

Commission proposal for **Horizon Europe**

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

#HorizonEU



This presentation does not engage the European Commission.
Please refer to official documents

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

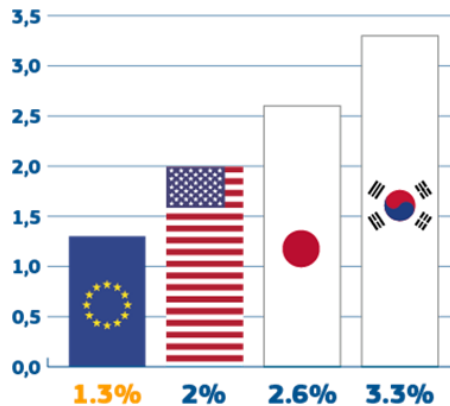
- The vision:
" a Europe that protects,
a Europe that empowers,
a Europe that defends"
Jean-Claude Juncker
- Tackling **climate change**
(35 % budgetary target)
- Helping to achieve **Sustainable Development Goals**
- Boosting the Union's
competitiveness and growth



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

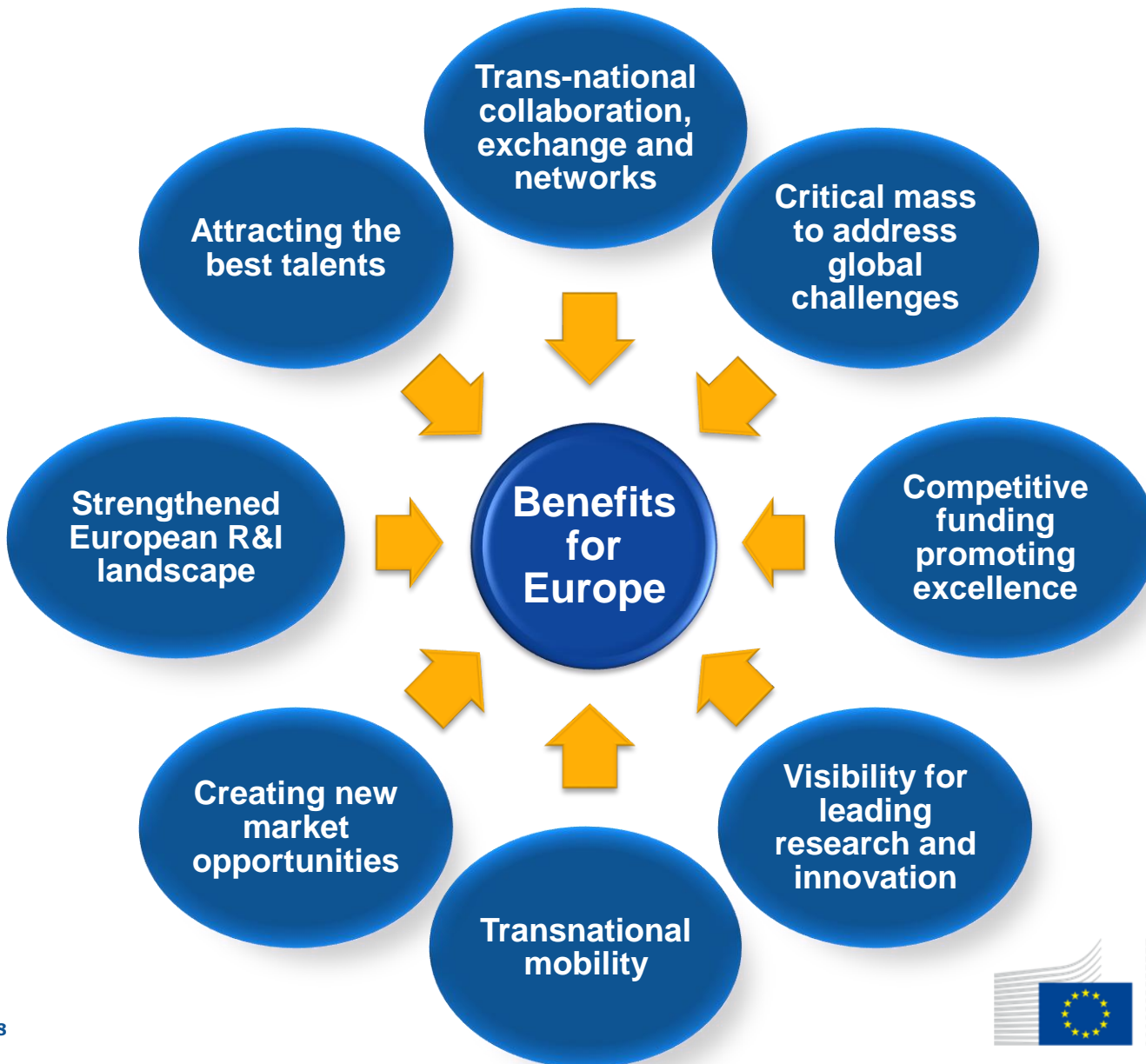
...Europe fails to transform leadership in science into leadership in innovation and entrepreneurship

