IA</td>
<td>4m</td>
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<tr>
<td><strong>Design for adaptability, re-use and deconstruction of buildings, in line with the principles of circular economy</strong> (Built4People Partnership)</td>
<td>HORIZON-CL5-2024-D4-02-04</td>
<td>21-Jan-25</td>
<td>RIA</td>
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<tbody>
<tr>
<td>Digital solutions to foster participative design, planning and management of buildings, neighbourhoods and urban districts <em>(Built4People)</em></td>
<td>HORIZON-CL5-2024-D4-02-05</td>
<td>21-Jan-25</td>
<td>IA</td>
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<tr>
<td>Low-disruptive renovation processes using integration of prefabricated solutions for energy-efficient buildings</td>
<td>HORIZON-CL5-2024-D4-01-01</td>
<td>18-Apr-24</td>
<td>IA</td>
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<tr>
<td>Smart grid-ready buildings</td>
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<td>CCU for the production of fuels</td>
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<tr>
<td>DACCS and BECCS for CO2 removal/negative emissions</td>
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<td>Emerging breakthrough technologies and climate solutions</td>
<td>HORIZON-CL5-2024-D2-01-04</td>
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<td>1.5-2.5m</td>
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<tr>
<td>Market Uptake Measures of renewable energy systems</td>
<td>HORIZON-CL5-2024-D3-02-10</td>
<td>21-Jan-25</td>
<td>CSA</td>
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# Heating & Cooling (Industry)

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<tr>
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<tbody>
<tr>
<td>Alternative heating systems for efficient, flexible and electrified heat generation in industry</td>
<td>HORIZON-CL5-2024-D4-01-03</td>
<td>18-Apr-24</td>
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## Hydrogen - Production

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<tbody>
<tr>
<td>Innovative proton conducting ceramic electrolysis cells and stacks</td>
<td>17/04/2024</td>
<td>RIA</td>
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<td>for intermediate temperature hydrogen production</td>
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<tr>
<td>Advanced anion exchange membrane electrolysers for low-cost hydrogen</td>
<td>17/04/2024</td>
<td>RIA</td>
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<tr>
<td>production for high power range applications</td>
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<tr>
<td>Development of innovative technologies for direct seawater electrolysis</td>
<td>17/04/2024</td>
<td>RIA</td>
<td>4</td>
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<tr>
<td>Development and implementation of online monitoring and diagnostic tools</td>
<td>17/04/2024</td>
<td>RIA</td>
<td>10</td>
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<td>for electrolysers</td>
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<tr>
<td>Hydrogen production and integration in energy-intensive or specialty</td>
<td>17/04/2024</td>
<td>IA</td>
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<tr>
<td>chemical industries in a circular approach to maximise total process</td>
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<td>efficiency and substance utilisation</td>
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<td>Investigation of microbial interaction for underground hydrogen porous media storage</td>
<td>17/04/2024</td>
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<td>Novel large-scale aboveground storage solutions for demand-optimised supply of hydrogen</td>
<td>17/04/2024</td>
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<td>Demonstration of hydrogen purification and separation systems for renewable hydrogen-containing streams in industrial applications</td>
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<td>Demonstration of innovative solutions for highcapacity, reliable, flexible, and sustainable hydrogen compression technologies in commercial applications</td>
<td>17/04/2024</td>
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<td>Demonstration and deployment of multi-purpose Hydrogen Refuelling Stations combining road and airport, railway, and/or harbour applications</td>
<td>17/04/2024</td>
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<tr>
<td>Call Title</td>
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<td>Balance of plant components, architectures and operation strategies for improved PEMFC system efficiency and lifetime</td>
<td>17/04/2024</td>
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<tr>
<td>Scaling-up Balance of Plant components for efficient high power heavy duty applications</td>
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<tr>
<td>Next generation on-board storage solutions for hydrogen-powered maritime applications</td>
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<td>Demonstration of hydrogen fuel cell-powered inland or short sea shipping</td>
<td>17/04/2024</td>
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<td>Portable fuel cells for backup power during natural disasters to power critical infrastructures</td>
<td>17/04/2024</td>
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<tr>
<td>Improved characterisation, prediction and optimisation of flame stabilisation in high-pressure premixed hydrogen combustion at gas-turbine conditions</td>
<td>17/04/2024</td>
<td>RIA</td>
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## Hydrogen – Cross-Cutting

