Commission proposal for
Horizon Europe

**THE NEXT EU RESEARCH & INNOVATION
PROGRAMME (2021 – 2027)**

#HorizonEU

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ETIP SNET - western Region Workshop

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Research and
Innovation

Horizon Europe

is the Commission proposal for a **€ 100 billion** research and innovation funding programme for seven years (2021-2027)

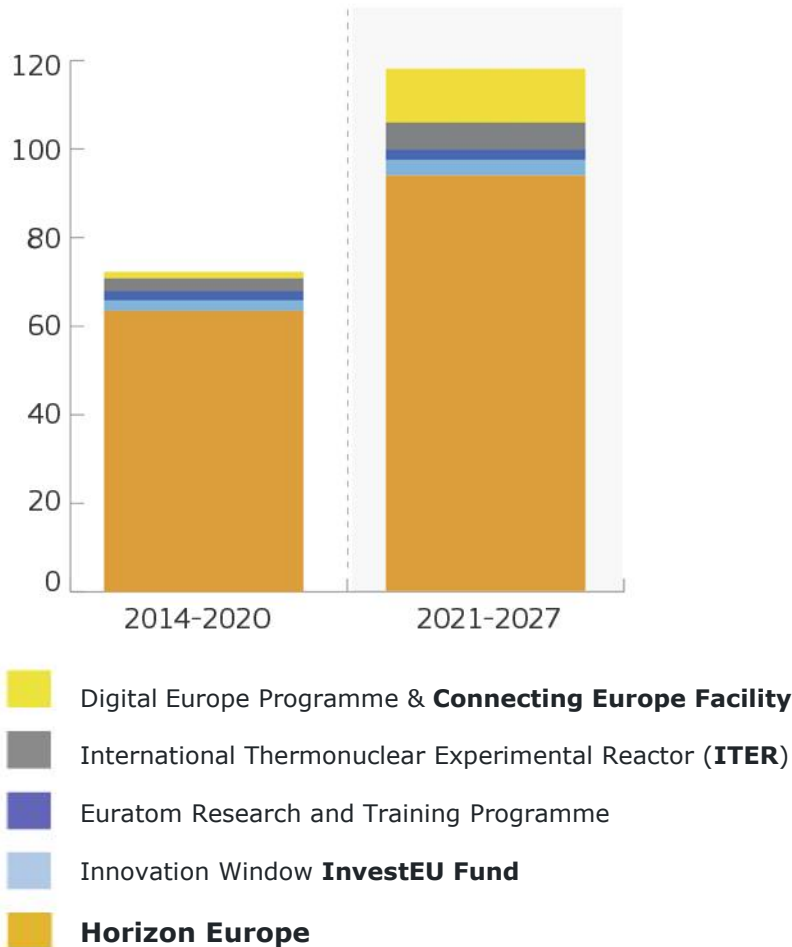**to strengthen the EU's scientific and technological bases**

to boost Europe's innovation capacity, competitiveness and jobs

to deliver on citizens' priorities and sustain our socio-economic model and values

€ 4.1 billion are proposed to be allocated for **defence research**, in a separate proposal for a European Defence Fund

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The next long-term EU budget:

2014-2020   2021-2027

Digital Europe Programme & **Connecting Europe Facility**

International Thermonuclear Experimental Reactor (**ITER**)

