

# Horizon Europe

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

Webinario EL NUEVO MARCO DE FINANCIACIÓN EUROPEA:  
EU GREEN DEAL Y HORIZONTE EUROPA  
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# Horizon Europe - Investing to shape our future

# Our vision

A sustainable, fair and **prosperous** future for **people** and **planet** based on European values.

- Tackling **climate change** (35 % budgetary target)
- Helping to achieve **Sustainable Development Goals**
- Boosting the Union's **competitiveness and growth**

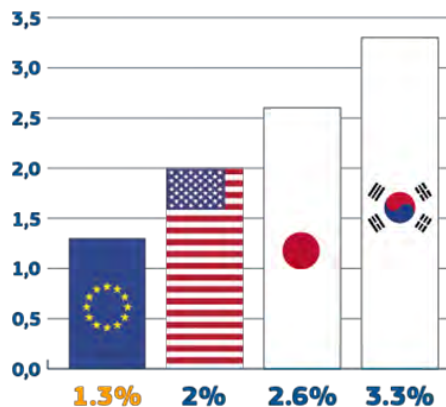


The Commission proposes a budget of € 100 billion for Horizon Europe.

# While benefiting from world-class research and strong industries...

Our knowledge and skills are our main resources.

- **7%** of the world's population
- **20%** of global R&D
- **1/3** of all high-quality scientific publications

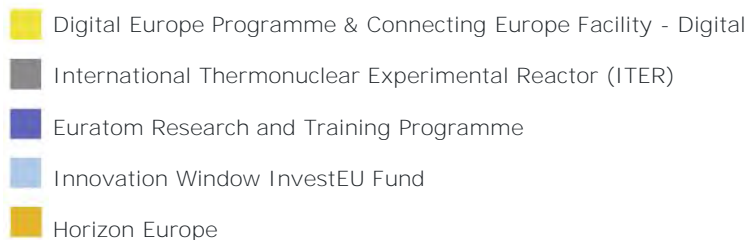
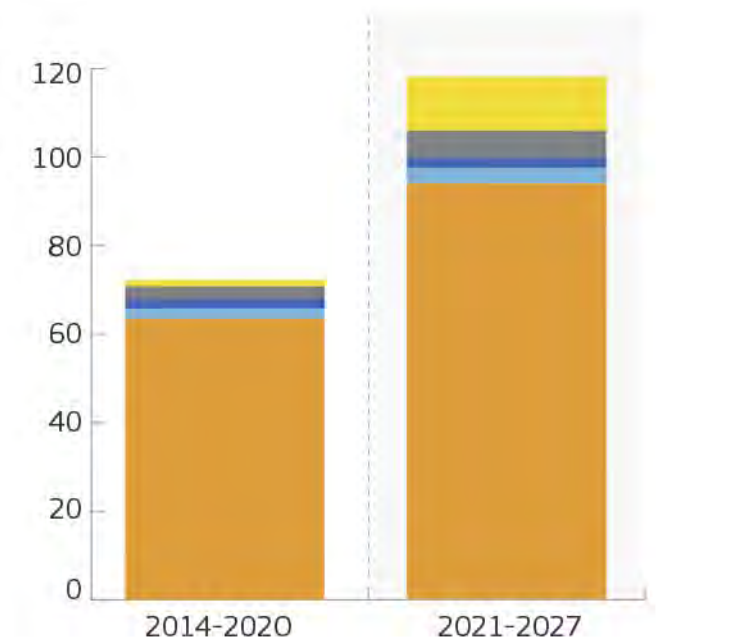