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<tr>
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<tr>
<td>Guidelines for sustainable-by-design systems across the hydrogen value chain</td>
<td>17/04/2024</td>
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<tr>
<td>Development of non-fluorinated components for fuel cells and electrolysers</td>
<td>17/04/2024</td>
<td>RIA</td>
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# Hydrogen – Hydrogen Valleys

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<tr>
<td>Large-scale Hydrogen Valley</td>
<td>17/04/2024</td>
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<td>Small-scale Hydrogen Valley</td>
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<td>Call Title</td>
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<tr>
<td>Development of smart concepts of integrated energy driven bio-refineries</td>
<td>HORIZON-CL5-2024-D3-02-03</td>
<td>21-Jan-25</td>
<td>RIA</td>
<td>3.5m</td>
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<tr>
<td>for co-production of advanced biofuels, bio-chemicals and biomaterials</td>
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<tr>
<td>Development of next generation synthetic renewable fuel technologies</td>
<td>HORIZON-CL5-2024-D3-02-02</td>
<td>21-Jan-25</td>
<td>RIA</td>
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## Offshore Wind

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<th>Budget (€)</th>
<th>Number of projects to be funded</th>
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<tbody>
<tr>
<td>Minimisation of environmental, and optimisation of socio-economic impacts in the deployment, operation and decommissioning of offshore wind farms</td>
<td>HORIZON-CL5-2024-D3-02-08</td>
<td>21-Jan-25</td>
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<tr>
<td>Demonstrations of innovative floating wind concepts</td>
<td>HORIZON-CL5-2024-D3-02-09</td>
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<td>PV-integrated electric mobility applications</td>
<td>HORIZON-CL5-2024-D3-02-05</td>
<td>21-Jan-25</td>
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<td>Innovative, Community-Integrated PV systems</td>
<td>HORIZON-CL5-2024-D3-02-06</td>
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<td>Resource Efficiency of PV in Production, Use and Disposal</td>
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<td>Digital tools for CSP and solar thermal plants</td>
<td>HORIZON-CL5-2024-D3-02-01</td>
<td>21-Jan-25</td>
<td>IA</td>
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### Wave & Tidal

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<tr>
<td>Critical technologies for the future ocean energy farms</td>
<td>HORIZON-CL5-2024-D3-02-04</td>
<td>21-Jan-2025</td>
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</table>
Travel Grants (for businesses)

For businesses - up to £700 is available to help cover travel and subsistence costs needed to attend the following events:

**European Sustainable Energy Week**, 11-13 June 2024, Brussels, Belgium (Application deadline: 21 May 2024, Notification date: 24 May 2024)

**Connecting Green Hydrogen Europe**, 25-27 June 2024, Madrid, Spain (Application deadline: 3 June 2024, Notification date: 7 June 2024)
Building networks

- Use Cordis to identify recently funded projects
- EU Events
- Built4People Partnership
- Clean Hydrogen Partnership
- Funding & Tenders Portal
- Greenet Brokerage website

- If you join any networking organisation, ensure that you get your money’s worth:
  - Be an active member
  - Volunteer, direct working groups etc
  - Join workshops
Call to Action

• Let me know if you would like to discuss opportunities

• Please provide input on strategic need for new funding

• Join my newsletter for updates
Case Study: Element Energy Ltd.
Climate and Cross cutting (including Battery)

Destination 1 & 2 of Cluster 5
Mission Adaptation to Climate
Mission Net Zero Cities

Nicolas.Wallet@iuk.ukri.org
Missions Adaptation to Climate and Cities

- Adaptation to Climate
  - Focus on region
  - Focus on nature based solution
  - Focus on Demonstrations
  - Link EU Commission site

- Net Zero Cities
  - Focus on Cities (look at the 112 cities incl. Bristol and Glasgow in UK)
  - Focus on Demonstrations
  - Link EU Commission site
  - https://netzerocities.eu/ Platform
Missions
Adaptation &
Cities

Start networking!