Euratom Research and Training Programme

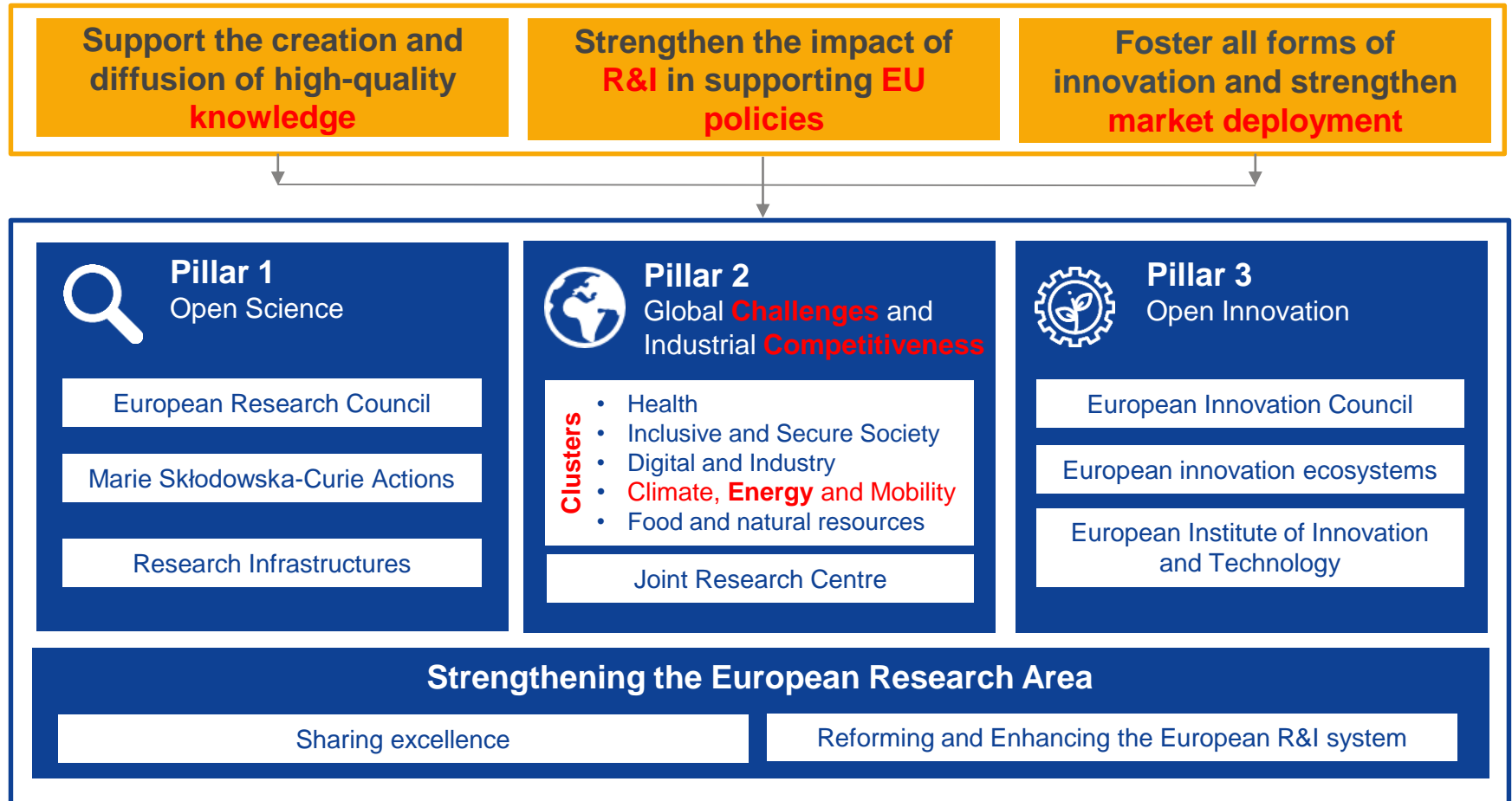Innovation Window **InvestEU Fund**

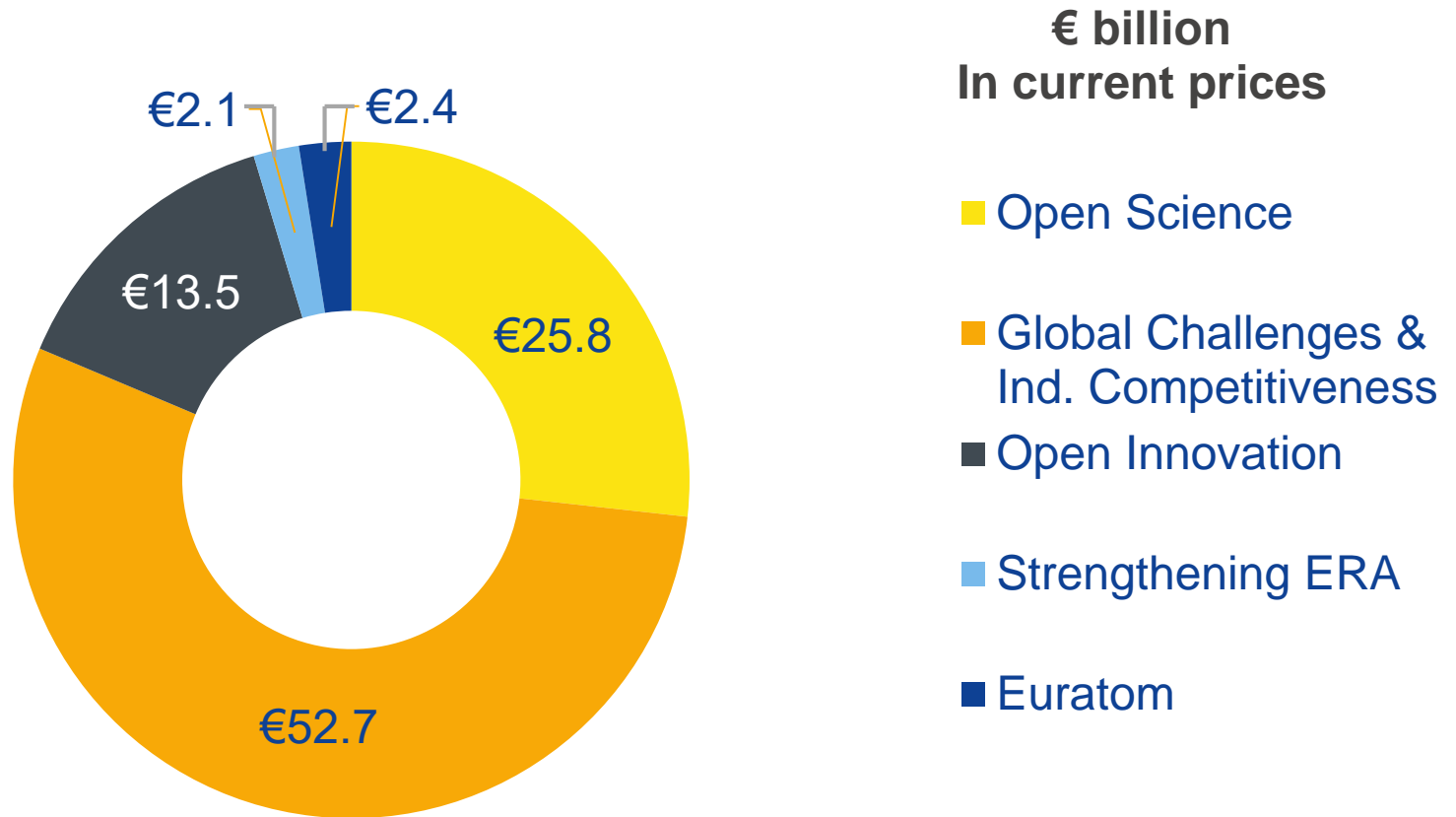**Horizon Europe**

Investing in the future

Building on the success of the EU's past flagship research and innovation programmes, the Commission proposes to **increase investment in research-innovation and digital** by allocating **€ 114.2 billion** for the future Multiannual Financial Framework.

European Commission

Horizon Europe: evolution not revolution

Specific objectives of the Programme

Support the creation and diffusion of high-quality **knowledge**	Strengthen the impact of **R&I** in supporting **EU** policies	Foster all forms of innovation and strengthen **market deployment**

Pillar 1
Open Science

- European Research Council
- Marie Skłodowska-Curie Actions
- Research Infrastructures

Pillar 2
Global **Challenges** and Industrial **Competitiveness**

Clusters
- Health
- Inclusive and Secure Society
- Digital and Industry
- Climate, **Energy** and Mobility
- Food and natural resources

Joint Research Centre

Pillar 3
Open Innovation

- European Innovation Council
- European innovation ecosystems
- European Institute of Innovation and Technology

Strengthening the European Research Area

Sharing excellence	Reforming and Enhancing the European R&I system

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Budget: €100 billion* (2021-2027)

€ billion
In current prices

- Open Science
- Global Challenges & Ind. Competitiveness
- Open Innovation
- Strengthening ERA
- Euratom

Chart values: €2.1, €2.4, €13.5, €25.8, €52.7

* This envelope includes EUR 3.5 billion allocated under the InvestEU Fund.