**1.3%**  
EU business  
R&D  
investment

**...Europe can do better at transforming this into leadership in innovation and entrepreneurship**

# The next long-term EU budget (2021-2027):

## Investing in the future



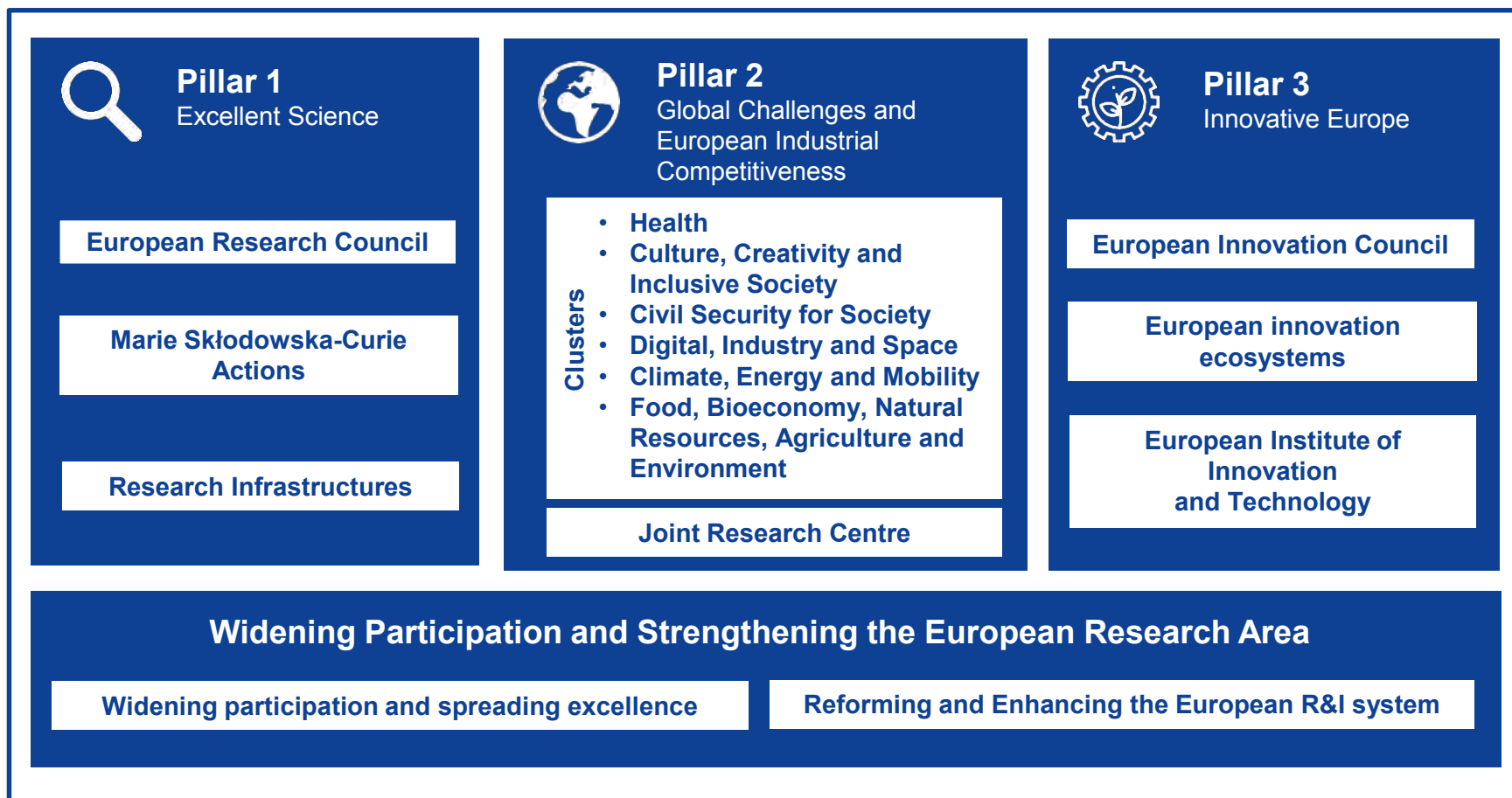
Source: European Commission  
Note: Compared to the Multiannual Financial Framework 2014-2020 at EU-27 (estimate)

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.

