



# Horizon Europe - the next EU Framework Programme for Research and Innovation 2021- 2027

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# 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**

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

# Horizon Europe – Why?

# Horizon Europe: investing in R&I to shape our future

- The vision:  
"a Europe that protects,  
a Europe that empowers,  
a Europe that defends"  
*Jean-Claude Juncker*
- Tackling **climate change**  
(35 % budgetary target)
- Helping to achieve **Sustainable Development Goals**
- Boosting the Union's  
**competitiveness and growth**

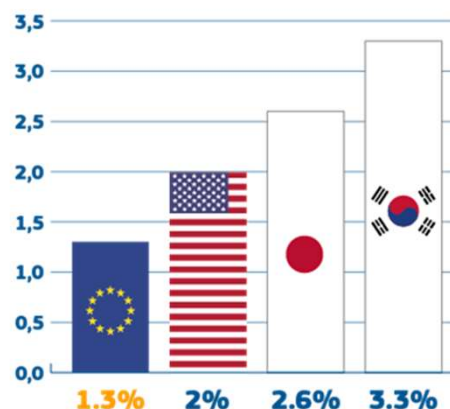


Credits: <https://www.un.org/sustainabledevelopment/sustainable-development-goals/>

## 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 fails to transform  
leadership in science into  
leadership in innovation  
and entrepreneurship**

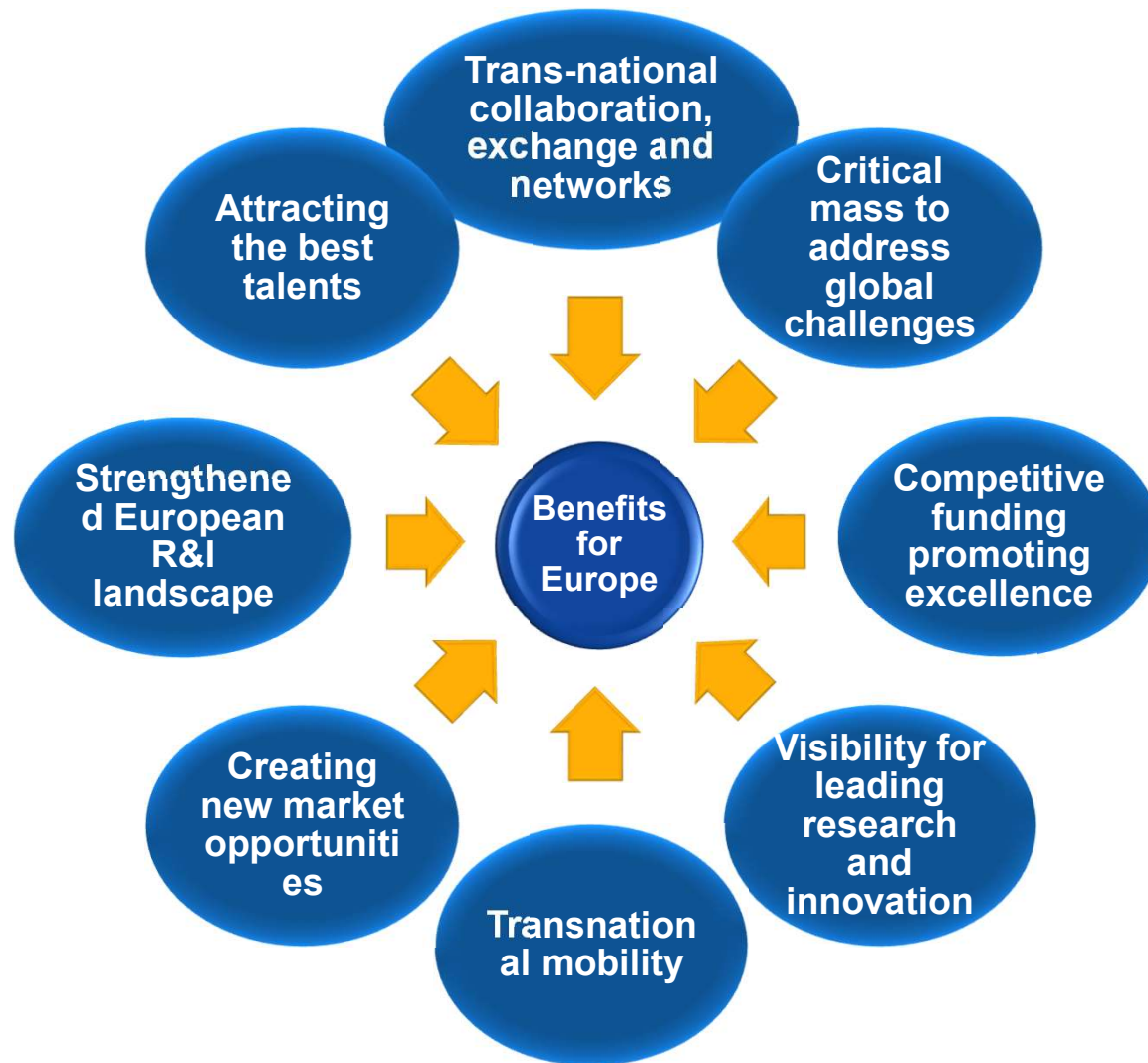
# We need a new level ambition and a renewed R&I agenda to be in pole position