European Commission

From Horizon 2020 to Horizon Europe

- From **13 parts** → to **5 clusters**
- From **69 activity lines** → to **39 intervention areas**

LEIT

- Information and Communication Technologies (ICT)
- Nanotechnologies
- Advanced materials
- Biotechnology
- Advanced manufacturing and processing
- Space

Societal Challenges

- Health, demographic change and well-being
- Food security, sustainable agriculture and forestry, marine, maritime and inland water research, and the bio-economy
- **Secure, clean and efficient energy**
- Smart, green and integrated transport
- Climate action, environment, resource efficiency and raw materials
- Europe in a changing world – Inclusive, innovative and reflective societies
- Secure societies – Protecting Freedom and security of Europe and its citizens

Health

Inclusive and Secure society

Digital and Industry

Climate, Energy and Mobility

Food and Natural Resources

bean
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Lessons Learned
from Horizon 2020 Interim Evaluation

Key Novelties
in Horizon Europe

Support breakthrough innovation → **European Innovation Council**

Create more impact through mission-orientation and citizens' involvement → **R&I Missions**

Strengthen international cooperation → **Extended association possibilities**

Reinforce openness → **Open science policy**

Rationalise the funding landscape → **New approach to Partnerships**

European Commission

European Innovation Council

Support to innovations with breakthrough and disruptive nature and scale up potential that are too risky for private investors.

European Innovation Council

Helping innovators create markets of the future, leverage private finance, scale up their companies,

Innovation centric, risk taking & agile, pro-active management and follow up

Two complementary instruments bridging the gap from idea to investable project

Pathfinder: grants
(from early technology
to pre- commercial)

Accelerator:
grants & blended finance
(from pre-commercial
to market & scale-up)

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R&I Missions

| R&I Missions | Relating EU's research and innovation better to society and citizens' needs; with strong visibility and impact |

A mission is a portfolio of actions intended to achieve **a bold and inspirational as well as measurable goal** within a set timeframe, with impact for science and technology, society and citizens that goes beyond individual actions.

Horizon Europe proposal defines mission characteristics and elements of governance

Specific missions will be **co-designed with Member States, stakeholders and citizens** and programmed within the Global Challenges and Industrial Competitiveness pillar (drawing on inputs from other pillars)

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Pillar 2
Global Challenges & Industrial Competitiveness:
boosting key technologies and solutions underpinning
EU policies & Sustainable Development Goals

Clusters implemented through usual calls, **missions & partnerships**	Budget (€ billion)
Health	*€ 7.7*
Inclusive and Secure Societies	*€ 2.8*
Digital and Industry	*€ 15*
Climate, Energy and Mobility	*€ 15*
Food and Natural Resources	*€ 10*
Joint Research Centre supports European policies with independent scientific evidence & technical support throughout the policy cycle	*€ 2.2*

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Clusters in 'Global Challenges and Industrial Competitiveness'

Clusters	Areas of intervention
Health	* Health throughout the life course * Environmental and social health determinants * Non-communicable and rare diseases * Infectious diseases * Tools, technologies and digital solutions for health and care * Health care systems
Inclusive and Secure Societies	* Democracy * Cultural heritage * Social and economic transformations * Disaster-resilient societies * Protection and Security * Cybersecurity
Digital and Industry	* Manufacturing technologies * Key digital technologies * Advanced materials * Artificial intelligence and robotics * Next generation internet * Advanced computing and Big Data * Circular industries * Low carbon and clean industry * Space
Climate, Energy and Mobility	* Climate science and solutions * Energy supply * Energy systems and grids * Buildings and industrial facilities in energy transition * Communities and cities * Industrial competitiveness in transport * Clean transport and mobility * Smart mobility * Energy storage
Food and Natural Resources	* Environmental observation * Biodiversity and natural capital * Agriculture, forestry and rural areas * Sea and oceans * Food systems * Bio-based innovation systems * Circular systems