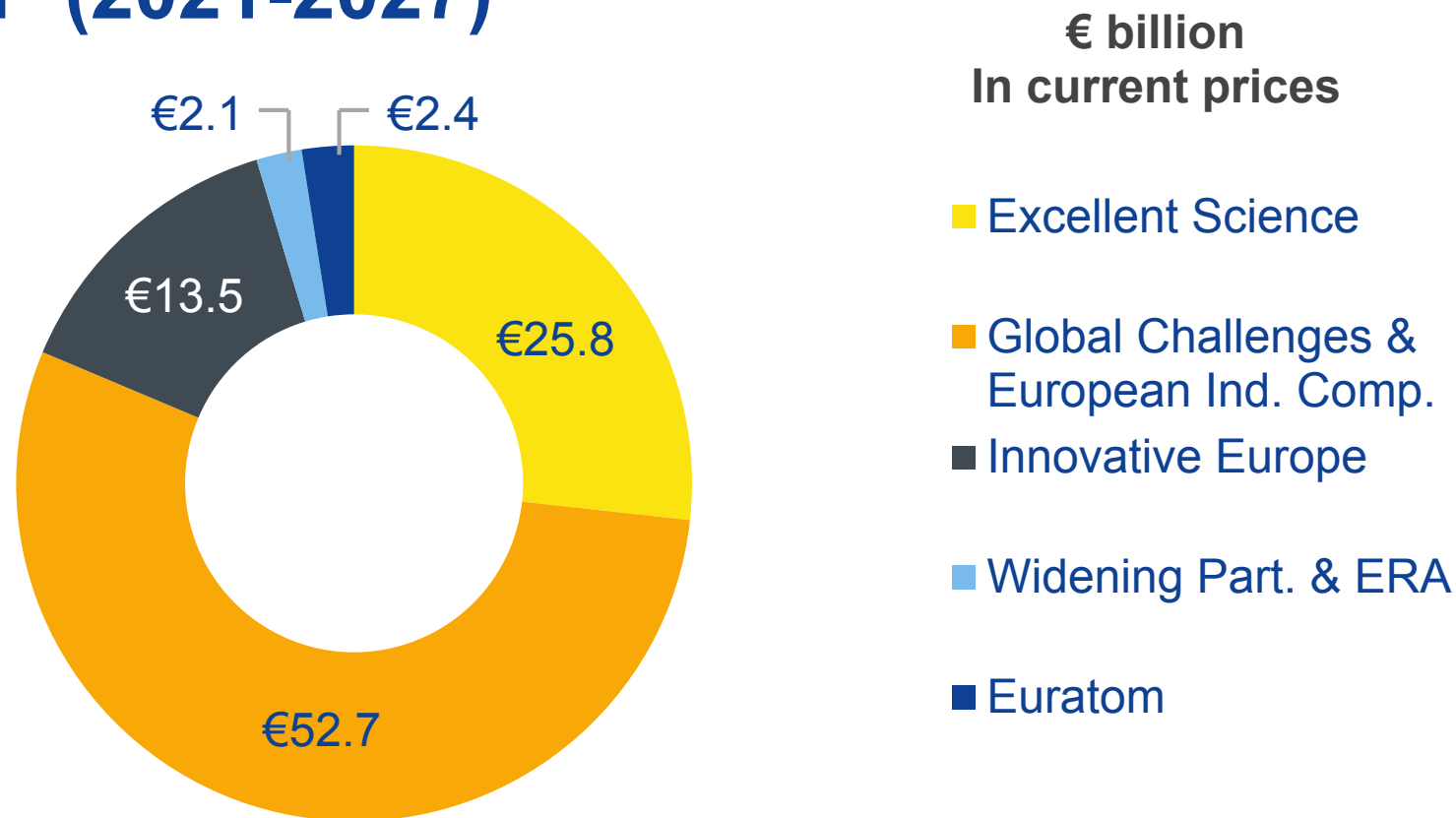


# Horizon Europe – Structure

# Horizon Europe: Preliminary structure



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



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



## Pillar 1

# EXCELLENT SCIENCE:

reinforcing and extending the excellence of the Union's science base

### European Research Council

- Frontier research by the best researchers and their teams

**Commission proposal:**  
**€ 16.6 billion**

### Marie Skłodowska-Curie Actions

- Equipping researches with new knowledge and skills through mobility and training

