

Commission proposal for **Horizon Europe**

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

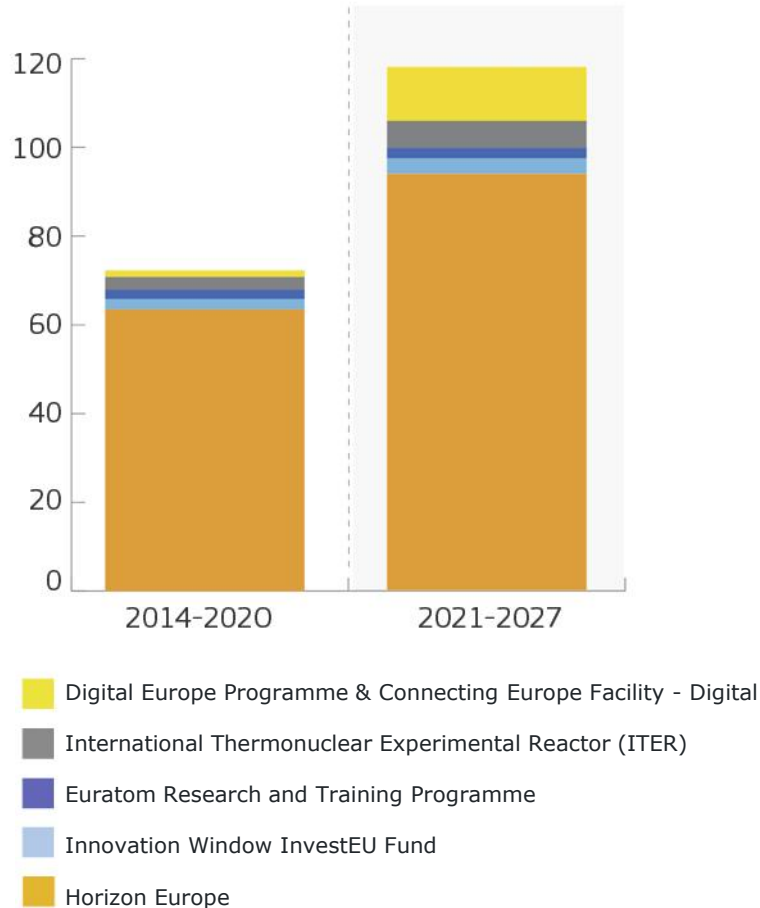
#HorizonEU

Thomas SCHUBERT
CPU meeting
20 June 2018



The next long-term EU budget:

