



Transport Infrastructure R&I: The European Commission Perspective

Brussels, 26 November 2019

Transport infrastructure in the EU

- **Roads - 5 mln km** (76.823km of highways, 3000 km bridges on TEN-T network)
- **Railways - 217.000 km** (incl 8.434km high speed)
- **Airports - 295 airports** above 100,000 passengers/year
- **Navigable inland waterways - 41,895 km**

Transport infrastructure challenges

- Reduction in GHG emissions / limiting external costs
- Low levels of investment in transport infrastructure - below 1,0%
Degradation due to lack of maintenance
- Capacity crunch
- Low quality of transport infrastructure in eastern part of the UE
- Missing links in border areas
- **Adaptation of infrastructure to new mobility patterns and technological innovation**

I. "EUROPE ON THE MOVE" Communication (283 - 31 May 2017) - AN AGENDA FOR A SOCIALLY FAIR TRANSITION TOWARDS CLEAN, COMPETITIVE AND CONNECTED MOBILITY FOR ALL



Three building blocks:



Clean Transport and Mobility



Connected Transport and
Mobility



Fair and Competitive Transport
and Mobility

II. "DELIVERING ON LOW-EMISSION MOBILITY" (Communication 675 – 8 November 2017) - A EUROPEAN UNION THAT PROTECTS THE PLANET, EMPOWERS ITS CONSUMERS AND DEFENDS ITS INDUSTRY AND WORKERS

Three building blocks:



Protecting the Planet:

measures to support the path towards zero emission transport;



Empowering Citizens: no second class consumers and smooth mobility for all



Defending EU's leadership in clean vehicles and **leave no worker behind**



European
Commission

Green Deal

“We are on track to meet our ambitious Paris Agreement goals and 2030 targets. But we need to go further and faster if we are serious about climate neutrality in 2050. We currently have a goal of 40% emissions reduction by 2030. But we have to be more ambitious. Carbon emissions must have a price. Every person and every sector will have to contribute.”

*Ursula von der Leyen, President-elect of the European
Commission
European Green Deal*

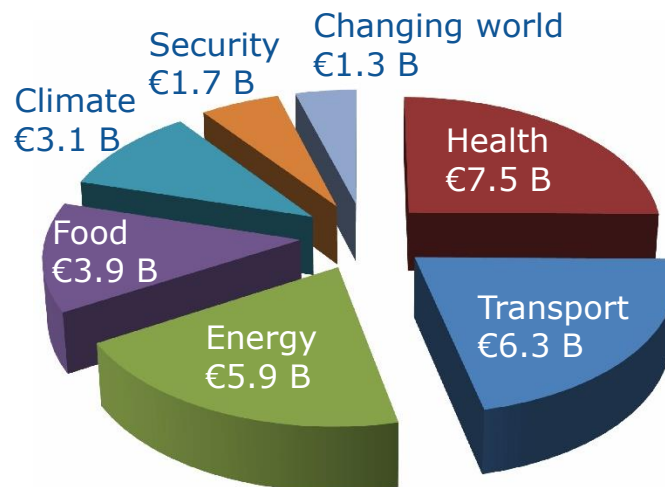




European
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R&I FRAMEWORK PROGRAMMES