- Ensuring essential investment and stimulating private investment
- Making regulatory frameworks fit for innovation
- Becoming a front runner in market-creating innovation
- Reconnecting R&I with citizens through EU-wide R&I missions
- Supporting the dissemination of innovation throughout the Union
- Investing in skills and empower universities to become more entrepreneurial and interdisciplinary





# Added value through Horizon Europe:

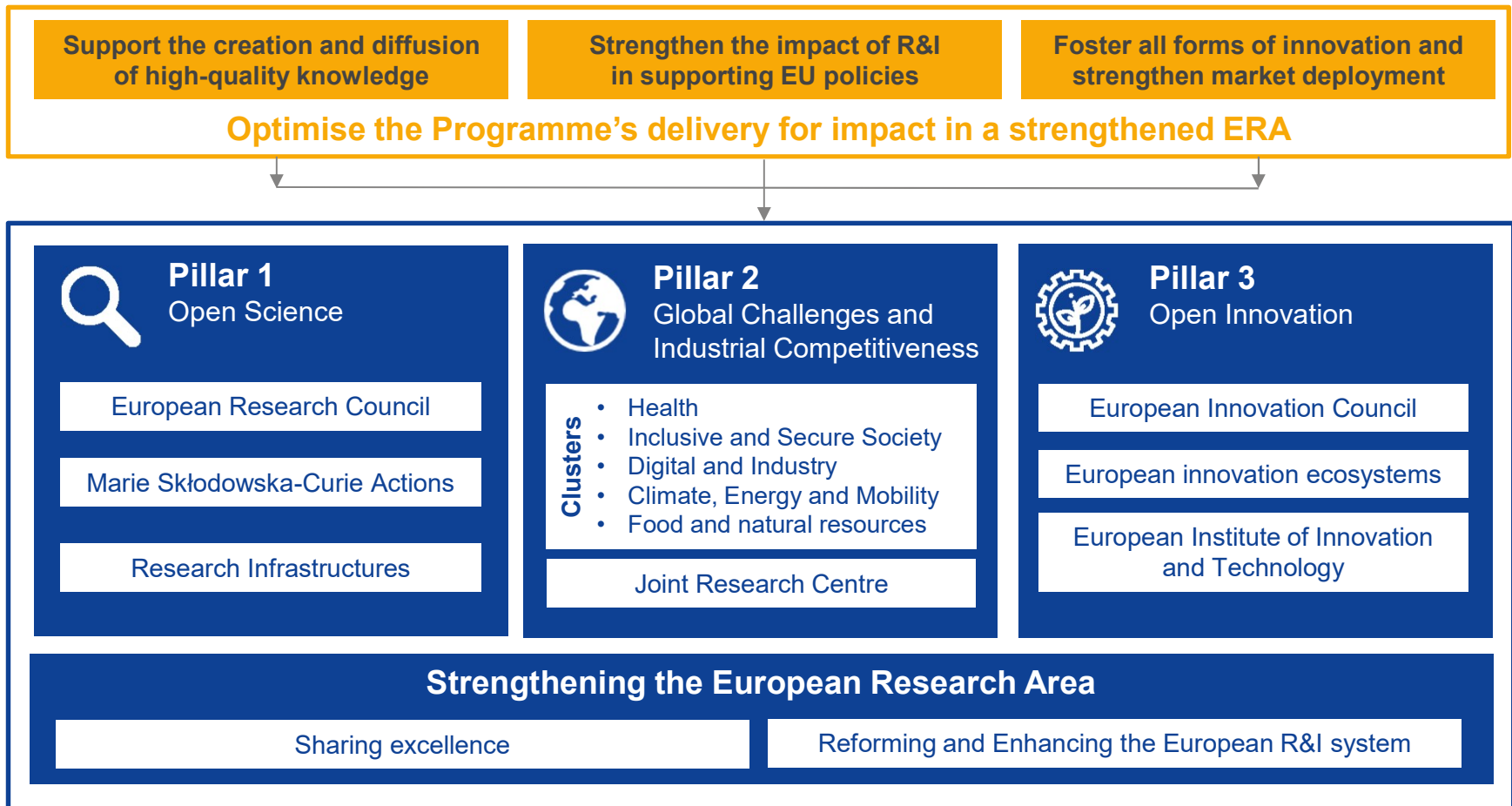


# Horizon Europe – What?

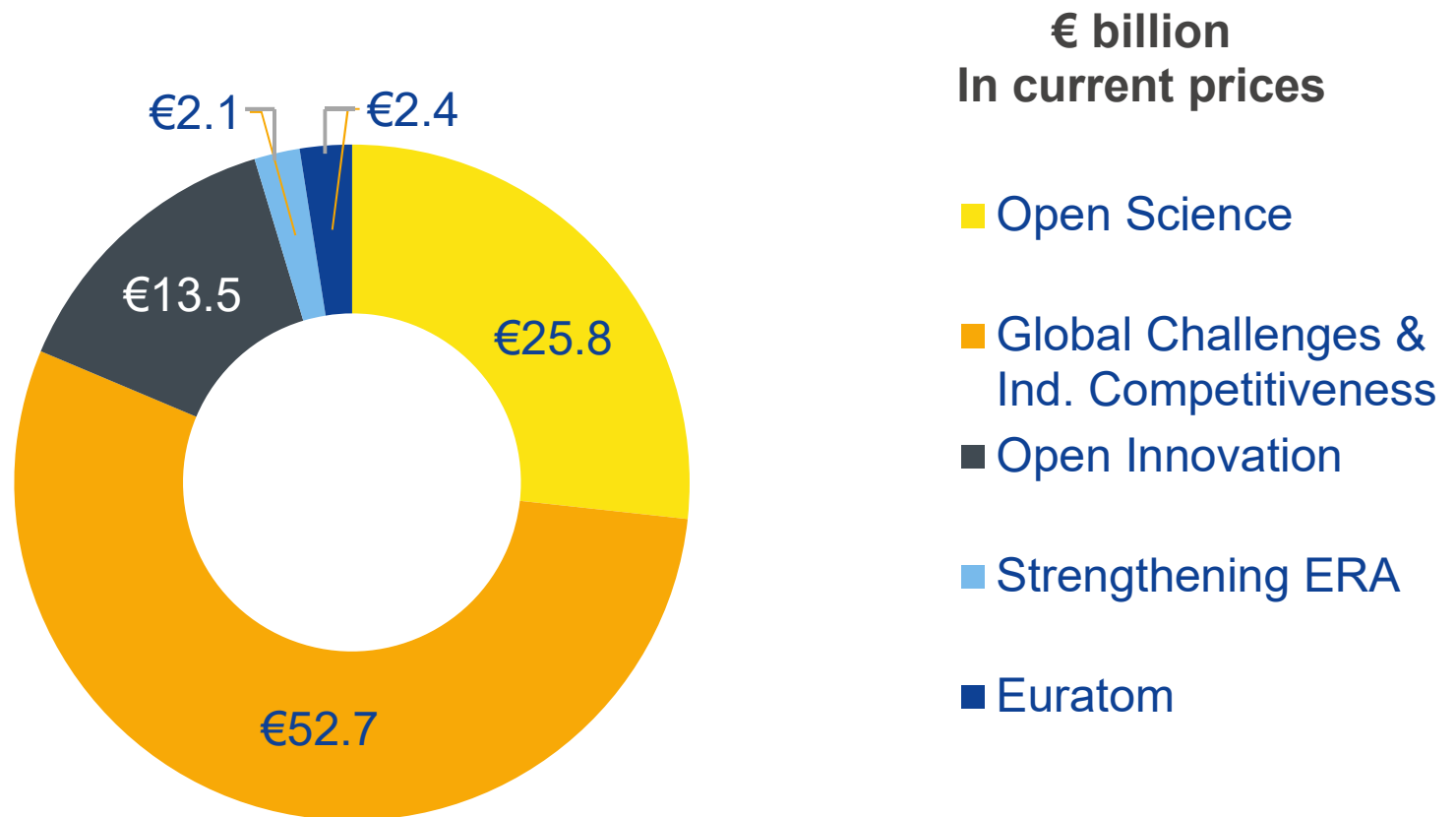


# Horizon Europe: evolution not revolution

## Specific objectives of the Programme



# Budget: €100 billion\* (2021-2027)



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

# Horizon Europe – What's new?

# Lessons Learned

## from Horizon 2020 Interim Evaluation



Support breakthrough innovation



Create more impact through mission-orientation and citizens' involvement



Strengthen international cooperation



Reinforce openness



Rationalise the funding landscape



# Key Novelties

## in Horizon Europe

European Innovation Council

R&I Missions

Extended association possibilities

Open science policy

New approach to Partnerships