Investing in the future

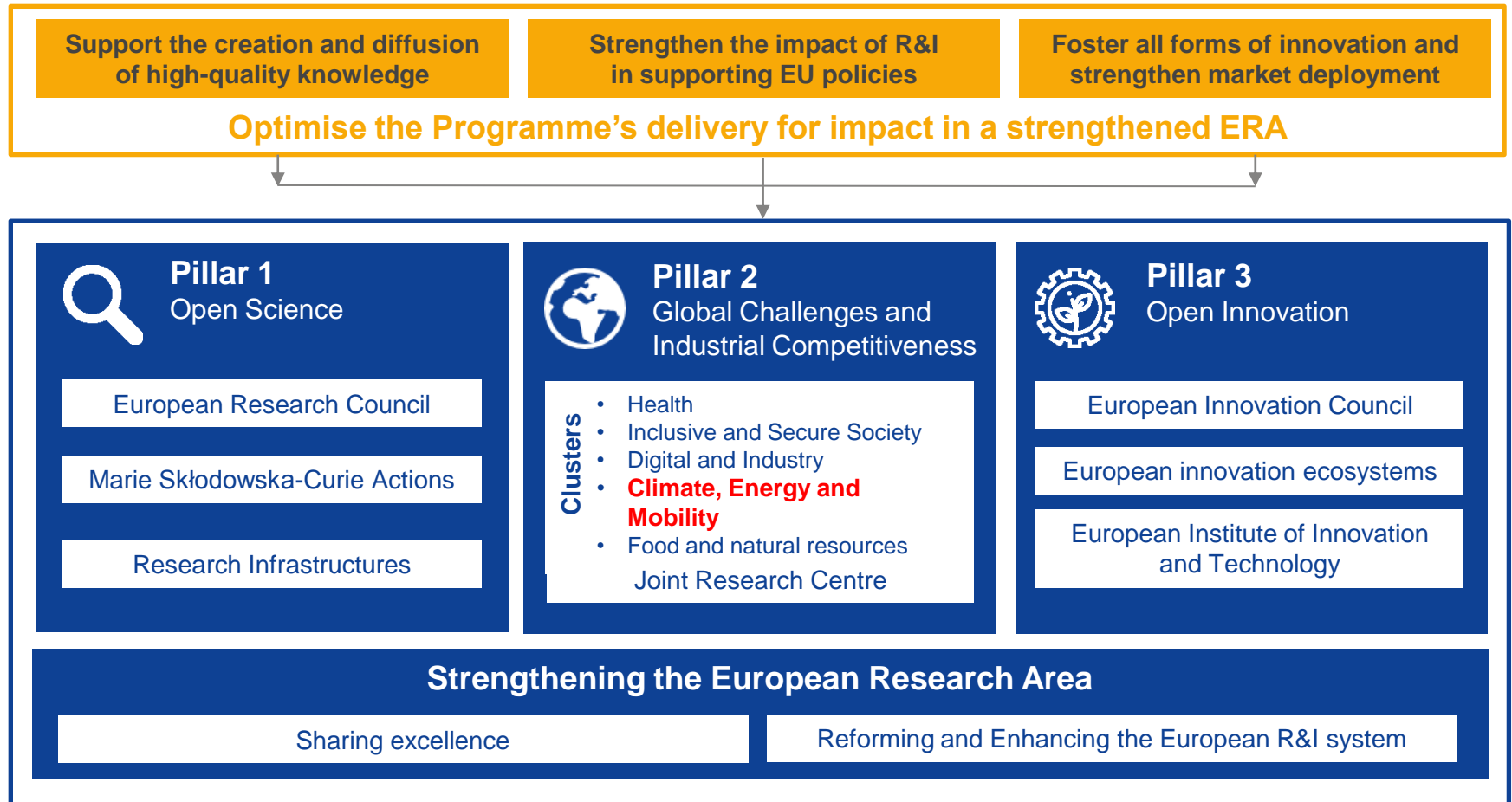


Building on the success of the EU's past flagship research and innovation programmes, the Commission proposes to **increase investment in research-innovation and digital** by allocating **€ 114.2 billion** for the future Multiannual Financial Framework.