**Commission proposal:**  
**€ 6.8 billion**

### Research Infrastructures

- Integrated and inter-connected world-class research infrastructures

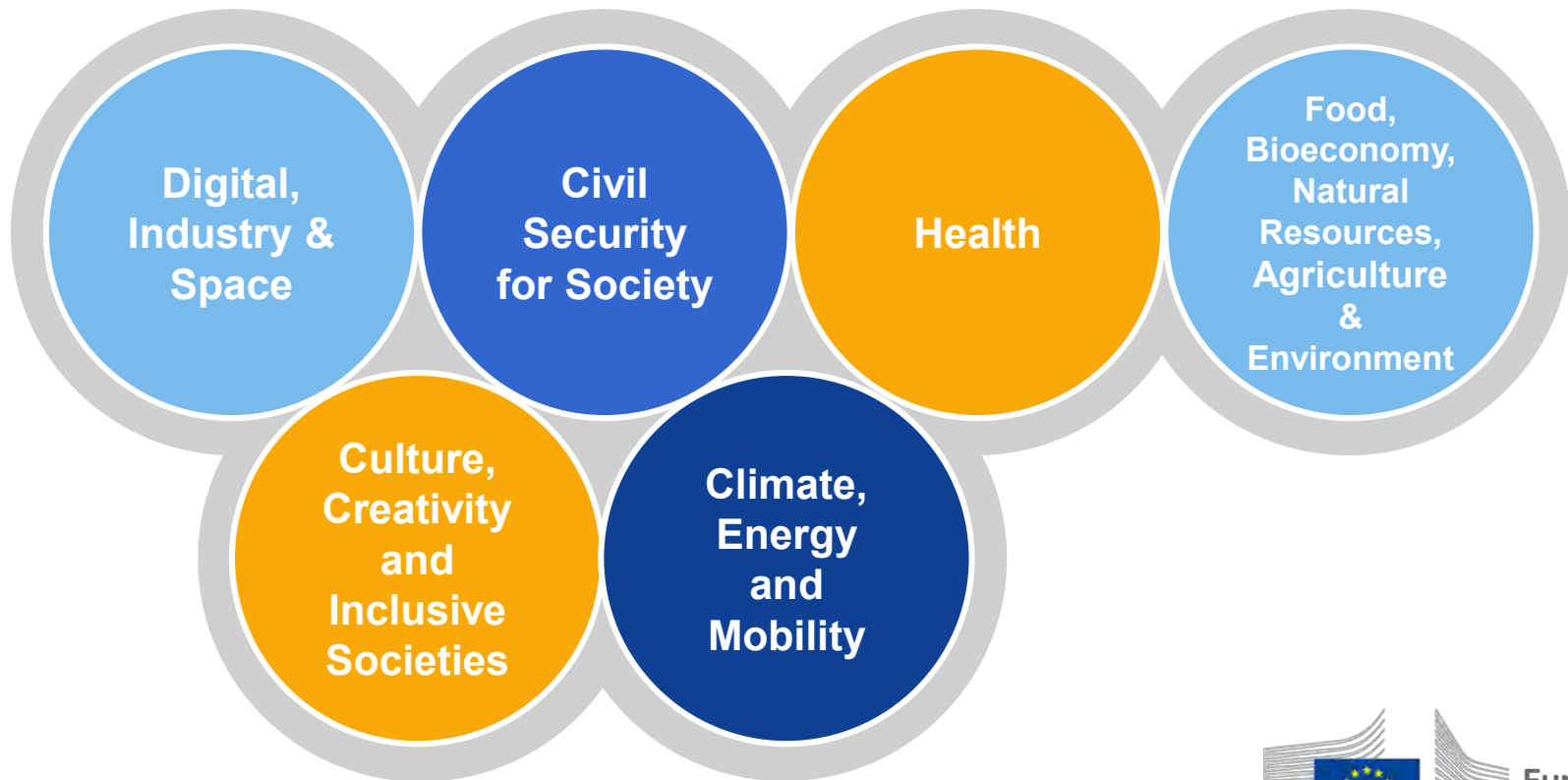
**Commission proposal:**  
**€ 2.4 billion**

## Pillar 2 - Clusters

# Global Challenges & European Industrial

**Competitiveness:** boosting key technologies and solutions underpinning EU policies & Sustainable Development Goals

**Commission proposal for budget: € 52.7 billion**



# Clusters in 'Global Challenges and European Industrial Competitiveness'

Clusters	Areas of intervention	
<b>Health</b>	<ul style="list-style-type: none"> <li>• Health throughout the life course</li> <li>• Non-communicable and rare diseases</li> <li>• Tools, technologies and digital solutions for health and care, including personalised medicine</li> </ul>	<ul style="list-style-type: none"> <li>• Environmental and social health determinants</li> <li>• Infectious diseases, including poverty-related and neglected disease</li> <li>• Health care systems</li> </ul>
<b>Culture, creativity and inclusive society</b>	<ul style="list-style-type: none"> <li>• Democracy and Governance</li> <li>• Social and economic transformations</li> </ul>	<ul style="list-style-type: none"> <li>• Culture, cultural heritage and creativity</li> </ul>
<b>Civil security for society</b>	<ul style="list-style-type: none"> <li>• Disaster-resilient societies</li> <li>• Protection and Security</li> </ul>	<ul style="list-style-type: none"> <li>• Cybersecurity</li> </ul>