# 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)





# 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)



# 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 must ensure the existence of sufficient rights to comply with open access requirements
- **Mandatory Data Management Plan for FAIR (Findable, Accessible, Interoperable, Re-usable) and Open Research Data :** for all research data with possibilities to opt-out from open access requirements
- Support to researcher skills in and reward systems for open science
- Use of European Open Science Cloud



# 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 by partners; commitment of partners for financial and in-kind contributions & financial contribution by Horizon Europe

### 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

## Pillar 1

# OPEN SCIENCE:

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

### European Research Council

- Frontier research by the best researchers and their teams

**€ 16.6 billion**

### Marie Skłodowska-Curie Actions

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

**€ 6.8 billion**

### Research Infrastructures

- Integrated and inter-connected world-class research infrastructures

**€ 2.4 billion**



## Pillar 2

# Global Challenges & Industrial Competitiveness:

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

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

### Pillar 3

## OPEN INNOVATION:

stimulating market-creating breakthroughs and ecosystems conducive to innovation

### European Innovation Council

- Support to innovations with breakthrough and market creating potential

**€ 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

**€ 3 billion**

# Strengthening the European Research Area:

optimising strengths & potential for a more innovative Europe

## Sharing Excellence

- Teaming  
(institution building)
- Twinning  
(institutional networking)
- ERA Chairs
- COST

**€ 1.7 billion**

## 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

**€ 0.4 billion**

**Budget doubled**

# InvestEU for Research and Innovation (R&I)

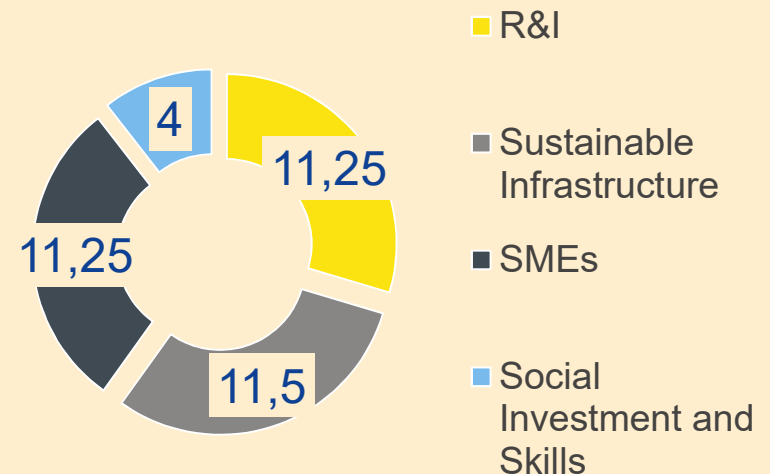
**Stimulates more investment in research and innovation**, notably by the private sector; leverages and complements national/regional initiatives

**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**

Invest EU's 4 investment windows:  
budgetary guarantees in billion €



➔ 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
- Single set of rules principle

# Synergies with other Union programmes

## Horizon Europe



**Other Union Programmes, including**

- Common Agricultural Policy
- ERDF
- External Instrument
- Maritime & Fisheries Fund
- InvestEU
- Erasmus
- LIFE
- Connecting Europe Facility
- ESF+
- Digital Europe
- Space Programme
- 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

