



European Policy

The Twin Green

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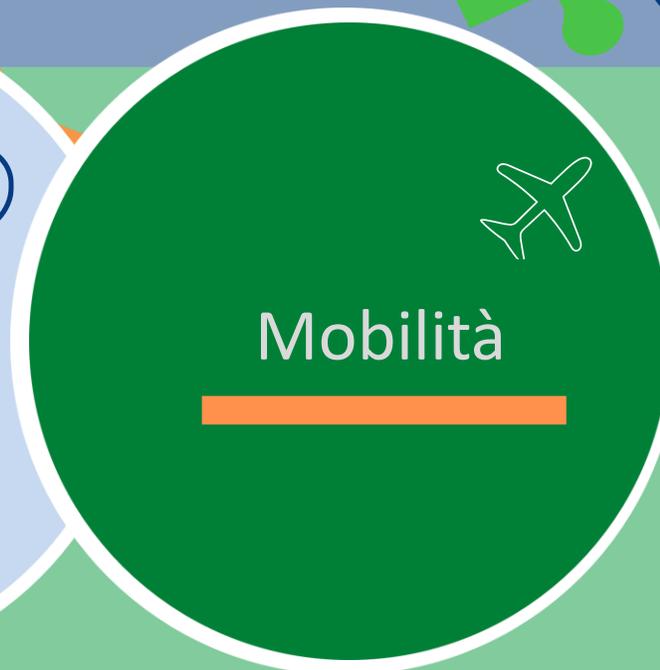
Digital Transition

Green Deal europeo

Cluster 5

SFIDE GLOBALI e
COMPETITIVITA'
INDUSTRIALE

Un'Europa per l'era Digitale



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Horizon Europe structure

Pillar 1 Excellent Science

European Research Council

Marie Skłodowska-Curie Actions

Research Infrastructures

Pillar 2 Global Challenges and European Industrial Competitiveness

- Clusters
- Health
 - Culture, Creativity and Inclusive Society
 - Civil Security for Society
 - Digital, Industry and Space
 - **Climate, Energy and Mobility**
 - Food, Bioeconomy, Natural Resources, Agriculture and Environment
- Joint Research Centre

Pillar 3 Innovative Europe

European Innovation Council

European innovation
ecosystems

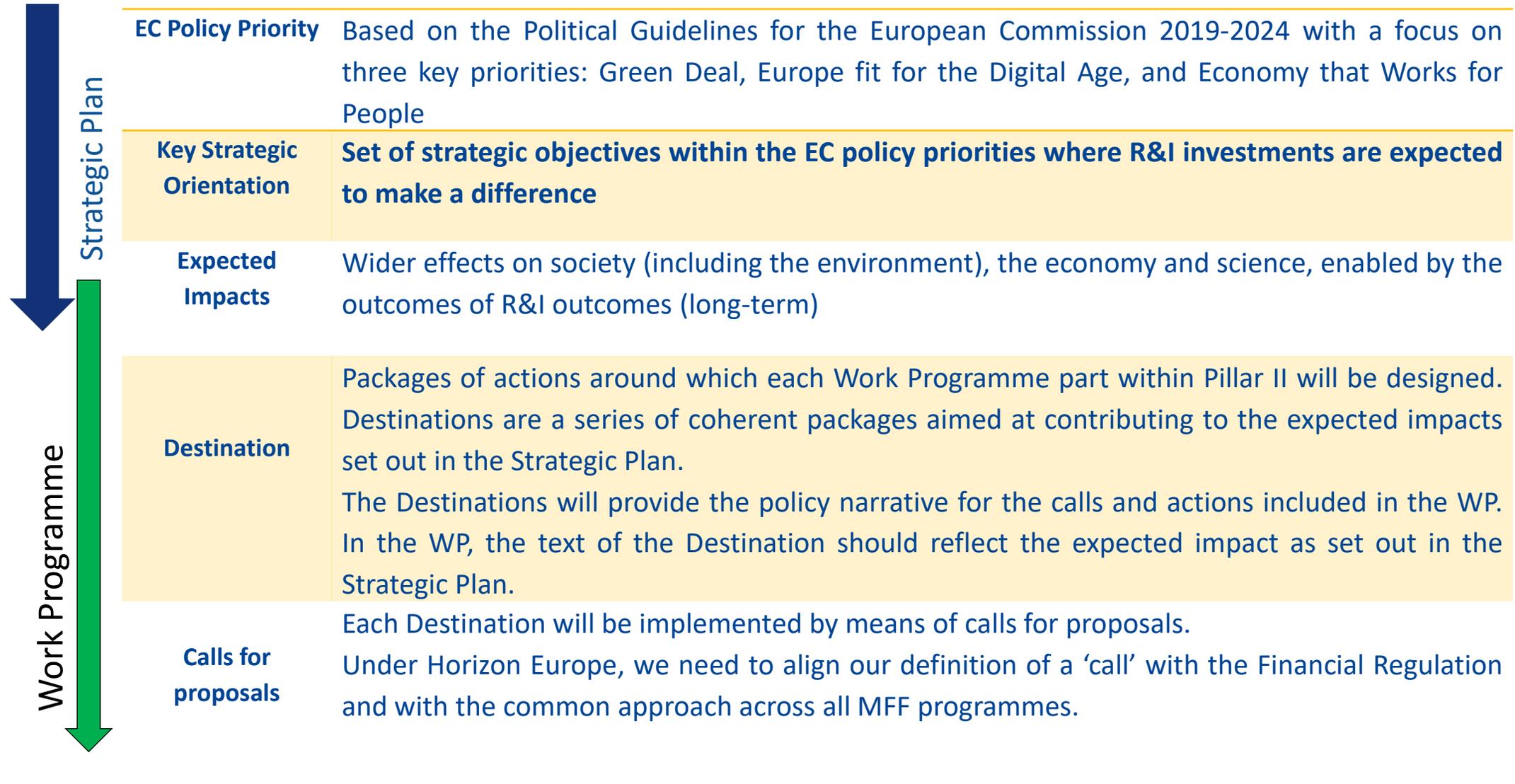
European Institute of Innovation
and Technology