• We expect deadline towards September and January for the topics…
• Here are the topic themes we are expecting.

- Develop solutions/knowledge for regions local authorities on climate change
- Develop indicators to measure resilience
- Support biodiversity with systemic solutions
- Build local capacity focused on climate adaptation
- Improve bankability/revenue stream for climate solutions
- Rural areas on climate change
- Climate resilience and vulnerable social groups
- Demonstrate a rethink of urban spaces for climate neutrality
- Zero pollution cities
- Mobility management and behaviour change
- Peri-urban areas transition net zero
- Support national/regional and local authorities to prepare for climate neutrality in cities
Batteries calls - 05/09/2024 DEADLINE

- **HORIZON-CL5-2024-D2-02-01** - Sustainable high-throughput production processes for stable lithium metal anodes for next generation batteries (Batt4EU Partnership)
  - €8m
- **HORIZON-CL5-2024-D2-02-02** - Post-Li-ion technologies and relevant manufacturing techniques for mobility applications (Generation 5) (Batt4EU Partnership)
  - €5m
- **HORIZON-CL5-2024-D2-02-03** - Size & weight reduction of cell and packaging of batteries system, integrating lightweight and functional materials, innovative thermal management and safe and sustainable by design approach (Batt4EU Partnership)
  - €8m
Climate science – Waiting on publication...

Earth system science

Climate change adaptation

Pathways to climate neutrality

Climate services

Social science for climate action

Better understanding of climate-ecosystems interactions

UKRI
Innovate UK
Department of Science, Innovation & Technology
Industry

- Overview – UK NCP for Cluster 4: Industry
- Case Study – HyProMag Ltd
UK Participation: FP9 (Horizon Europe)

These statistics are relevant only to Industry calls/topics within Cluster 4 having 2021, 2022 and 2023 in the identifier.

174 UK entities applied into TWIN TRANSITION and RESILIENCE destinations, of which 114 were unique.

Birmingham was represented the most with 18 participants.

182 proposals were submitted overall, of which 103 were eligible.

97 grant agreements were signed in all.

Retained applications among eligible ones = 96.70% success rate.

64 SMEs and 52 unique SMEs have participated, leading to 58 SME applications with a cumulative proposed funding requirement of €20.65 million.

Among all 18 associated countries, the UK has been ranked:
• 1st for participation
• 2nd for contribution per inhabitant
• 9th for budget share

Source: Horizon Europe Dashboard
Destination 1: Climate Neutral, Circular and Digitised Production

Circular economy, clean and climate-neutral industrial value chains, digital systems and infrastructures (networks, data centres), through innovative manufacturing processes and digitisation.

New business models, sustainable-by-design advanced materials and technologies enabling the switch to decarbonisation in all major emitting industrial sectors, including green digital technologies.
Destination 2: Increased Autonomy in Key Strategic Value Chains for Resilient Industry

Industrial leadership and increased autonomy in key strategic value chains with security of supply in raw materials, through breakthrough technologies, 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 circular economy.
## E.g. Calls/Topics from WP 2024

