

Commission proposal for **Horizon Europe**

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

#HorizonEU

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Horizon Europe – changing and evolving proposal

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, which is specified in the European Defence Fund that is subject to a distinct and complementary proposal.

Horizon Europe – Why?

Horizon Europe: our chance to shape the 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/>

We must continue to nourish our scientific and technological base by

- Generating new and more knowledge and technologies
- Promoting and sharing scientific excellence
- Attracting the world's top scientists and innovators
- Fostering cross-sector and trans-national coordination between public and private R&I investment



33 %

of total employment in
Europe in knowledge-
intensive activities

We must do better at turning scientific excellence into economic success by

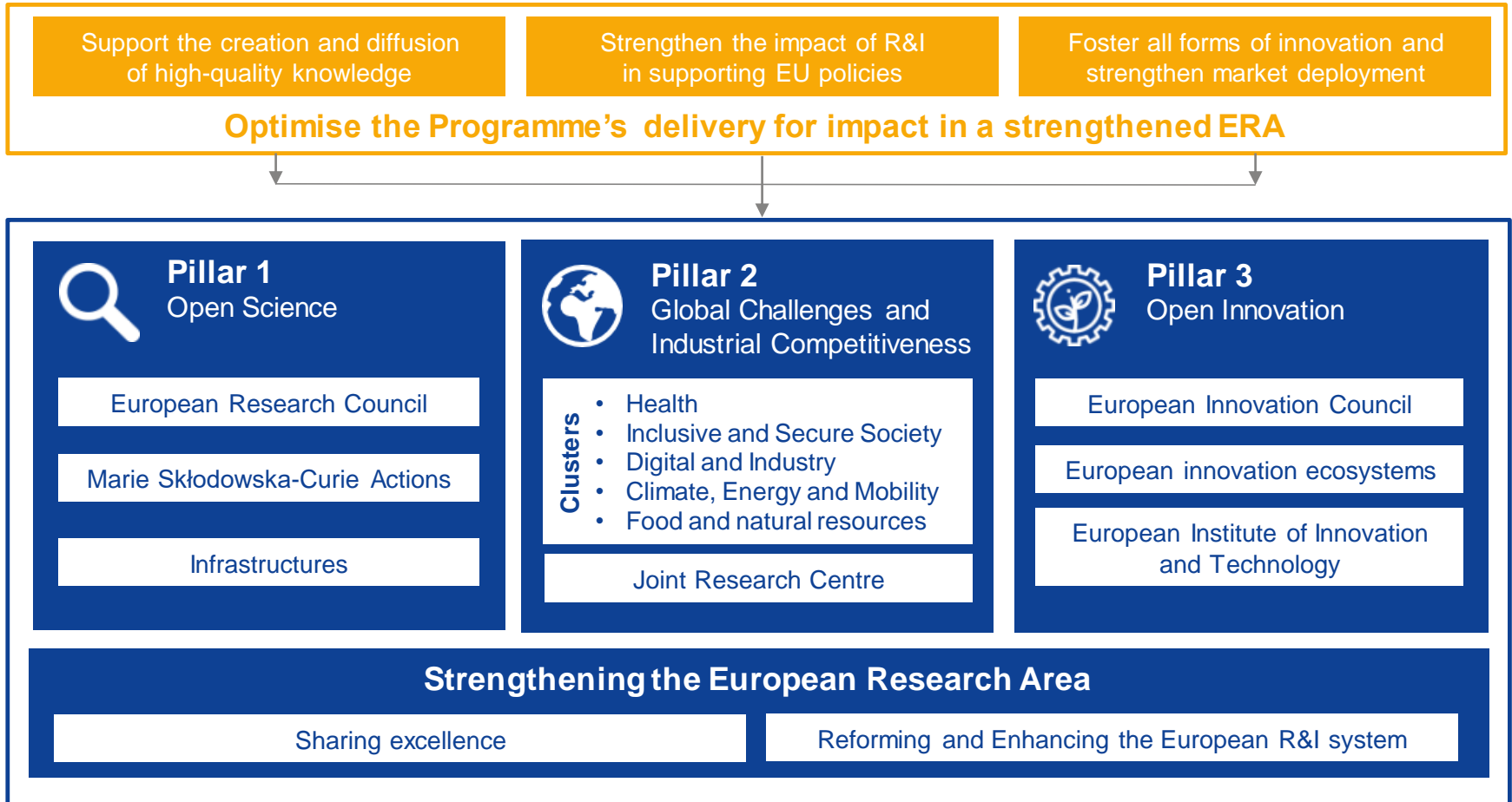
- Innovation-friendly regulation and financing
- Becoming a frontrunner in breakthrough and disruptive market-creating innovation
- Reconnecting R&I with citizens through EU-wide research and innovation missions