<b>Digital, Industry and space</b>	<ul style="list-style-type: none"> <li>• Manufacturing technologies</li> <li>• Advanced materials</li> <li>• Next generation internet</li> <li>• Circular industries</li> <li>• Space, including Earth Observation</li> <li>• Emerging enabling technologies</li> </ul>	<ul style="list-style-type: none"> <li>• Key digital technologies, including quantum technologies</li> <li>• Artificial Intelligence and robotics</li> <li>• Advanced computing and Big Data</li> <li>• Low-carbon and clean industry</li> <li>• Emerging enabling technologies</li> </ul>
<b>Climate, Energy and Mobility</b>	<ul style="list-style-type: none"> <li>• Climate science and solutions</li> <li>• Energy systems and grids</li> <li>• Communities and cities</li> <li>• Industrial competitiveness in transport</li> <li>• Smart mobility</li> </ul>	<ul style="list-style-type: none"> <li>• Energy supply</li> <li>• Buildings and industrial facilities in energy transition</li> <li>• Clean, safe and accessible transport and mobility</li> <li>• Energy storage</li> </ul>
<b>Food, bioeconomy, natural resources, agriculture and environment</b>	<ul style="list-style-type: none"> <li>• Environmental observation</li> <li>• Agriculture, forestry and rural areas</li> <li>• Circular systems</li> <li>• Food systems</li> </ul>	<ul style="list-style-type: none"> <li>• Biodiversity and natural resources</li> <li>• Seas, oceans and inland waters</li> <li>• Bio-based innovation systems in the EU Bioeconomy</li> </ul>