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Area "Energy Systems and Grids"

➢ Growth of **variable electricity production** and shift towards **more electric heating, cooling and transport**
-> new approaches to manage energy grids ensuring energy affordability, security and stability of supply

➢ **Optimise** smart and integrated **operation** of infrastructure

Broad Lines:

✓ **Technologies and tools** for electricity networks to integrate renewables and new loads (e.g. electro-mobility, heat pumps)

✓ **Pan-European energy network** approaches to management;

✓ **Integrated approaches** to match renewable energy production and consumption **at local level**

✓ **Network flexibility and synergies** between the different energy sources, networks, infrastructures and actors;

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CLUSTER 4: Climate, Energy and Mobility

From sectors to systems – Why combining climate, energy and transport/mobility in one cluster?

- Limiting increase of global average temperature to well below 2°C (1.5°C in line with Paris Agreement goals) requires **decarbonising the energy and transport sectors**

- EU policies on energy, climate and transport closely interlinked

- **Many common challenges and opportunities** for energy and transport:
  - Better environmental performance
  - EU industrial competitiveness
  - Integration of ICT and space-based applications
  - Strong consumer-orientation
  - Infrastructure needs

- **Synergies** in many areas of mutual relevance (e.g. energy storage, electrification of transport, fuel cells and hydrogen, advanced fuels, smart combined solution for cities)

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CLUSTER 4 Climate, Energy and Mobility
Key features

More **impact-focused R&I** – supporting the implementation of EU policy goals and links between fuels/electricity (supply-side) and transport (demand-side)

New **holistic / system-wide / integrated view** – e.g. focus on citizens, industry and user needs

More **synergies** across R&I areas, along the full innovation cycle:

- ❑ between thematic areas (e.g. low-emission mobility, energy & climate)

- ❑ between clusters (e.g. digital and automated mobility)

- ❑ between pillars (through wide / joint Missions)

- ❑ with other EU / funding instruments (e.g. CEF, LIFE)

Mainstreaming and thus more impact of Social Sciences & Humanities, citizen & consumer empowerment, economic & behavioural aspects, standardisation and innovation-friendly frameworks

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Strategic planning to define multiannual work programmes and calls for proposals

- Transparency and stakeholder involvement
- Prioritisation and flexibility to align to political priorities
- Internal programme coherence & synergies with other programmes

Multiannual Strategic R&I Plan
* Multiannual orientations and priorities in one document
* Areas for partnerships and missions

Strategic discussions with Member States and European Parliament

Consultation with stakeholders

Work Programmes

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Synergies with other Union programmes