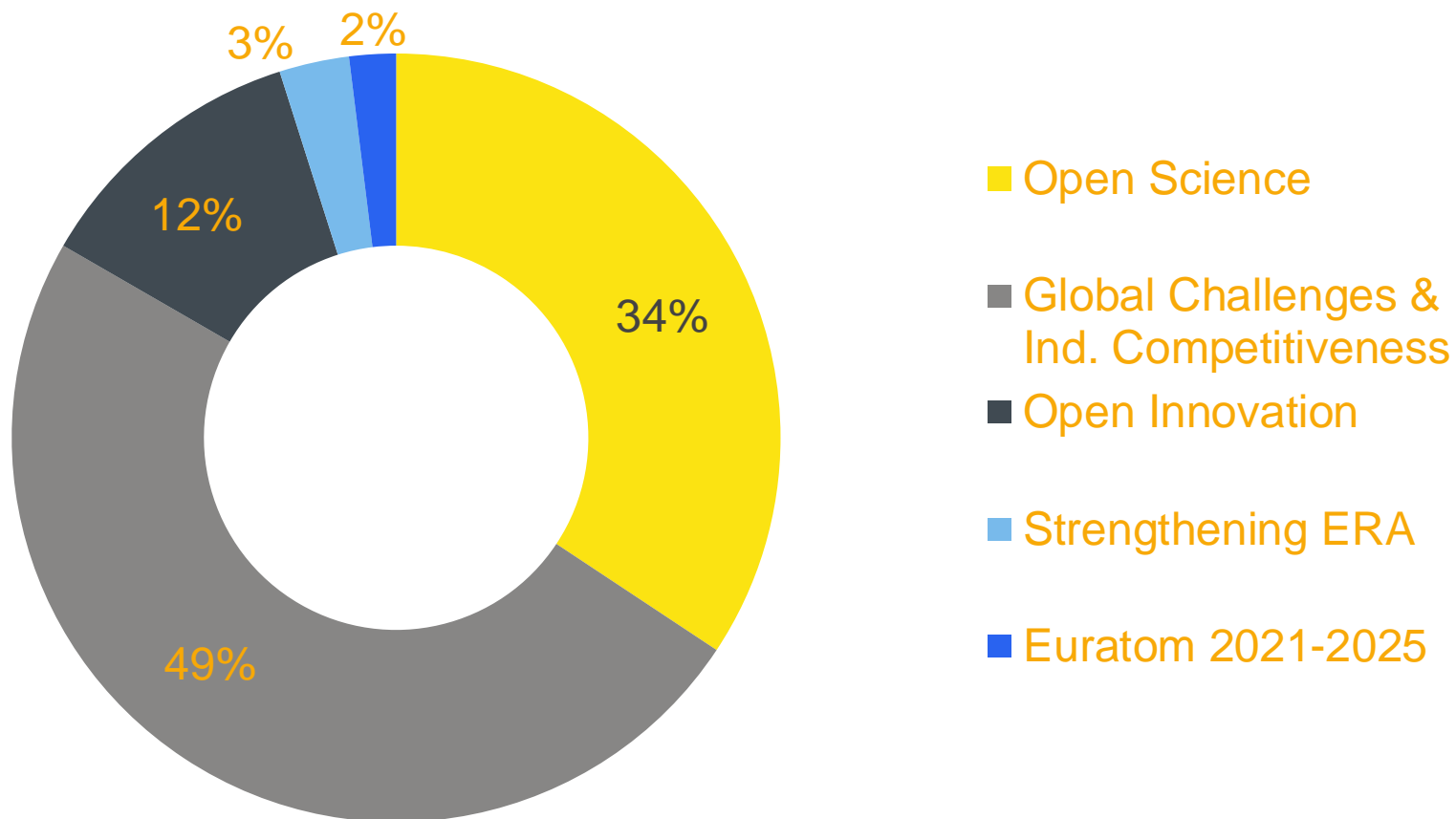
Horizon Europe – What?