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



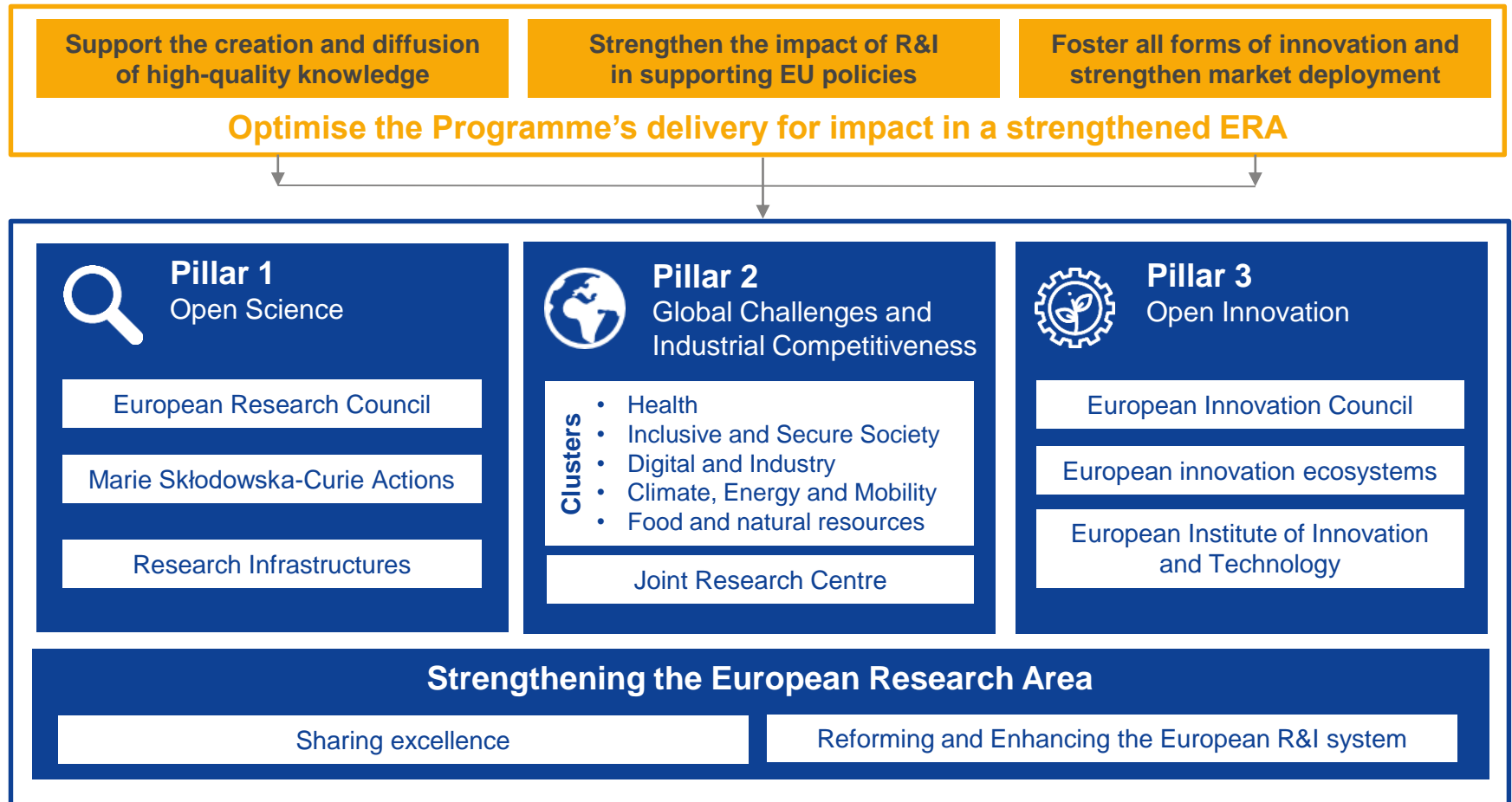
Added value through Horizon Europe:



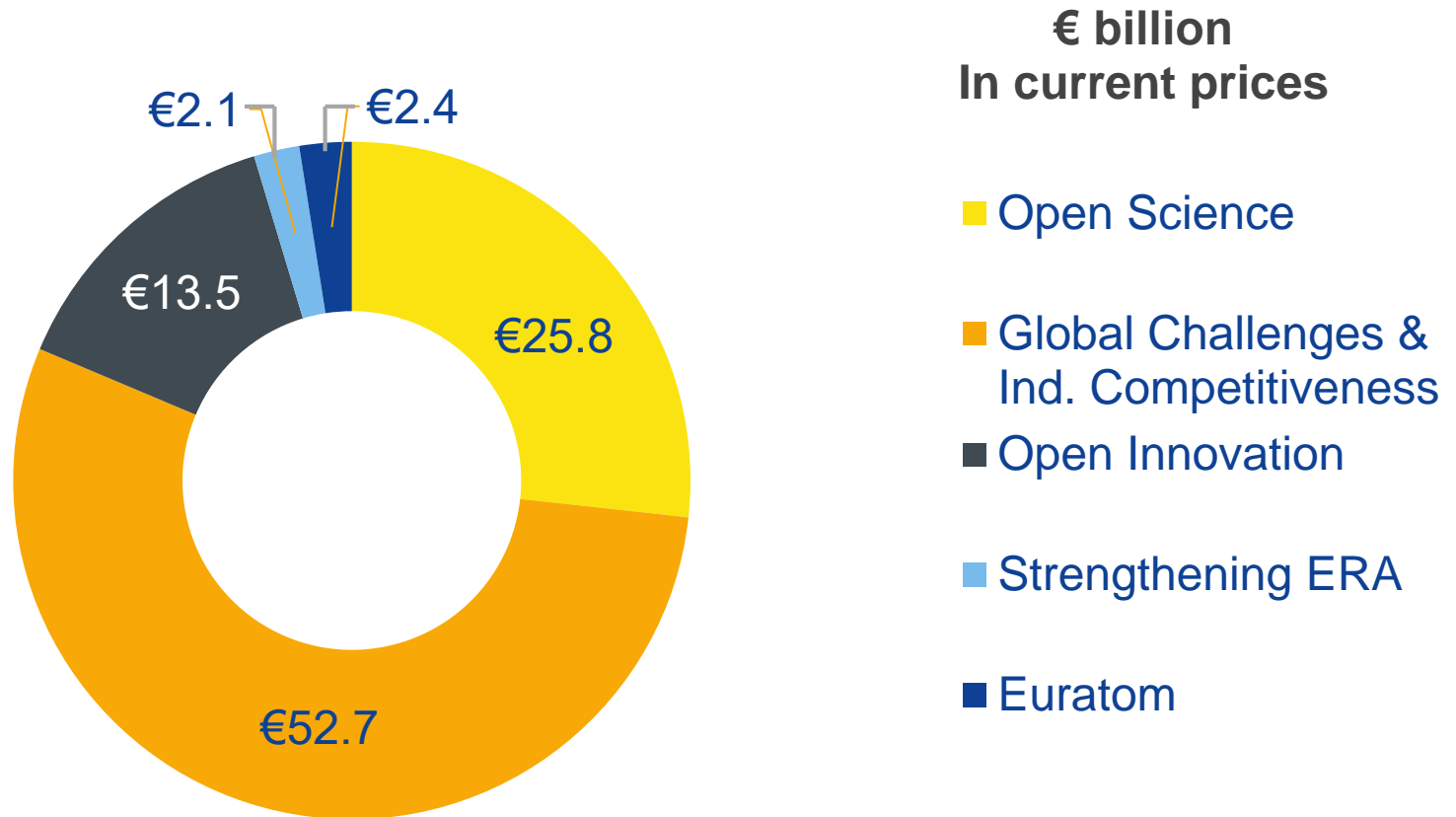
Horizon Europe – What?