# **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**

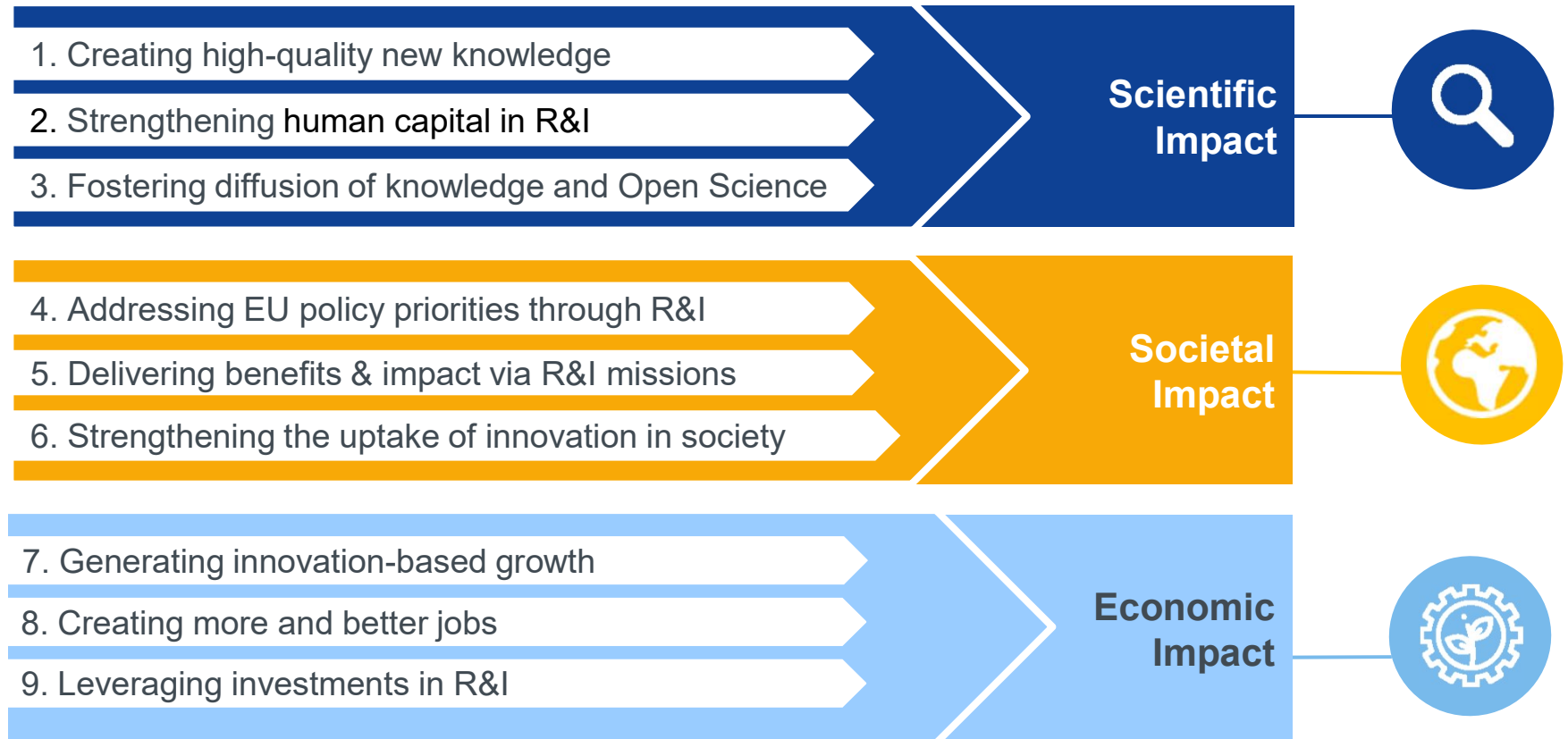
**\* Areas for partnerships and missions**

Strategic discussions with Member States and European Parliament

Consultation with stakeholders

## **Work Programmes**

# Key impact pathways to track progress



# Cluster 1: Health



# Aligned with major European policy goals...

- EU Pillar of Social Rights
- EU Digital Single Market
- EU Directive on cross-border healthcare
- European One Health Action Plan against antimicrobial resistance (AMR)

## ...and with global strategies

- United Nation's 2030 Agenda for Sustainable Development
- World Health Organization (WHO)



# CLUSTER 1: Health

## Sustainable Development Goals



# CLUSTER 1: Health

## Facts and figures on health

- Health care expenditure of EU countries is steadily increasing and now accounts for **nearly 10% of GDP**, as a result of increasing prevalence of chronic diseases due to unhealthy lifestyles and an ageing population.
- Avoidable environmental factors cause **1.4 million deaths** yearly in the EU.
- Infections resistant to antimicrobials (AMR) cause **25'000 deaths** yearly in the EU and **700'000 deaths** globally.
- Life expectancy in some EU countries is **six years lower** than the average.
- EU healthcare industry accounts for **3% of GDP and 1.5 million employees**.