# 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)

Más info: [https://ec.europa.eu/info/horizon-europe-next-research-and-innovation-framework-programme/missions-horizon-europe\\_en](https://ec.europa.eu/info/horizon-europe-next-research-and-innovation-framework-programme/missions-horizon-europe_en)

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

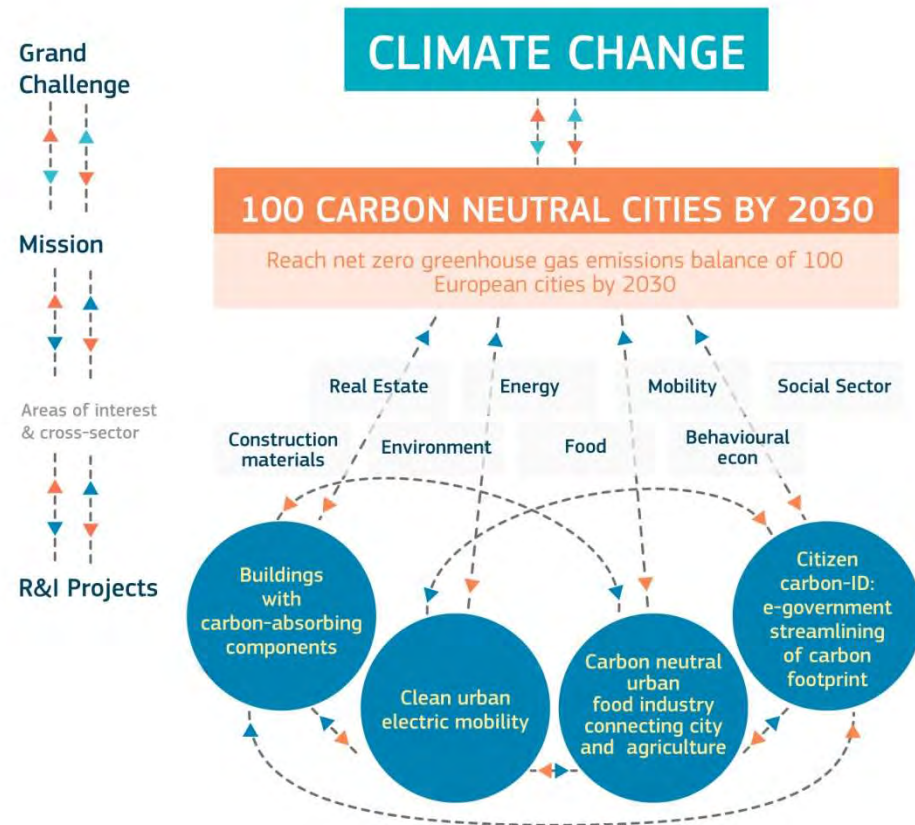


<https://www.youtube.com/watch?v=ciz0M1p-OWY>



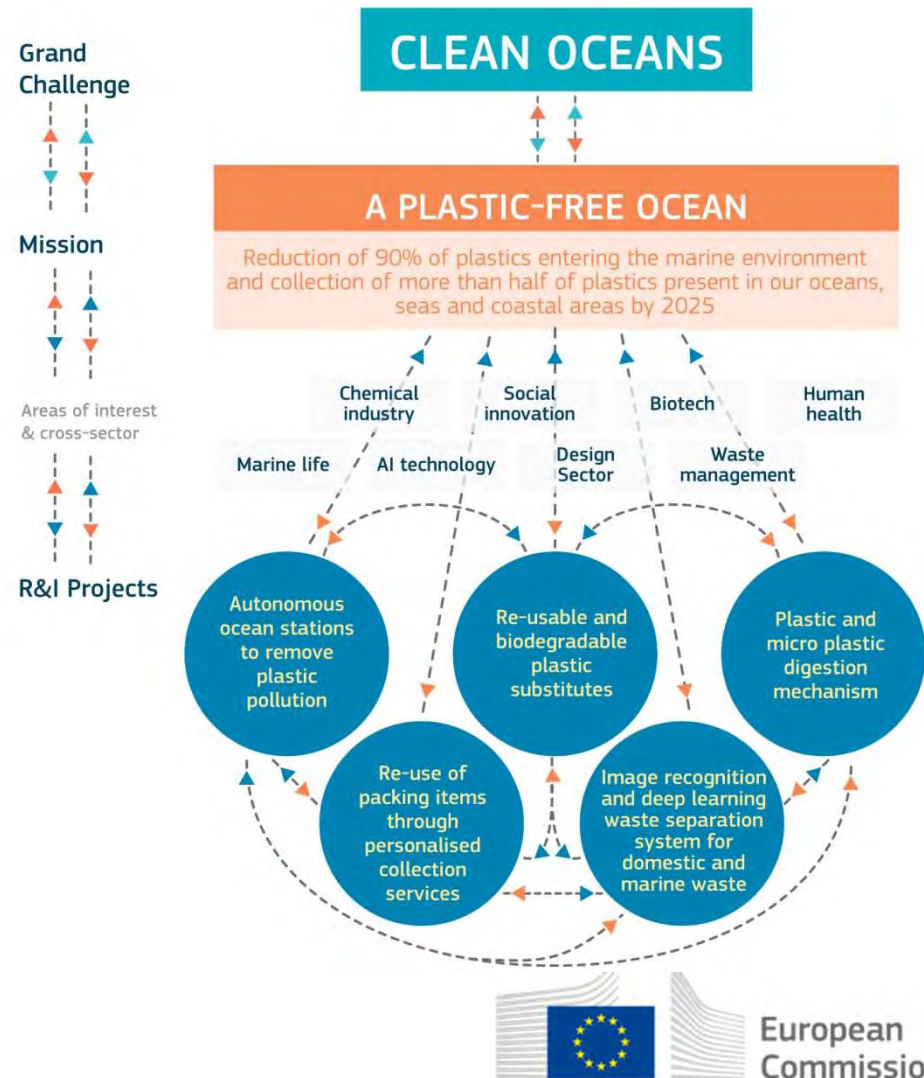
## FUTURE EXAMPLE: 100 Carbon Neutral Cities by 2030

1. Impact 40% of European citizens
2. 100 cities by 2030
3. R&I in Construction materials – mobility – citizen carbon-ID
4. Urban planning- energy efficiency – mobility-behavioural economics
5. Simultaneous projects ->