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, proactive 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

Horizon Europe – In detail

“
**We built a four wheel drive nano-car.
It would not have been possible
without the ERC funding.**
”

Prof. Ben Feringa

Nobel laureate 2016, Davos 2018

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

**“ Horizon 2020
allows my organisation
to demonstrate our research excellence
and our commitment to work
for the benefit of society
on a much larger scale
than would otherwise
be possible! ”**

From a Norwegian Research Institute

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 Society	€ 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 	<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

“

**Embracing both
research and innovation
under one programme Horizon 2020
has given a boost to bringing
Europe's excellent research to
the market preparing the ground
for the innovations
of tomorrow**

”

University Association

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

“

Horizon 2020
has been an exceptional help
in consolidating my career
in my home country
(versus in the USA)

”

Researcher from Hungary

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

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

- **Budget:** € 2.4 billion (2021-2027)

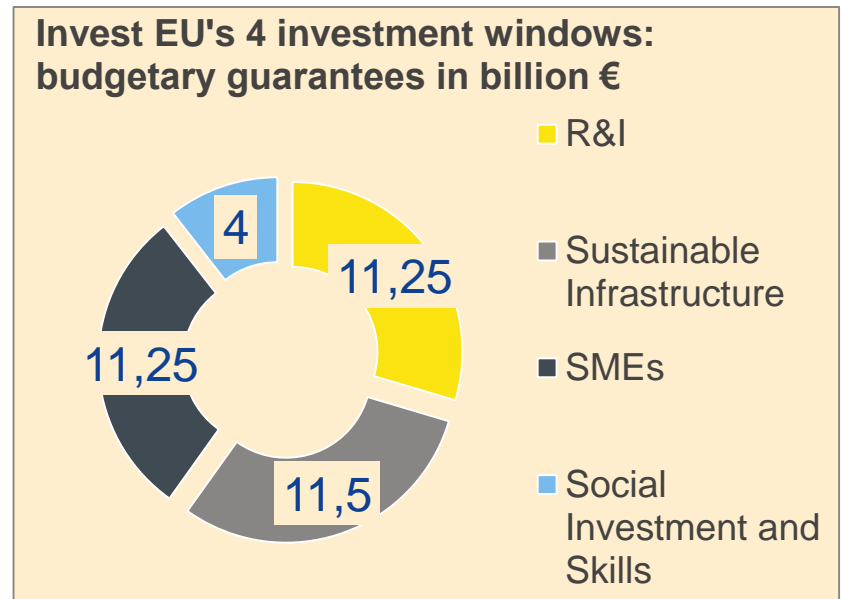
InvestEU for Research and Innovation (R&I)

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 2020 provides an excellent medium for developing technological breakthroughs and helps SMEs to achieve their commercial goals (innovative products, creation of highly skilled work, profitability) ”