# Six main areas of intervention



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



# Next steps



# Horizon 2020

## Work Programme 2018-2020

### *15. Spreading Excellence and Widening Participation*

#### BRIDGING THE RESEARCH AND INNOVATION DIVIDE IN EUROPE

##### HOW MUCH?

Over €800 m for Widening until 2020

##### GOALS?

- » Increase H2020 participation rates in low R&I performing countries
- » Increase capability to compete for international research funding
- » Facilitate new partnerships with leading international institutions

##### HORIZON 2020 WIDENING MEASURES TO MAXIMISE R&I EXCELLENCE ACROSS EUROPE



##### WHAT'S BEING DONE?

*Three main tools*

**teaming:** create centres of excellence

So far:

- ✓ 61 projects (Phase 1) funded - €26 m
- ✓ 24 projects (Phase 2) funded - €350 m

**twinning:** link up with leading counterparts

So far:

- ✓ 134 projects funded - €127 m

**ERA chairs:** attract outstanding academics

So far:

- ✓ 37 projects funded - €91,5 m

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## Towards outstanding research and training in tumour biology at IMM

Fact Sheet Reporting Results

### Objective

Cancer is a major societal health issue in Europe. In 2012, cancer accounted for around 1.3 million deaths and an estimated economic impact of around € 126 billion in the European Union (EU). The Instituto de Medicina Molecular (IMM) aims to fight this destructive disease by reinforcing its capacity for outstanding pre-clinical and translation research, and by creating a dynamic cluster of excellence within the Lisbon region in the field of cancer research. Towards this goal, IMM is building up a network for outstanding research and innovation with two leading research institutes, the Institut Curie (the largest European cancer research centre), and the DKFZ - Deutsches Krebsforschungszentrum (the largest cancer research institute in Germany), the ReTuBi consortium. ReTuBi targets 4 specific scientific areas: Cancer Stem Cells; Cancer Signalling; Cancer Invasion and Metastasis; and Tumour Angiogenesis. ReTuBi is designed to stimulate the establishment of novel and long-lasting interactions between groups at IMM, Institut Curie and DKFZ. The dynamic and intensive research framework is focused on promoting the exchange of know-how in research excellence and cutting-edge technologies to tackle current and future challenges in tumour biology. Through this initiative, ReTuBi expects an increase of 30% in multiple indicators until 2020, including the number of citations per publication; h-index of IMM researchers; percentage of publications in top 10% impact journals; number of filed patents; and number of international collaborative projects. ReTuBi will also have an impact in the entire IMM community and Lisbon area, through organisation of open scientific meetings, summer schools, and workshops. ReTuBi extensive dynamic network of interactions will provide a channel of knowledge transfer to potentiate already existent scientific and innovative capacity within IMM, promoting an overall increase in competitiveness of Portugal and EU.

### Programme(s)

H2020-ELI-4.3 - Twinning of research institutions

### Topic(s)

H2020-TWINN-2015 - Twinning

### Call for proposal

H2020-TWINN-2015

### Project information

#### ReTuBi

Grant agreement ID: 692222

[Project website](#)

Status

Closed project

Start date

1 January 2016

End date

31 December 2018

Funded under:

H2020-ELI-4.3

Overall budget:

€ 999 975

EU contribution

€ 999 975

Coordinated by:  
INSTITUTO DE MEDICINA MM  
JOAO LORO ANTUNES  
Portugal



https://cordis.europa.eu/project/rcn/208421/factsheet/en

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## Establishment of a Center of Plant Systems Biology and Biotechnology for the translation of fundamental research into sustainable bio-based technologies in Bulgaria