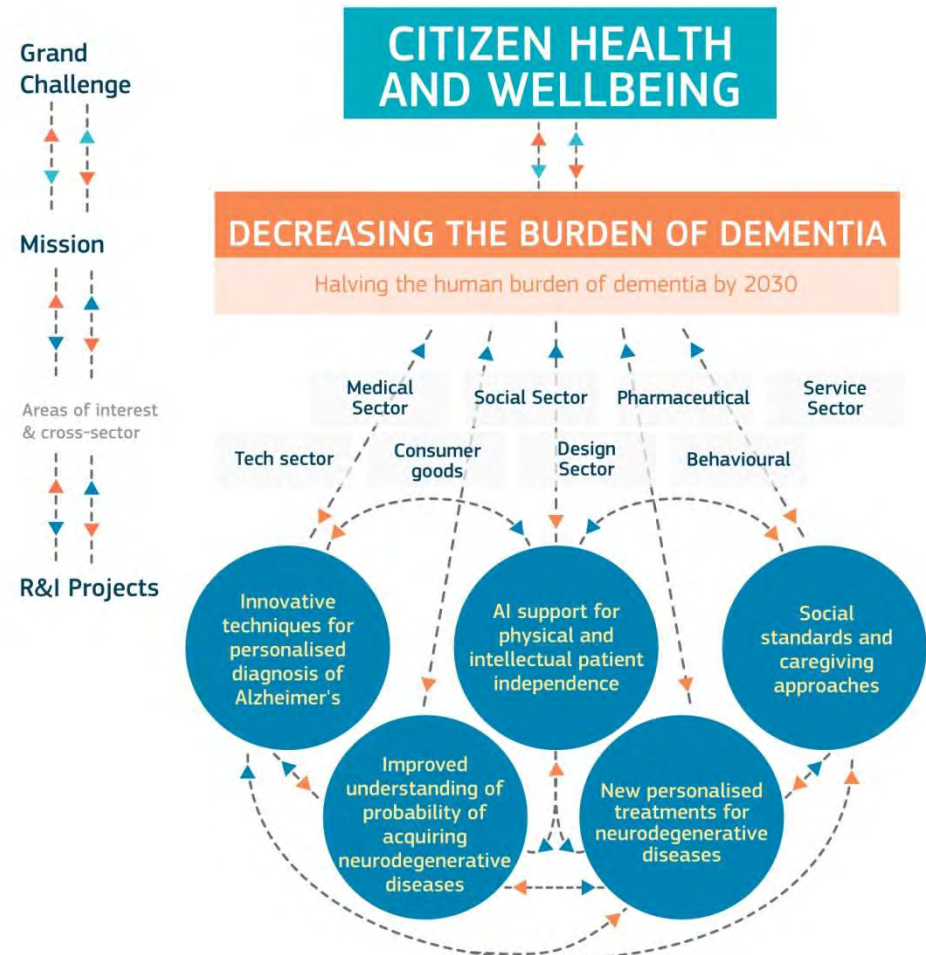
## FUTURE EXAMPLE: A Plastic-free Ocean

1. Solve 25 mil tons of European plastic waste
2. Stop 7.2 mil tons and collect 2 mil tons of plastic by 2025
3. R&I in plastic chemistry-packaging – collection stations
4. Chemical – biotech – marine life – waste
5. Simultaneous projects ->



## FUTURE EXAMPLE: Decreasing the burden of Dementia

1. Currently 10.5 mil Europeans affected
2. Reduce by 50% the progression of the disease by 2030
3. R&I on brain-science – treatments – artificial intelligence
4. Medical – Tech – Social – Design
5. Simultaneous projects ->



## Pillar 3

# INNOVATIVE EUROPE:

stimulating market-creating breakthroughs and ecosystems conducive to innovation

### European Innovation Council

- Support to innovations with breakthrough and market creating potential

**Commission proposal: € 10.5 billion, incl. up to € 500 million for ecosystems**

### European innovation ecosystems

- Connecting with regional and national innovation actors

### European Institute of Innovation and Technology (EIT)

- Bringing key actors (research, education and business) together around a common goal for nurturing innovation

**Commission proposal: € 3 billion**



# European Innovation Council

Support to innovations with breakthrough and disruptive nature and scale up potential that are too risky for private investors (**70% of the budget earmarked for SMEs**)

**European  
Innovation Council  
– a one-stop-shop**

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 only & blended finance**  
(from pre-commercial  
to market & scale-up)



# **Widening Participation and Strengthening the European Research Area:** optimising strengths & potential for a more innovative Europe

## **Widening Participation and Spreading Excellence, e.g.**

- Teaming & twinning
- ERA Chairs
- COST
- Support to NCPs
- Brain circulation and excellence initiatives
- “Hop-on“

**Common understanding: At least 3.3 % of Horizon Europe budget**

## **Reforming and enhancing the European R&I system**

- Scientific evidence & foresight
- Open Science
- Policy Support Facility
- Attractive researcher careers
- Citizen science, Responsible Research & Innovation
- Gender equality



# New approach to European Partnerships

New generation of objective-driven and more ambitious partnerships in support of agreed EU policy objectives

## Key features

- Simple architecture and toolbox
- Coherent life-cycle approach
- Strategic orientation

### Co-programmed

Based on Memoranda of Understanding / contractual arrangements; implemented independently by the partners and by Horizon Europe

### Co-funded

Based on a joint programme agreed and implemented by partners; commitment of partners for financial and in-kind contributions

### Institutionalised

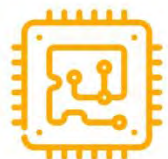
Based on long-term dimension and need for high integration; partnerships based on Articles 185 / 187 of TFEU and the EIT-Regulation supported by Horizon Europe

Health  
innovations



Sustainable  
bio-based  
solutions

Key digital  
and enabling  
technologies



Hydrogen  
and  
sustainable  
energy  
storage

Metrology



Clean,  
connected  
mobility

EU air  
traffic,  
aviation  
and rail



Innovative  
SMEs

Areas for  
possible  
Institutionalised  
European  
partnerships  
(based on Article  
185/7 TFEU)



European  
Commission



# International Cooperation

## International Cooperation

Tackling together global societal challenges; access to the world's best talents, expertise and resources; enhanced supply and demand of innovative solutions

### Extended openness to association

- Third countries with good capacity in science, technology and innovation
- Taking into account objective of driving economic growth in Europe through innovation
- General opening for international participation
- Intensified targeted actions (flagship initiatives, joint calls, etc.)