*Small and medium sized company,
United Kingdom*

“ Horizon 2020 is a great opportunity to strengthen collaboration and active partnerships between industry, academia and the supply chain and a key driver to maintain industrial leadership ”

Company from The Netherlands

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

LIFE
Connecting Europe Facility
ESF+
Digital Europe
Space Programme

Erasmus
Innovation Fund
Internal Security Fund
ESF+
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

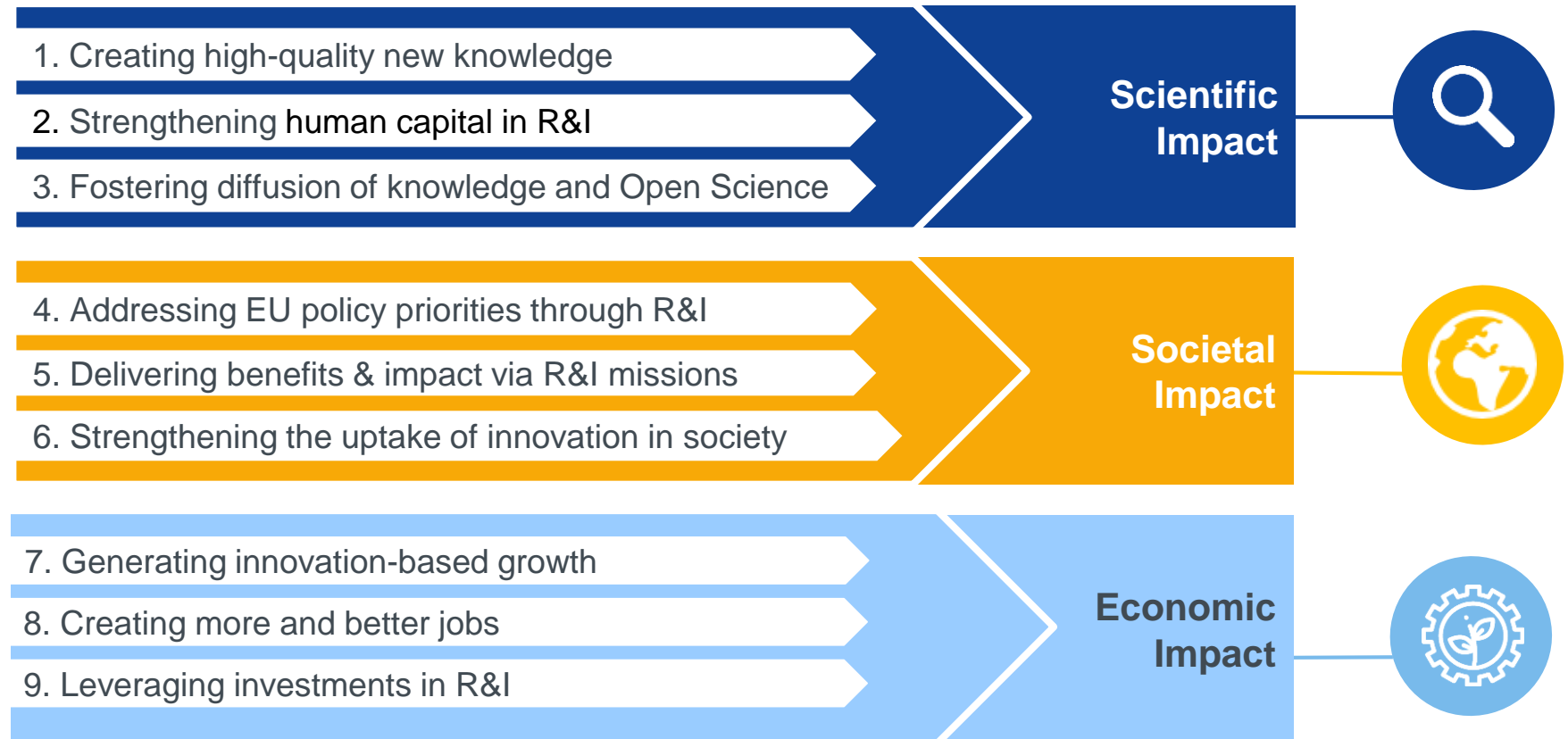
- * Multiannual orientations and priorities in one document
- * Areas for partnerships and missions