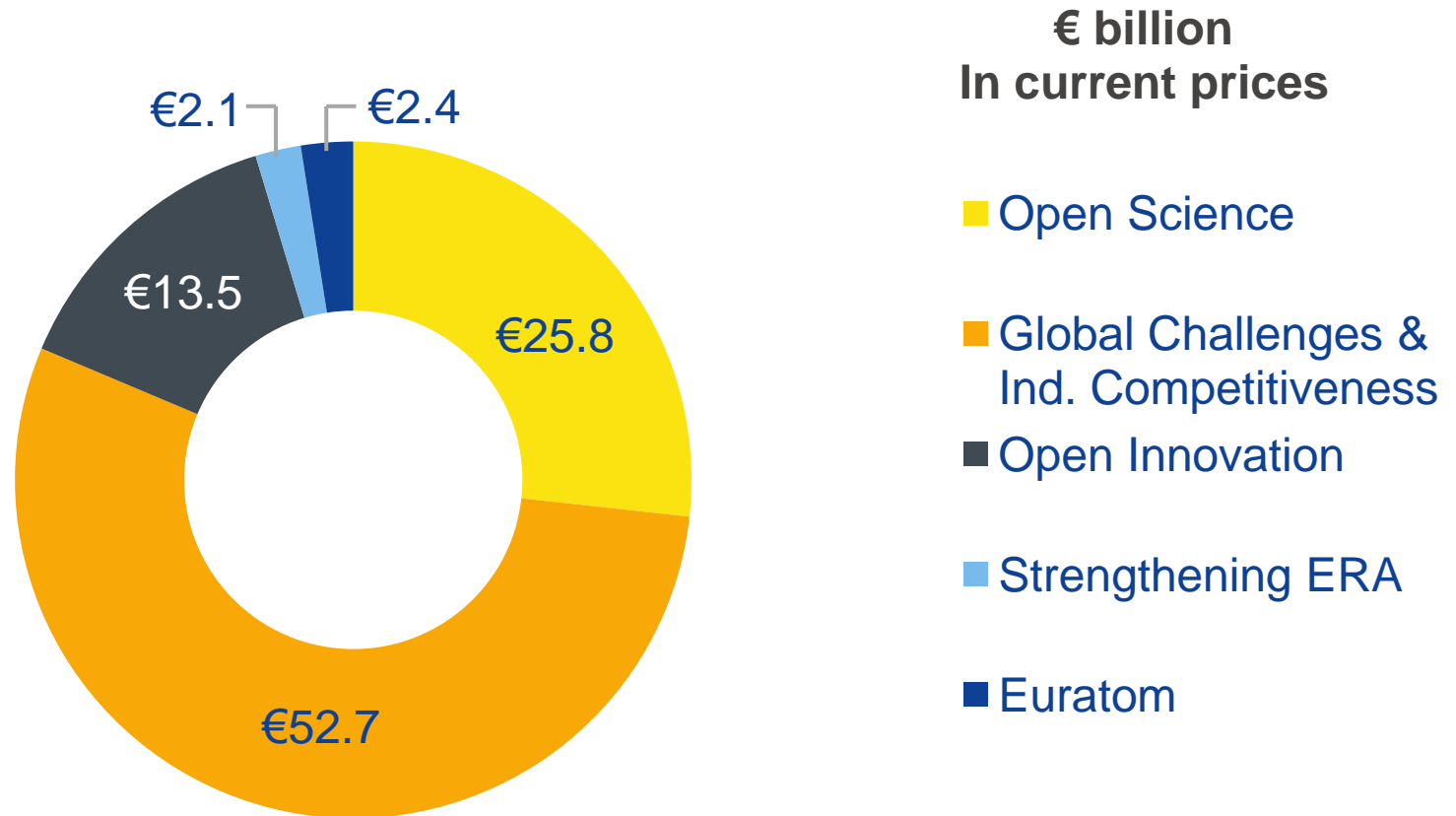
Source: European Commission
Note: Compared to the Multiannual Financial Framework 2014-2020 at EU-27 (estimate)

Horizon Europe: evolution not revolution

Specific objectives of the Programme



Budget: €100 billion* (2021-2027)



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

Pillar II / Global Challenges & Industrial Competitiveness

A systemic approach **along the lines of the SDGs** and the **Paris Climate Agreement**

- **System** vs. sector approach
- **Integrated clusters** of activity
- No separate budgets per **intervention area**
- Engaging **all actors** to **co-design** and **co-create** research and innovation
- **Greater impact** through aligning actions with the rest of the world
- Strong support to **industry** and **innovation**



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 |

Clusters in 'Global Challenges and Industrial Competitiveness'

| Clusters | Areas of intervention | |
|---------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Health | <ul style="list-style-type: none"> * Health throughout the life course * Non-communicable and rare diseases * Tools, technologies and digital solutions for health and care | <p style="color: red; font-weight: bold; text-align: center;">From 69 activity lines (H2020) to 39 intervention areas</p> <ul style="list-style-type: none"> * Environmental and social health determinants * Infectious diseases * Health care systems |
| Inclusive and Secure Societies | <ul style="list-style-type: none"> * Democracy * Social and economic transformations * Protection and Security | <ul style="list-style-type: none"> * Cultural heritage * Disaster-resilient societies * Cybersecurity |
| Digital and Industry | <ul style="list-style-type: none"> * Manufacturing technologies * Advanced materials * Next generation internet * Circular industries * Space | <ul style="list-style-type: none"> * Key digital technologies * Artificial intelligence and robotics * Advanced computing and Big Data * Low carbon and clean industry |
| Climate, Energy and Mobility | <ul style="list-style-type: none"> * Climate science and solutions * Energy systems and grids * Communities and cities * Industrial competitiveness in transport * Smart mobility | <ul style="list-style-type: none"> * Energy supply * Buildings and industrial facilities in energy transition * Clean transport and mobility * Energy storage |
| Food and Natural Resources | <ul style="list-style-type: none"> * Environmental observation * Agriculture, forestry and rural areas * Food systems * Circular systems | <ul style="list-style-type: none"> * Biodiversity and natural capital * Sea and oceans * Bio-based innovation systems |

Cluster 'Climate, Energy and Mobility' - Rationale

EU climate change targets (Paris Agreement) -> **transition to a low-carbon society**, including decarbonisation of energy and transport, better knowledge of complex climate system.