Horizon Europe

Other Union Programmes, including

Common Agricultural Policy

LIFE

Erasmus

Innovation Fund

ERDF

Connecting Europe Facility

External Instrument

Internal Security Fund

Maritime & Fisheries Fund

ESF+

Digital Europe

Single Market Programme

InvestEU

Space Programme
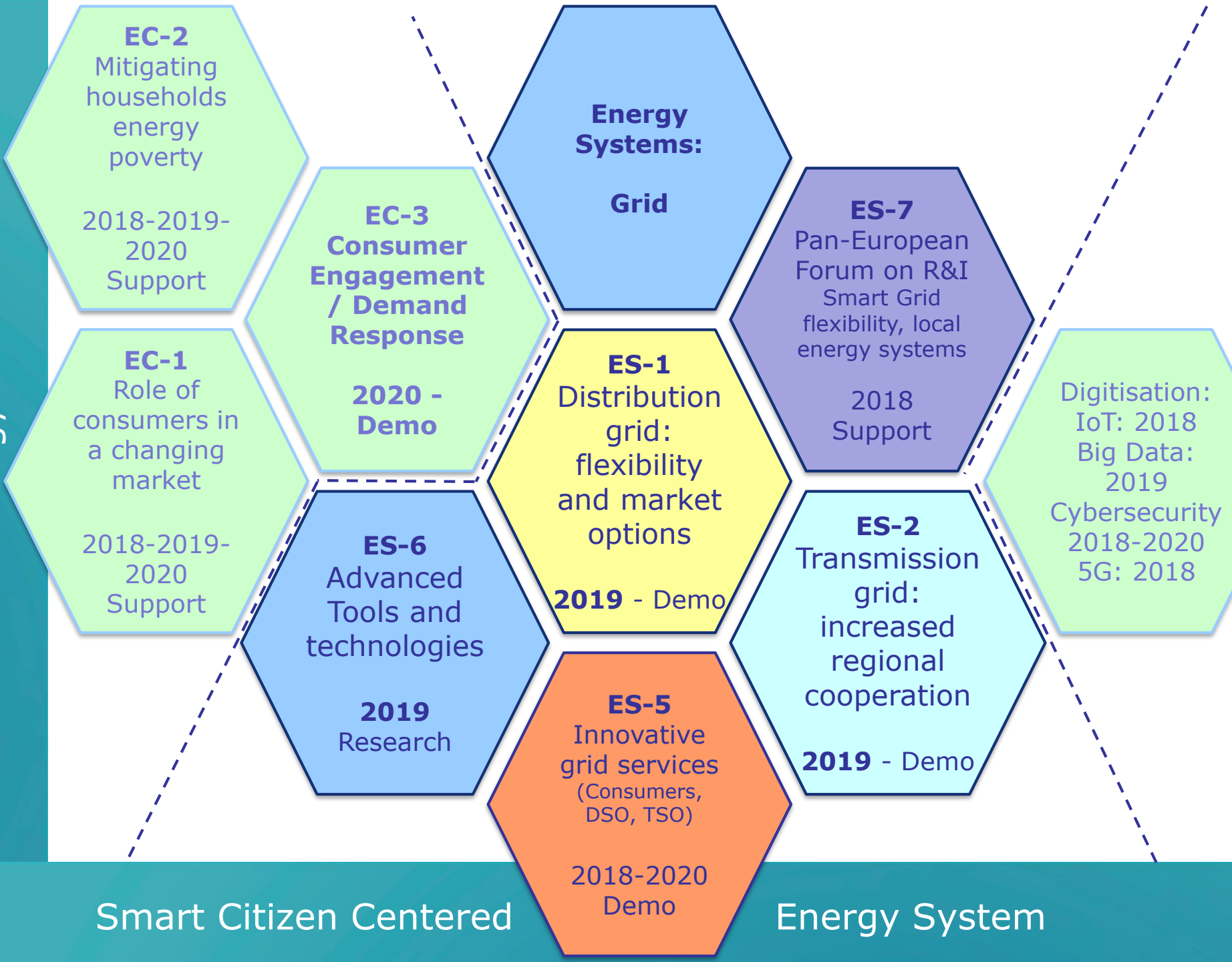
Enhanced synergies

Compatibility

Harmonisation of funding rules; flexible **co-funding** schemes; pooling resources at EU level