H2020: Seven societal challenges

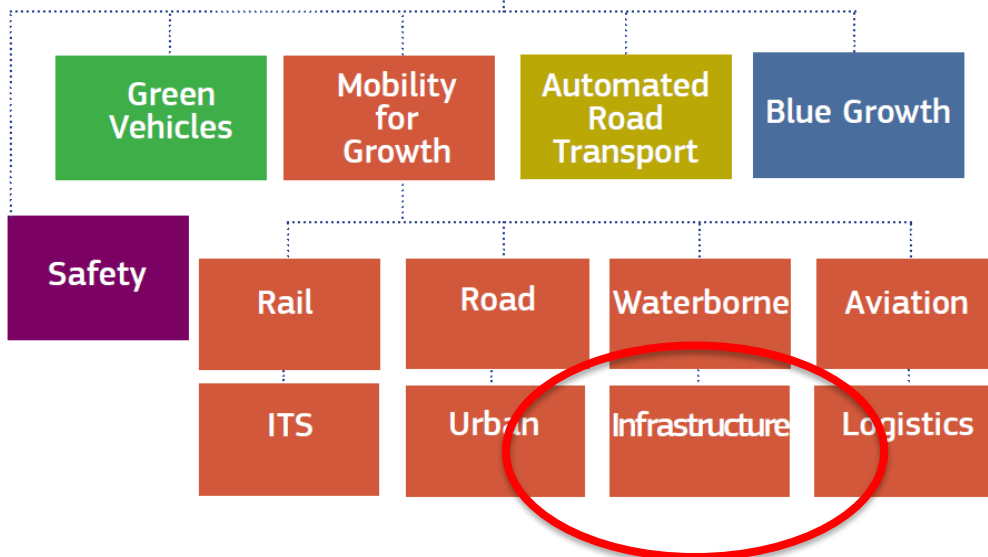


% of H2020:

- Health - 9.7%
- **Transport - 8.2%**
- **Energy - 7.7%**
- Food - 5%
- Climate - 4%
- Security - 2.2%
- Changing world - 1.7%

Smart, green and integrated Transport

Smart, green and integrated transport



- Mobility for Growth, technical development, modes and integration
- Better use of existing resources, reduced congestion, intelligent systems
- Cleaner, safer vehicles

Transport Infrastructure in H2020

- Over EUR **450 million** have been invested in INF research projects :
 - **EUR 302 million of EU funds**
 - **EUR 148 million of own contributions** by beneficiary organisations
- Dominates research in **road and rail** infrastructure
- Participants from **UK, France, Germany** and **Denmark** receive a large part of the funding

Lessons learned

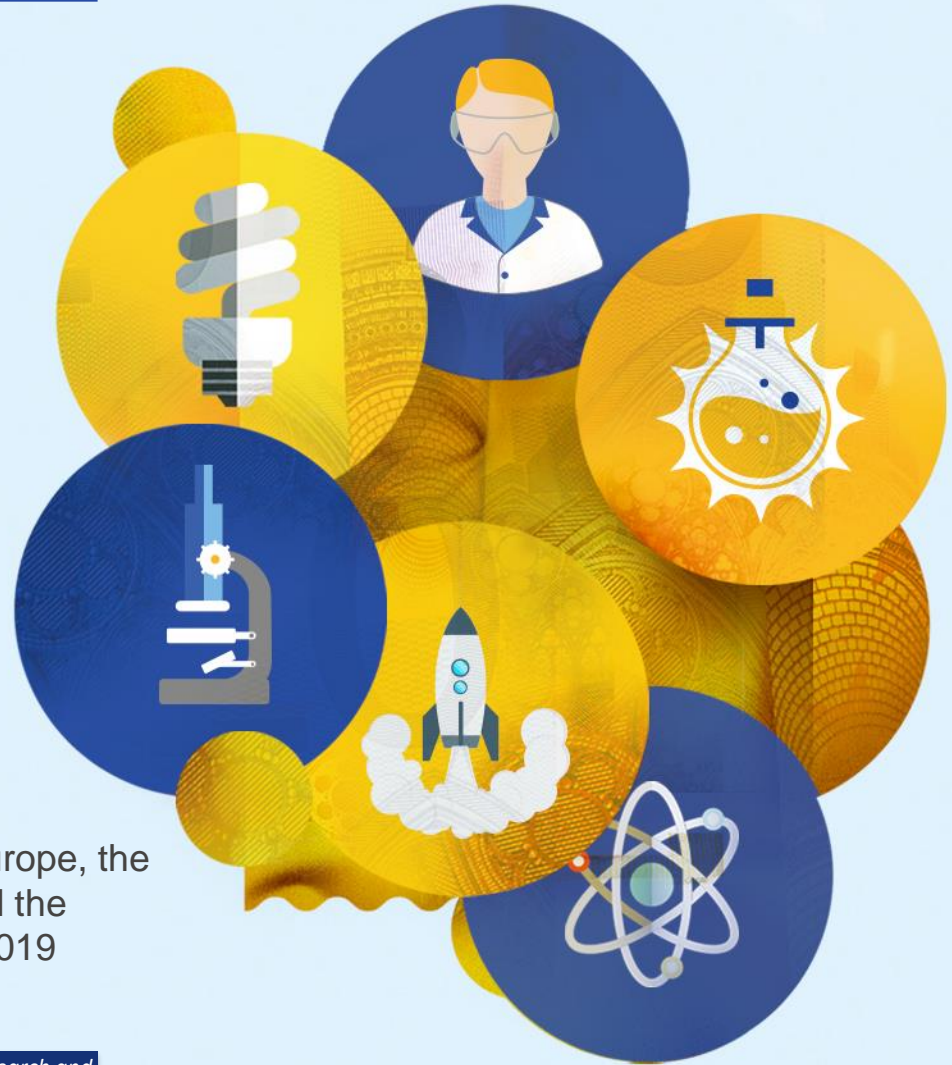
- **Follow up** and **deployment** of projects to be reinforced
- Need for **project monitoring after** projects' closing
- Need for stronger **link between research and implementation**
- Need for EU **standards, guidelines and recommendations** in the maintenance area