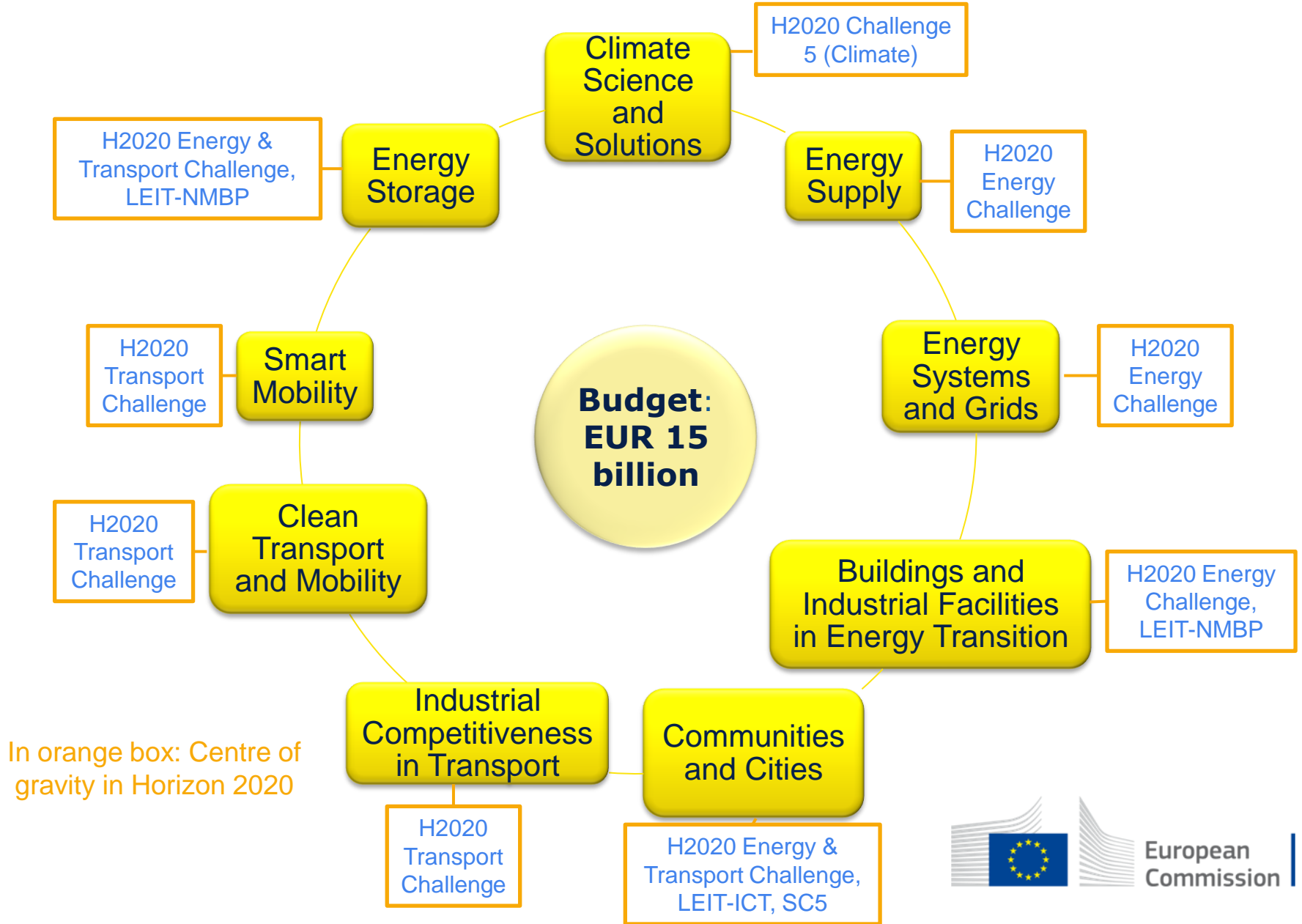
Other major drivers: increasing application of digital and space-based technologies; changes in user behavior; new market entrants; older, more urban and increasingly diverse, population.