<table>
<thead>
<tr>
<th>Topic Identifier</th>
<th>Competition (Topic</th>
<th>Type of Action</th>
<th>Topic Budget</th>
<th>Number of projects to be funded</th>
</tr>
</thead>
<tbody>
<tr>
<td>HORIZON-CL4-2024-TWIN-TRANSITION-01-03</td>
<td>Manufacturing as a Service: Technologies for customised, flexible, and decentralised production on demand (Made in Europe Partnership)</td>
<td>RIA</td>
<td>€35.0m</td>
<td>5</td>
</tr>
<tr>
<td>HORIZON-CL4-2024-TWIN-TRANSITION-01-12</td>
<td>Enhanced assessment, intervention and repair of civil engineering infrastructure</td>
<td>RIA</td>
<td>€12.0m</td>
<td>2</td>
</tr>
<tr>
<td>HORIZON-CL4-2024-RESILIENCE-01-24</td>
<td>Development of safe and sustainable by design alternatives</td>
<td>IA</td>
<td>€59.0m</td>
<td>4</td>
</tr>
</tbody>
</table>

N.B.: All ‘Industry’ calls/topics in WP 2024 are closed a/o 7th February 2024
Future direction: What could WP 2025 look like?

- Possibility of some WP 2024 RIAs → WP 2025 IAs.

- **New European Bauhaus** – not an EU Mission anymore but part of the Horizon Europe destinations under Pillar II.
  - NEB – a bridge between the worlds of science and technology, art and culture. It is about leveraging our green and digital challenges to transform our lives for the better.
  - Focus areas – sustainability, aesthetics and inclusion.

- Proposed candidate partnerships of relevance to Cluster 4: ‘Industry’:
  - Innovative Materials for EU (I’M for EU),
  - Raw Materials for the Green and Digital Transition,
  - Textiles of the Future.
Recent EC development(s)

New initiatives boosting European industrial leadership in advanced materials

<table>
<thead>
<tr>
<th>Strategic area</th>
<th>Advanced materials R&amp;I priorities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy</td>
<td>Materials needed for conversion and generation of renewable and low carbon energy, energy storage and increased energy efficiency</td>
</tr>
<tr>
<td>Mobility</td>
<td>Materials for energy storage and use, robust, lightweight materials for transport means and assets, protection and durability, circularity and environmental performance, ability to perform in harsh environments</td>
</tr>
<tr>
<td>Construction</td>
<td>Materials for more energy efficient buildings, more robust building structures and structural integrity monitoring, enhanced wellbeing in buildings, materials increasing circularity and improved environmental performance</td>
</tr>
<tr>
<td>Electronics</td>
<td>Materials for improved performance and new functionalities of electronic components, sensors, novel computing concepts, chips production, greater efficiency in the next generation of communication technologies and ability to perform in harsh environments</td>
</tr>
</tbody>
</table>

Source: European Commission
Case study: HyProMag Ltd.

REESilience: Resilient and sustainable critical raw materials REE supply chains for the e-mobility and renewable energy ecosystems and strategic sectors

- **Grant Agreement ID:** 101058598
- **Aim:** Less EU dependence on critical rare earth materials.
- **Project in a Nutshell:**
  - Categorising Rare Earths (RE) for geographic locations, quantities, chemical composition, ethical and sustainable indicators, ramp-up scenarios, and pricing, considering all value streams from virgin to secondary material.
  - Building a production system that ensures a resilient and sustainable supply chain for RE as critical raw materials for the e-mobility, renewable energy and further strategic sectors in Europe with less dependencies on non-European economies.
  - Developing a software tool to determine optimum mixing ratios to ensure consistently high product quality with maximum secondary materials for high-tech applications.
Questions?
UK National Contact Points (NCPs)

Team of national advisors, appointed by the Government to support UK organisations to successfully participate in Horizon Europe by:

- Raising Awareness of the programme
- Helping you find the right Topic
- Identifying the best ways to find partners
- Navigating the EU funding & tender opportunities portal
- Developing the proposal
- Answering any other Horizon Europe related questions

https://www.gov.uk/business-finance-support/horizon-europe-funding
Thank you