Widening Participation and Strengthening the European Research Area

Widening participation and spreading excellence

Reforming and Enhancing the European R&I system

Horizon Europe – Impact logic



KEY Strategic Orientations

- **A: Promoting an open strategic autonomy by leading the development of key digital and enabling technologies, sectors and value chains** to accelerate and steer the digital and green transitions through human-centred technologies and innovations;
- **B: Restoring Europe's ecosystems and biodiversity, and managing sustainably natural resources** to ensure food security and a clean and healthy environment;
- **C: Making Europe the first digitally led circular, climate-neutral and sustainable economy** through the transformation of its mobility, energy, construction and production systems;
- **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

Strategic Plan – Cluster 5 expected impacts

| Expected Impact (Strategic Plan) | Destination (Cluster 5 work programme) |
|---|--|
| i. 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. | 1. Climate sciences and responses |
| i. Clean and sustainable transition of the energy and transport sectors towards climate neutrality facilitated by innovative crosscutting solutions. | 1. Cross-sectoral solutions for the climate transition |
| i. 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. | 1. Sustainable, secure and competitive energy supply |
| i. Efficient and sustainable use of energy, accessible for all is ensured through a clean energy system and a just transition. | 1. Efficient, sustainable and inclusive energy use |
| i. Towards climate-neutral and environmental friendly mobility through clean solutions across all transport modes while increasing global competitiveness of the EU transport sector. | 1. Clean and competitive solutions for all transport modes |
| i. 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. | 1. Safe Resilient Transport and Smart Mobility services for passengers and goods |

Orientation document – structure

Climate Science

Cross-sectoral solutions for decarbonisation

- Batteries*
- Hydrogen and fuel cells***
- Cities and communities**
- Empowering citizens to engage in the transition
- Emerging breakthrough technologies and climate solutions

Renewable-centred energy system

- Renewable energy
- Energy systems and grids
- Carbon capture, utilisation and storage (CCUS) solutions
- Energy storage solutions
- Leverage public and private investments in clean energy systems**

Mission on Adaptation to Climate Change including Societal Transformation

Mission on Mission on Climate-Neutral and Smart Cities

Demand side solutions to decarbonise the energy system

- EU building stock*
- Industrial facilities

Low-carbon and competitive transport solutions across all modes

- Zero-emission road transport*
- Rail***
- Aviation***
- Waterborne*
- Transport impacts on environment and human health

Seamless, smart, safe, accessible and inclusive mobility systems

- Automated and connected road transport*
- Transport infrastructure
- Transport network and integrated traffic management
- Multimodal freight logistics and passenger mobility services
- Transport safety