# Open Science across the programme

## Open Science

Better dissemination and exploitation of R&I results and support to active engagement of society

**Mandatory Open Access to publications:** beneficiaries shall ensure that they or the authors retain sufficient intellectual property rights to comply with open access requirements

**Open Access to research data ensured:** in line with the principle "as open as possible, as closed as necessary"; Mandatory Data Management Plan for FAIR (Findable, Accessible, Interoperable, Re-usable) and Open Research Data

- Support to researcher skills and reward systems for open science
- Use of European Open Science Cloud



# Open Science across the programme

[https://ec.europa.eu/info/sites/info/files/research\\_and\\_innovation/knowledge\\_publications\\_tools\\_and\\_data/documents/ec\\_rtd\\_factsheet-open-science\\_2019.pdf](https://ec.europa.eu/info/sites/info/files/research_and_innovation/knowledge_publications_tools_and_data/documents/ec_rtd_factsheet-open-science_2019.pdf)

## The eight ambitions of Open Science

- 1.-**Open Data:** FAIR (Findable, Accessible, Interoperable and Re-usable data) and open data sharing should become the default for the results of EU-funded scientific research.
- 2.-**European Open Science Cloud (EOSC):** a 'federated ecosystem of research data infrastructures' will allow the scientific community to share and process publicly funded research results and data across borders and scientific domains.
- 3.-**New Generation Metrics:** New indicators must be developed to complement the conventional indicators for research quality and impact, so as to do justice to open science practices.
- 4.-**Future of scholarly communication:** all peer-reviewed scientific publications should be freely accessible, and the early sharing of different kinds of research outputs should be encouraged.
- 5.-**Rewards:** research career evaluation systems should fully acknowledge open science activities.
- 6.-**Research integrity:** all publicly funded research in the EU should adhere to commonly agreed standards of research integrity.
- 7.-**Education and skills:** all scientists in Europe should have the necessary skills and support to apply open science research routines and practices.
- 8.-**Citizen science:** the general public should be able to make significant contributions and be recognised as valid European science knowledge producers.

# 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



Encourage participation



Spreading Excellence

# Euratom research and training programme (2021-2025)

## ■ Objective

Research and training activities to reduce nuclear safety and security risks, development of safe nuclear technologies and optimal radiation protection.

## ■ Key novelties

- Increased focus on non-power applications of radiation (medical, industrial, space)
  - Opening mobility opportunities for nuclear researchers through inclusion in Marie Skłodowska-Curie Actions
  - Simplification: Specific objectives from currently 14 to 4, covering both direct actions (implemented by JRC) and indirect actions
- **Commission proposal for budget:** € 2.4 billion (2021-2027)

# InvestEU for Research and Innovation (R&I)

**Stimulates more investment in research and innovation**, notably by the private sector; leverages and complements national/regional initiatives

**No market distortion:** intervention only to address financing gaps in the R&I delivery chain (notably due to high risk)

Support through:

- **InvestEU Fund**
- **InvestEU Assistance**
- **InvestEU Portal**

Leverages an estimated **€ 200 bn** of investments into R&I; **market-based finance** for the exploitation and scale-up of European R&I

# Horizon Europe – How?

# Simple and fit for purpose rules

- Further alignment to the Financial Regulation
- Increased use of **simplified forms of grants** where appropriate (building on the H2020 lump sum pilot experience)
- Broader acceptance of **usual cost accounting practices**
- Enhanced **cross-reliance on audits** benefiting beneficiaries taking part in several Union programmes

## **while ensuring continuity and consistency for beneficiaries by maintaining**

- Attractive H2020 funding model, including up to 100% funding rate of direct costs
- Single set of rules principle



# Commission proposal for synergies with other Union programmes

Horizon Europe



## Other Union Programmes, including

Common Agricultural Policy  
ERDF  
External Instrument  
Maritime & Fisheries Fund  
InvestEU

LIFE  
Connecting Europe Facility  
ESF+  
Digital Europe  
Space Programme

Erasmus  
Innovation Fund  
Internal Security Fund  
Single Market 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



European  
Commission

# **Implementation Strategy** to shift the focus from administration to content

- **Enhancing synergies with other EU programmes**
- **Simplifying the model grant agreements and guidance to be beneficiaries**
- **Funding and tenders portal – one-stop-shop for easy access to EU funding and project implementation**

**Early consultation with stakeholders/programme  
ready to start in 2021**

# Thank you!

#HorizonEU

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