Transformation creates **better solutions and services for citizens** and **huge business opportunities** in the EU and beyond – maintaining/increasing global competitiveness of EU industry crucial

Comprehensive approach including systems and technologies, citizen and consumer empowerment, economic and behavioral aspects, standardization, and innovation-friendly frameworks.

Flexibility to adapt to new challenges - detailed priority setting in strategic programming phase

Cluster 'Climate, Energy and Mobility' - Scope



Cluster 'Climate, Energy and Mobility' – Key features

Thematic stability – all main areas of Horizon 2020 continued, although sometimes merged or mainstreamed (*exception: clean coal, unconventional hydrocarbons not mentioned; activities targeting 'capacity building for a large-scale market uptake' - > to be funded under LIFE programme*).

More integration –
within the cluster and
with other
clusters/missions

Major contributor to the
**spending target on
Climate action (35%)**

Area “Climate Science and Solution”

Main activities:

- ✓ **Knowledge** on the functioning and future evolution of the **earth-climate system**
- ✓ **Decarbonisation pathways** covering all sectors of the economy
- ✓ **Climate projections**, assessment of impacts and **climate services**
- ✓ **Adaptation pathways and policies** for vulnerable ecosystems, critical economic sectors and infrastructure in the EU

Area “Energy Supply”

Main activities:

- ✓ **Renewable energy** solutions for power generation, heating and cooling, sustainable transport fuels and intermediate carriers
- ✓ Reduction of GHG-emissions from fossil fuel-based power generation via **CO2 capture, utilisation and storage (CCUS)**

Area “Energy Systems and Grids”

Main activities:

- ✓ Integration of renewables and new loads (e.g. electro-mobility, heat pumps) in **electricity networks**
- ✓ Match renewable energy production and consumption at **local level**
- ✓ **Pan-European energy network** management approaches;
- ✓ **Network flexibility** and **synergies** between the different energy sources, networks, infrastructures and actors;

Area “Buildings and Industrial Facilities in Energy Transition”

Main activities:

- ✓ **Interaction** of (and between) industrial plants and the energy systems
- ✓ Smart buildings and large mobility hubs as **active elements** of wider energy networks and of innovative mobility solutions
- ✓ **Buildings** life-cycle design, construction, operation, dismantling, renovation
- ✓ Energy performance of buildings **monitoring and optimization**
- ✓ New business models, financing mechanisms, skills, and ways of engagement
- ✓ Tools and smart appliances for energy efficiency gains

Area “Communities and Cities ”

Main activities:

- ✓ City/district **energy/mobility systems**
- ✓ **Urban planning**, infrastructures and systems
- ✓ **Quality of life** for the citizens, reduced environmental footprint and pollution
- ✓ Global cities research agenda

Area “Industrial Competitiveness in Transport ”

Main activities:

- ✓ **Concept, design and manufacturing** of vehicles/vessels/aircrafts
- ✓ **On-board technologies and sub-systems**, including safety and cybersecurity
- ✓ **Infrastructure** construction, maintenance/regeneration, operation

Area “Clean Transport and Mobility”

Main activities:

- ✓ Reducing impact of mobility on **environment and human health**
- ✓ **Electrification** of all transport modes
- ✓ Sustainable **new fuels and new smart vehicles**/vessels/aircraft;

Area “Smart mobility”

Main activities:

- ✓ Digital **network-and traffic management**
- ✓ **Single European Sky**
- ✓ **Rail** technologies and operations
- ✓ Connected, cooperative and automated **mobility systems and services**

Area “Storage”

Main activities:

- ✓ **Broad portfolio** of storage technologies for daily to seasonal needs
- ✓ **EU value chain** for batteries
- ✓ EU value chain for zero-carbon **hydrogen including fuel cells**

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

Synergies with other Union programmes

Horizon Europe



Other Union Programmes, including

Common Agricultural Policy
LIFE
ERDF
External Instrument
Maritime & Fisheries Fund
InvestEU
Space Programme

Erasmus
Innovation Fund
Internal Security Fund
ESF+
Single Market Programme

Connecting Europe Facility
Digital Europe

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 Europe dedicated website

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

European Innovation Council

<http://ec.europa.eu/research/eic>

EU budget for the future

http://ec.europa.eu/budget/mff/index_en.cfm