* (Including) co-programmed European Partnership

** (Including) co-funded European Partnership

*** (Including) Institutional European Partnership

Destination

Destination 1 –
Climate sciences and responses

Destination 2 –
Cross-sectoral solutions

Destination 3 –
Sustainable, secure and
competitive energy supply

Destination 4 –
Efficient, sustainable and
inclusive energy use

Destination 5 –
Clean and competitive solutions
for all transport modes

Destination 6 –
Safe Resilient Transport and
Smart Mobility services

Destination 1 - Climate Science ad Responses (17 calls 272 Mil)

Earth system science (3)

Analysis of pathways leading
to climate neutrality (6)

Adaptation and climate
services (3)

Climate-ecosystem
interactions (2)

Social science to tackle
climate change (3)

Destination 2 - Cross cutting solution

Hydrogen Europe

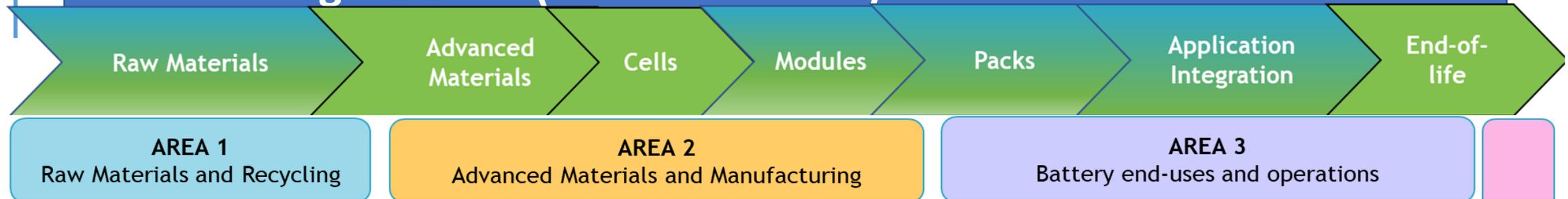
A competitive and
sustainable European
battery value chain