Fact Sheet Reporting Results

### Objective

PlantaSYST aims at establishing a new Center of Plant Systems Biology and Biotechnology (CPSBB) in Plovdiv, Bulgaria. The CPSBB registered as an autonomous legal research entity during TEAMING Phase 1 and is firmly supported by the Bulgarian and German PlantaSYST partners, the Governments of Bulgaria and Germany, and the Plovdiv Municipality. CPSBB's mission is to position itself at the forefront of plant sciences in Bulgaria and South-East Europe. This will be achieved by building on the research and technological excellence of two strong partners from Potsdam, Germany: the University of Potsdam and the Max Planck Institute of Molecular Plant Physiology. Cutting-edge functional genomics, metabolomics and bioinformatics will be adopted to unravel the regulatory codes and metabolic pathways that govern plant development, stress physiology, and the production of valuable metabolites with potential market applications. Fundamental science, conducted in the CPSBB departments Plant Development, Molecular Stress Physiology, Metabolomics, and Bioinformatics, will feed into applied research of the departments Vegetable Breeding, Synthetic Biology, and Plant Cell Biotechnology. CPSBB provides the missing links between academia and industry in the region and will take a leading role in training next-generation researchers in crop systems biology and biotechnology. Thus, the CPSBB will fill the scientific and technological gaps identified in Bulgaria's Innovation Strategy for Smart Specialisation. The service-oriented CPSBB administration is designed to function efficiently following the example of the Max Planck Society in Germany, and a Technology Transfer Office will facilitate the flow of knowledge and technologies to partners and end-users. Overall, the newly established CPSBB will significantly increase Bulgaria's research and innovation potential, enhance the capacity in crop genomics, and stimulate the local scientific, economic, and social development in Plovdiv.

### Programme(s)

H2020-ELI-4.3 - Twinning of excellent research institutions and low performing RDI regions

### Topic(s)

WIDESPREAD-01-2016-2017 - Twinning Phase 2

### Call for proposal

H2020-WIDESPREAD-01-2016-2017-TwinningPhase2

### Project information

#### PlantaSYST

Grant agreement ID: 729582

[Project website](#)

Status

Ongoing project

Start date

1 March 2017

End date

29 February 2024

Funded under:

H2020-ELI-4.3

Overall budget:

€ 14 940 000

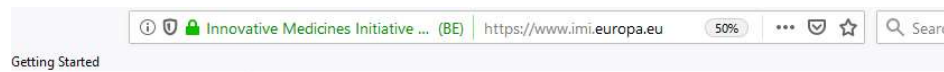
EU contribution

€ 14 940 000

Coordinated by:  
INSTITUTE OF MOLECULAR BIOLOGY AND BIOTECHNOLOGY  
Bulgaria



# Public-Private Partnerships Joint Undertakings



Europe's partnership  
for health

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We are an EU public-private partnership  
funding health research and innovation

€5.3bn  
BUDGET

121  
PROJECTS

2278  
PARTICIPANTS

>7 000  
PROJECT OUTPUT

https://www.bbi-europe.eu | 80%



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Bio-based Industries Joint Undertaking: a €3.7 billion partnership between  
the EU and the Bio-based Industries Consortium

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## Our Vision

From fossil-based to bio-based  
products 'Made in Europe'

New markets for a resource  
efficient low carbon economy



European  
Commission

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**Horizon Europe dedicated website**

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

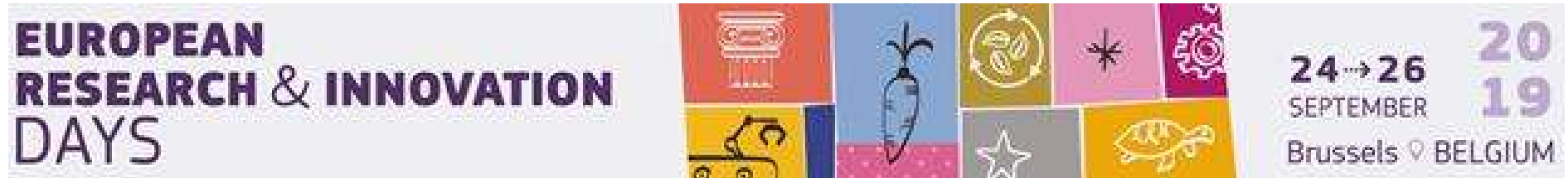
**European Innovation Council**

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

**EU budget for the future**

[http://ec.europa.eu/budget/mff/index\\_en.cfm](http://ec.europa.eu/budget/mff/index_en.cfm)

[https://ec.europa.eu/info/research-and-innovation/events/upcoming-events/european-research-and-innovation-days\\_en](https://ec.europa.eu/info/research-and-innovation/events/upcoming-events/european-research-and-innovation-days_en)





# Thank you!

#HorizonEU

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