Strategic discussions with Member States and European Parliament

Consultation with stakeholders

Work Programmes

Key impact pathways to track progress



Next steps



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<https://www.facebook.com/EUScienceInnov/>

<https://www.facebook.com/cmoeidas/>



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

Examples of success stories



InvestEU SUCCESS STORIES

InvestEU/InnovFin stimulating private investment for R&I

Finnish SME MOBIDIAG received €15 million through the InnovFin “Infectious Diseases Finance Facility”, to scale-up their Novodiag[®] diagnostics platform; an on-demand automated solution for small labs providing results for gastric and joint infections, sepsis, and pneumonia. The product was officially launched in December 2017.



Country: Finland/France
Project Name: Mobidiag EU
Funding: €15 million

Read more on: <http://mobidiag.com/>



SUCCESS STORIES

Diabetes Reversing Implants with enhanced Viability and long-term Efficacy

No more injections... For diabetics whose bodies don't produce insulin, transplants of the necessary pancreatic cells can be a solution. However, at the moment, this intervention can only offer temporary relief. A new EU-funded project is taking the technique another step ahead.



Country: Ireland
Project Name: DRIVE
Funding: €8 832 061

Read more on: <http://europa.eu/!NQ94nQ>

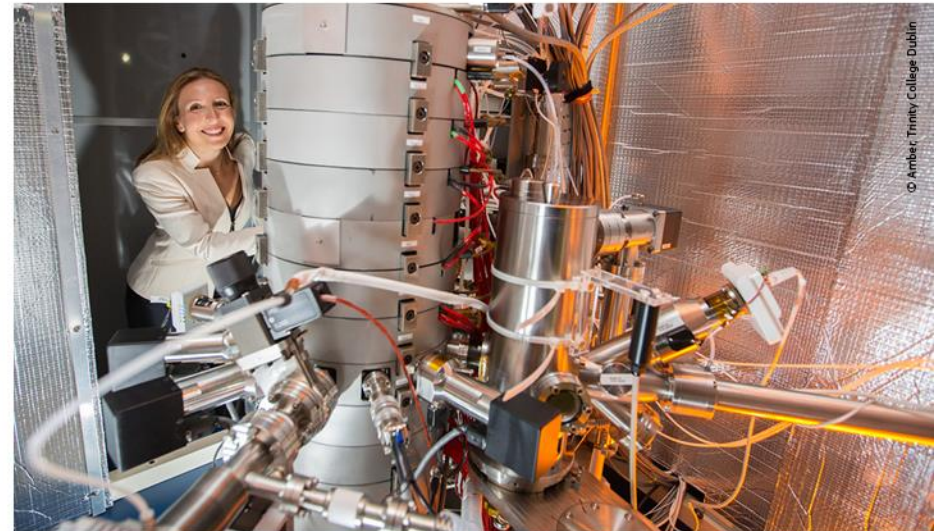


SUCCESS STORIES

3D Printing of Novel 2D Nanomaterials: Adding Advanced 2D Functionalities to Revolutionary Tailored 3D Manufacturing

Nanomaterials are closest thing we have to real-life 'superheroes'. Utilising the superhero properties of materials around an atom thick could revolutionise how we store energy in electronic devices, according to Valeria Nicolosi, professor of nanomaterials and advanced microscopy at Trinity College Dublin, Ireland.

Read more on: <https://bit.ly/2kvg0e0>



© Amber, Trinity College Dublin

Country: Ireland

Project Name: 3D2DPrint

Funding: €2 499 942





**'With growing international competition, Europe needs to act urgently on research and innovation.
The proposed € 100 billion for the next EU research and innovation programme would be a huge boost.'**

Carlos Moedas, Commissioner, 15/05/2018





Thank you!

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

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