Communities and Cities to be
adopted

Emerging breakthrough
technologies and
climate solutions

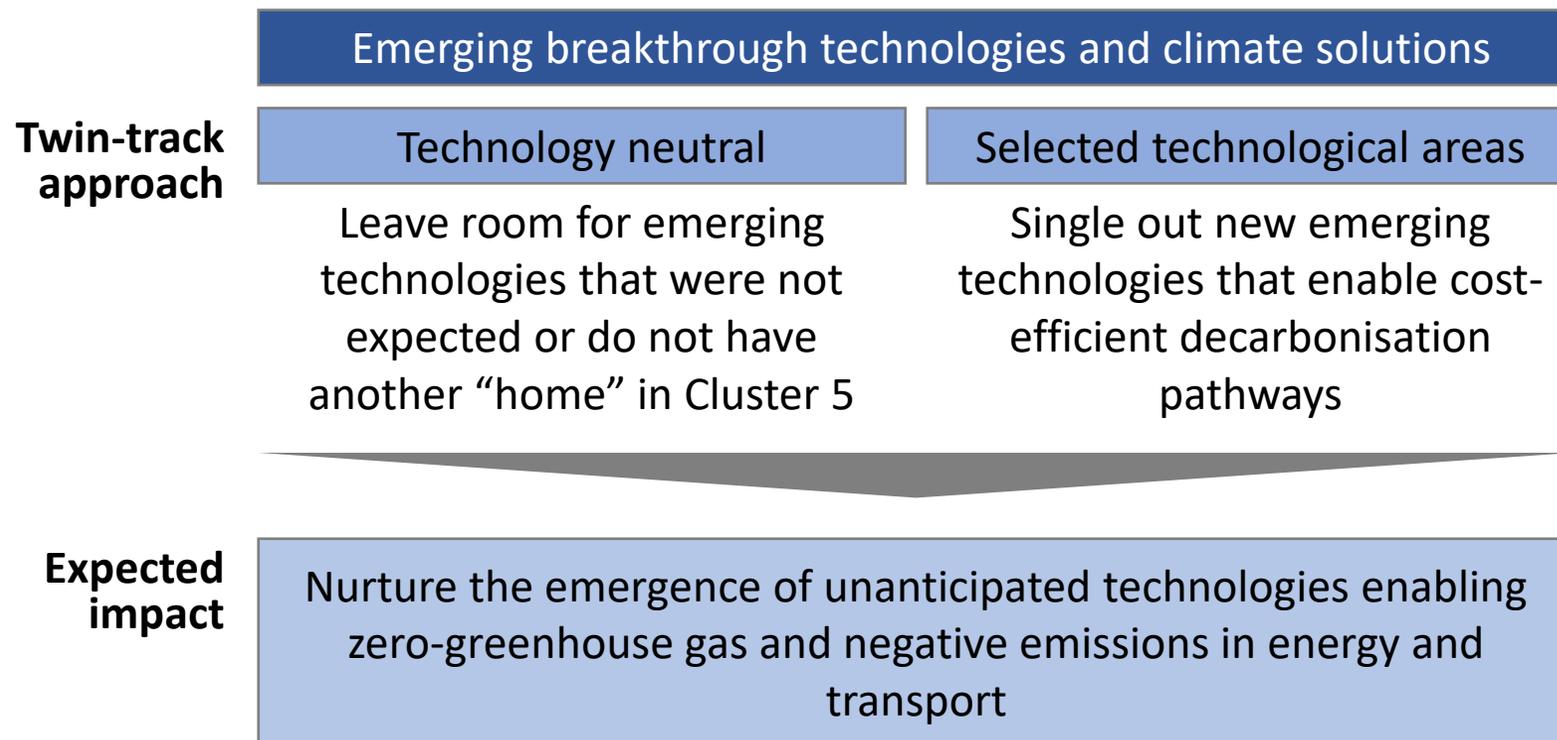
Citizen and stakeholder
engagement

Destination 2 - Cross cutting solution (17 calls 289 Mil)



- a) Increased global competitiveness of the European battery ecosystem through generated knowledge and leading-edge technologies in battery materials, cell design, manufacturing and recycling;
- b) Accelerated growth of innovative, competitive and sustainable battery manufacturing industry in Europe;
- c) Increased overall sustainability and improved Life Cycle Assessment of each segment of the battery value chain,
- d) Developed and established innovative recycling network and technologies;
- e) Accelerated roll out of electrified mobility through increased attractiveness for citizens and businesses, offering lower price, better performance and safety, reliable operation of e-vehicles;
- f) Increased grid flexibility, increased share of renewables integration and facilitated self-consumption and participation in energy markets by citizens and businesses;
- g) Increased exploitation and reliability of batteries through demonstration of innovative use cases of battery integration in stationary energy storage and vehicles/vessels/aircrafts (in collaboration with other partnerships);
- h) Established the best-in-the-world innovative battery R&I ecosystem,

Emerging breakthrough technologies and climate solutions



Destination 3 -

Sustainable, secure and competitive energy supply

Energy system grid and storage (17 calls, 320 Million euro)

Energy Sector Integration

Energy system planning and
operation

Scale up renewable energy
technologies

Pan-European transmission
of energy

Green digitalisation of the
energy system -
Interoperability and data

Active consumers, Markets
and Energy Communities

Electricity system reliability
and resilience

Destination 3 -

Sustainable, secure and competitive energy supply

Global Leadership in renewable energy (44 calls, 678 Mil)

Novel renewable energy technologies (2)

Cost reduction and efficiency improvement of renewable energy technologies (17)

Scale up renewable energy technologies (15)

Flexible and integrated renewable energy solutions (5)

Social economic impact and market uptake (2)

CSA and international cooperation (3)

Destination 3 - Sustainable, secure and competitive energy supply

Carbon capture, utilisation
and storage (CCUS)
(3 calls 90 mil euro)

Cross cutting issues

- 1) Clean energy transition partnership
(35 mlion euro per year)**
- 2) Support to the activities of the ETIPs and
technology areas of the SET-Plan**
- 3) Support to the activities of the European
Geological Services**

Destination 4 -

Efficient, sustainable and inclusive energy use (17 calls 330 Mil)

Highly energy-efficient and climate neutral EU
building stock (13)

Industrial facilities in the
energy transition (4)

Destination 5 –

Clean and competitive solutions for all transport modes (29 calls 495 Mil)

Zero-emission road transport

Rail

Enabling, low-carbon, clean,
smart, and competitive
waterborne transport

Aviation:
climate neutral, digitaliation,
policy support

Impact of transport on
environment and human
health

Destination 5 –
Clean and competitive solutions for all transport modes

Zero-emission road transport

Rail

Enabling, low-carbon, clean,
smart, and competitive
waterborne transport

Aviation:
climate neutral, digitaliation,
policy support

Impact of transport on
environment and human
health

Destination 6 –

Safe Resilient Transport and Smart Mobility services (25 calls 334 mil euro)