Horizon Europe

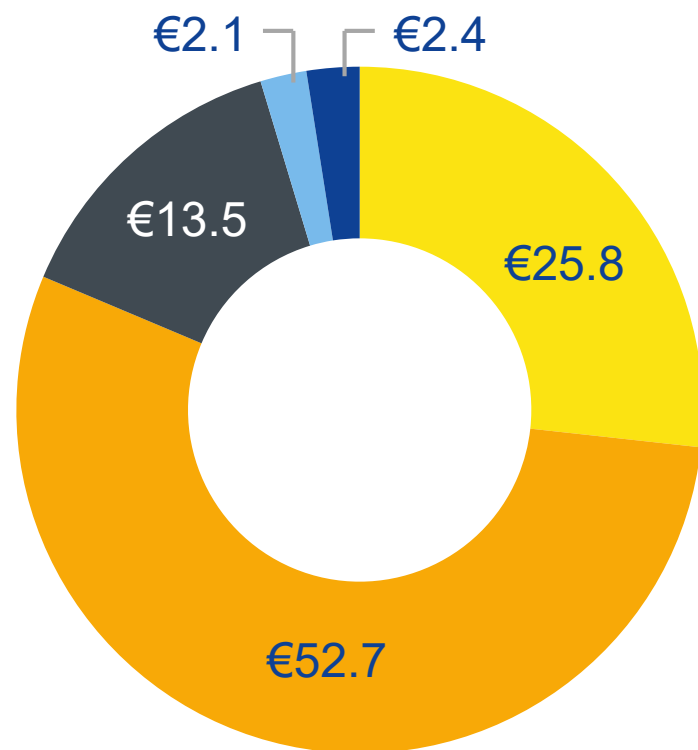
THE NEXT EU RESEARCH & INNOVATION
INVESTMENT PROGRAMME (2021 – 2027)

#HorizonEU

Based on the Commission Proposal for Horizon Europe, the common understanding between co-legislators and the Partial General Approach, both approved in April 2019



Commission proposal for budget: €100 billion* (2021-2027)