Coherence and complementarity

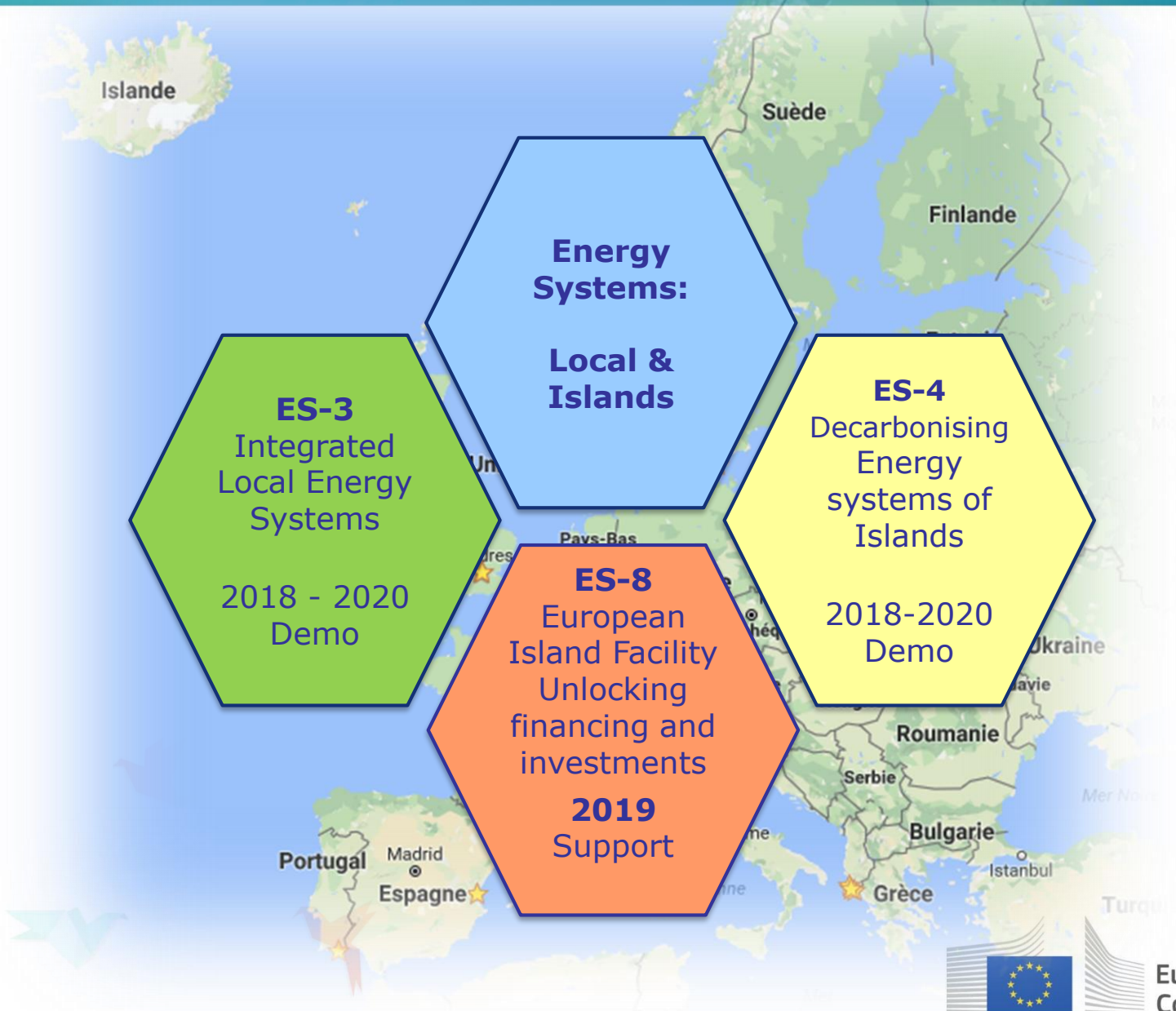Alignment of strategic priorities in support of a common vision

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Horizon 2020 - next calls

Smart Citizen Centered Energy System: Local and Islands

Energy Systems:

Local & Islands

ES-3 Integrated Local Energy Systems

2018 - 2020 Demo

ES-4 Decarbonising Energy systems of Islands

2018-2020 Demo

ES-8 European Island Facility Unlocking financing and investments

2019 Support

European Commission

BRIDGE

- Is a **European Commission** initiative

- Gather Horizon 2020 **Smart Grid and Energy Storage** demonstration projects

- Creates a **structured view** of obstacles to innovation.

- Fosters continuous **knowledge sharing** amongst projects

- Deliver **conclusions and recommendations** with a single voice

Data management	Business Models	Regulations	Customer engagement

Energy

European Commission

Thank you!

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http://ec.europa.eu/horizon-europe