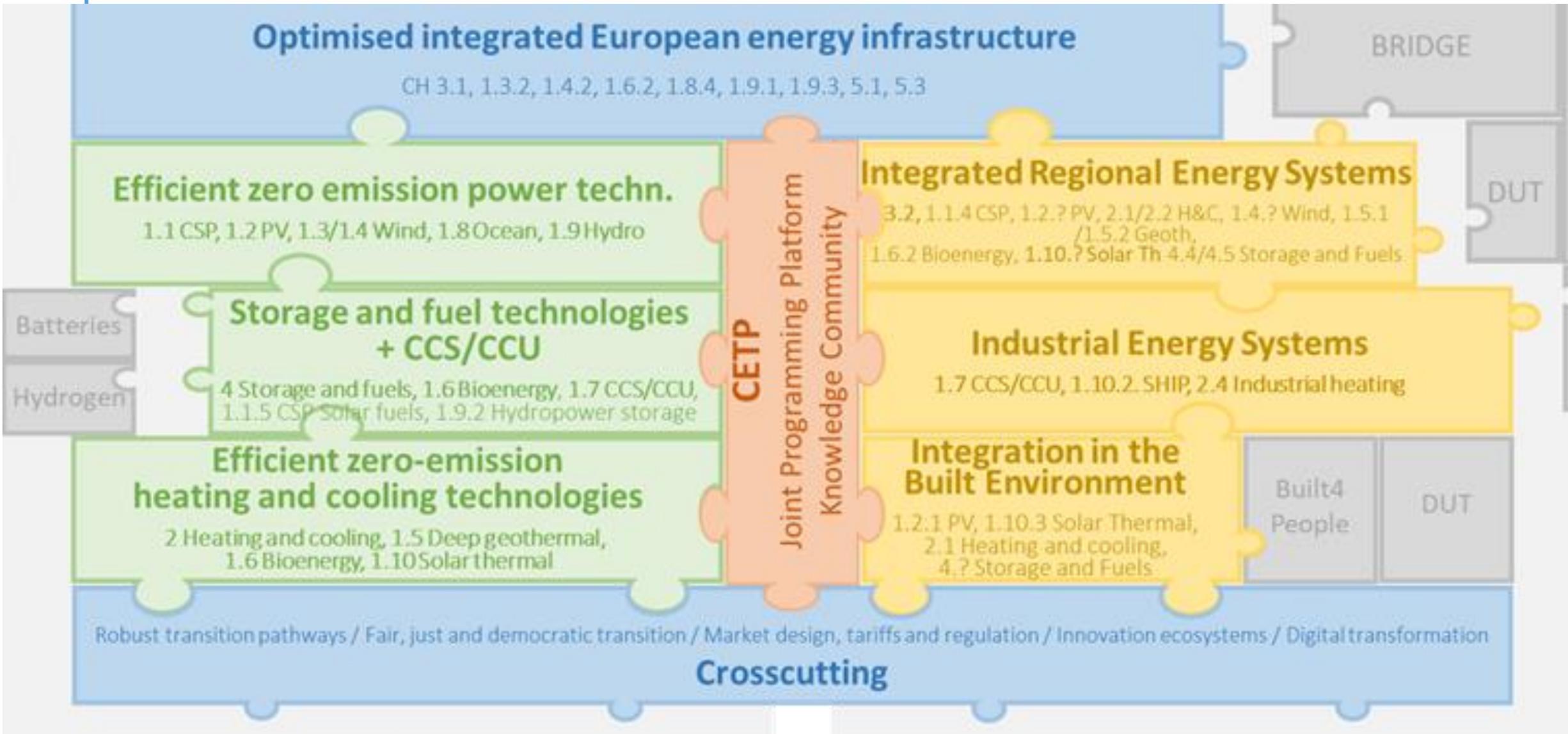
Connected, Cooperative and Automated Mobility

Multimodal and sustainable transport systems:

Safety and resilience - per mode and across all transport modes
Safety in urban areas/road, waterborne, aviation

Clean Energy Transition

650-750 millions euro cumulative national contribution



Driving Urban Transition

250-300 million Euro cumulative national contribution

Positive Energy Districts

Downsizing Doughnut Districts

15 Minute Cities



Digital transitions and urban governance



From resilience to urban robustness



Sustainable land-use and urban infrastructures



Inclusive public spaces