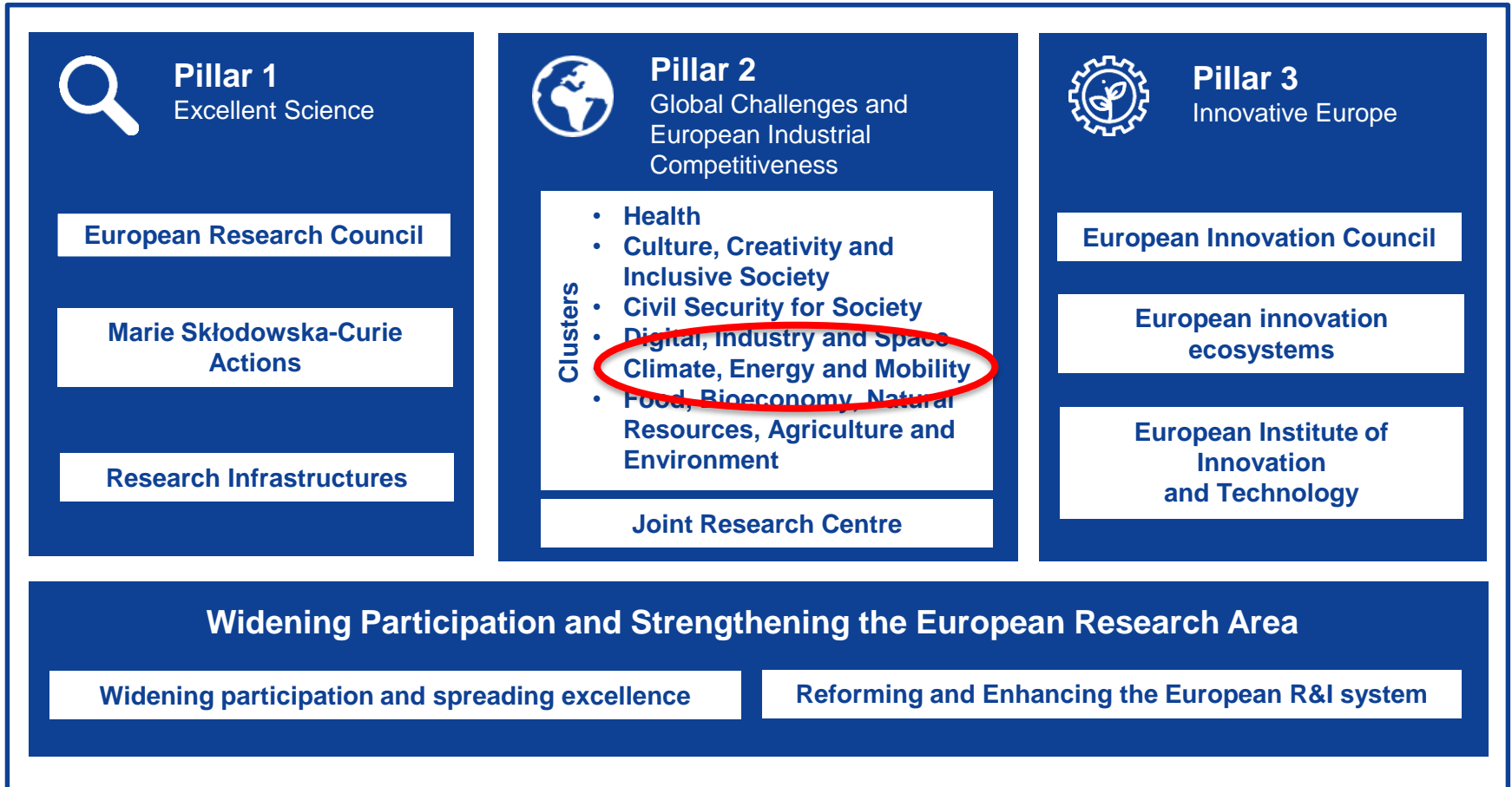


€ billion
In current prices

- Excellent Science
- Global Challenges & European Ind. Comp.
- Innovative Europe
- Widening Part. & ERA
- Euratom

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

Horizon Europe: Preliminary structure



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, including personalised medicine 	<ul style="list-style-type: none"> • Environmental and social health determinants • Infectious diseases, including poverty-related and neglected disease • Health care systems
Culture, creativity and inclusive society	<ul style="list-style-type: none"> • Democracy and Governance • Social and economic transformations 	<ul style="list-style-type: none"> • Culture, cultural heritage and creativity
Civil security for society	<ul style="list-style-type: none"> • Disaster-resilient societies • Protection and Security 	<ul style="list-style-type: none"> • Cybersecurity
Digital, Industry and space	<ul style="list-style-type: none"> • Manufacturing technologies • Advanced materials • Next generation internet • Circular industries • Space, including Earth Observation • Emerging enabling technologies 	<ul style="list-style-type: none"> • Key digital technologies, including quantum technologies • Artificial Intelligence and robotics • Advanced computing and Big Data • Low-carbon and clean industry • Emerging enabling technologies
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, safe and accessible transport and mobility • Energy storage
Food, bioeconomy, natural resources, agriculture and environment	<ul style="list-style-type: none"> • Environmental observation • Agriculture, forestry and rural areas • Circular systems • Food systems 	<ul style="list-style-type: none"> • Biodiversity and natural resources • Seas, oceans and inland waters • Bio-based innovation systems in the EU Bioeconomy



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 across disciplines intended to achieve a **bold and inspirational and measurable goal** within a set timeframe, with **impact** for society and policy making as well as relevance for a significant part of the European population and wide range of European citizens.

Horizon Europe defines mission characteristics and elements of governance, and 5 missions areas.

Specific missions will be programmed within the Global Challenges and European Industrial Competitiveness pillar (drawing on inputs from other pillars)

Adaptation to climate change, including societal transformation



Mission areas

Healthy oceans, seas, coastal and inland waters



Cancer



Climate-neutral and smart cities



Soil health and food



European Partnerships in HORIZON EUROPE

For addressing European or global challenges European Partnerships will be proposed. For Climate, Energy and Mobility cluster the following future partnerships have been identified:

- Transforming Europe's rail system
- Integrated Air Traffic Management
- Clean Aviation
- Clean Hydrogen
- Built environment and construction
- Towards zero-emission road transport (2ZERO)
- **Mobility and Safety for Automated Road Transport (MOSART)**

Horizon Europe Strategic Plan Orientations - Public Consultation

4.6.2 Develop efficient and innovative transport infrastructure - potential research challenges (1/2):

- Develop and test **new methods of transport infrastructure maintenance and upgrade**, with a view to improving safety, climate resilience and environmental impact (incl. habitat and biodiversity) and develop **new solutions to accommodate connected mobility**;
- Support the development of transport infrastructure which will **accommodate new and evolving transport modes** and **improved integration** (national, regional) **of transport infrastructure and energy systems** through deployment of relevant infrastructure;

Horizon Europe Strategic Plan Orientations - Public Consultation

Potential research challenges (2/2):

- **Integration of physical and secure digital infrastructure** including aspects of **cybersecurity**;
- Develop tools for **information and data collection and management** to monitor the performance of the infrastructure (asset utilisation rate) and the efficient **management of mixed vehicle fleets on road networks**;
- Develop and test **governance, regulatory, and public procurement models** and new contractual **performance indicators** and incentives to maintain and upgrade infrastructure.;

Strategic Transport Research and Innovation Agenda (STRIA).

- Forward-looking agenda for research and innovation (R&I) in transport, addressing seven priority areas in the form of roadmaps (2017 First Mobility Package)
- STRIA roadmap on Transport Infrastructure was first published in 2017 assessed the requirements for the infrastructure to meet the **environmental policy objectives**.
- For infrastructure **STRIA update** other aspects have been considered too, such as the competitiveness of the European industries, territorial cohesion, multimodality, **technology and digitalisation**, safety and security, etc.

PRIORITIES FOR RESEARCH & INNOVATION IN TRANSPORT INFRASTRUCTURE

- A. Governance.**
- B. Life cycle and asset management.**
- C. Financing, pricing and taxation.**
- D. Technology and digitalization.**
- E. Multimodality, interoperability and interconnectivity.**
- F. Safety and security.**
- G. Sustainability, environment and resilience.**
- H. Logistics.**

STRIA Roadmap on Connected and Automated Transport

R&I initiatives for Road Transport Infrastructure:

- **Physical and digital infrastructure** (PDI) for enabling increasing levels of **automation**
- Reliable and effective traffic, network and incident **information management**
- Adequate **connectivity** (reliability, quality, coverage, security) **for higher levels of automation**, also across borders
- **Cyber Security** of CAD-related operations including data exchange & sharing



THANK YOU FOR ATTENTION

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