Horizon Europe

Specific objectives of the Programme



Budget* EUR 100 Billion - suggested



* In addition, this envelope includes EUR 3.5 billion allocated under the InvestEU Fund.

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

€ XXX billion

Marie Skłodowska-Curie Actions

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

€ XXX billion

Research Infrastructures

- Integrated and inter-connected world-class research infrastructures

€ XXX billion

Global Challenges & Industrial Competitiveness:

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

Clusters implemented through usual calls, missions & partnerships	2021-24
Health	€ XXX
Inclusive and Secure Societies	€ XXX
Digital and Industry	€ XXX
Climate, Energy and Mobility	€ XXX
Food and Natural Resources	€ XXX
Joint Research Centre supports European policies with independent scientific evidence & technical support throughout the policy cycle	2021-27 € XXX

OPEN INNOVATION:

stimulating market-creating breakthroughs and ecosystems conducive to innovation

European Innovation Council

- Support to innovations with breakthrough and market creating potential

€ XXX billion

European innovation ecosystems

- Connecting with regional and national innovation actors

€ XXX billion

European Institute of Innovation and Technology (EIT)

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

€ XXX billion

Strengthening the European Research Area:

optimising strengths & potential for a more innovative Europe

Sharing Excellence

- Teaming
(institution building)
- Twinning
(institutional networking)
- ERA Chairs bringing
excellence to institutions
- COST

€ XXX 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

€ XXX billion

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 programme
- Simplification: Specific objectives from currently 14 to 4
- **Budget: € 2.4 bn (2021-2027)**

InvestEU for Research and Innovation (R&I)

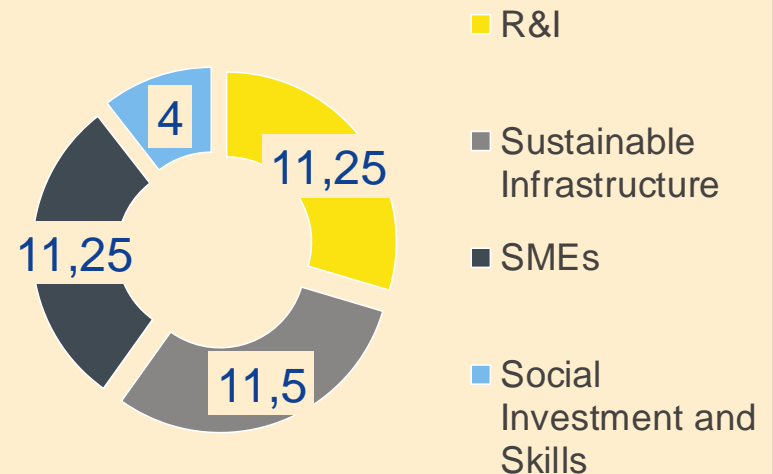
Stimulates more investment in research and innovation, notably by the private sector; leverages and complements national/regional initiatives

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

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

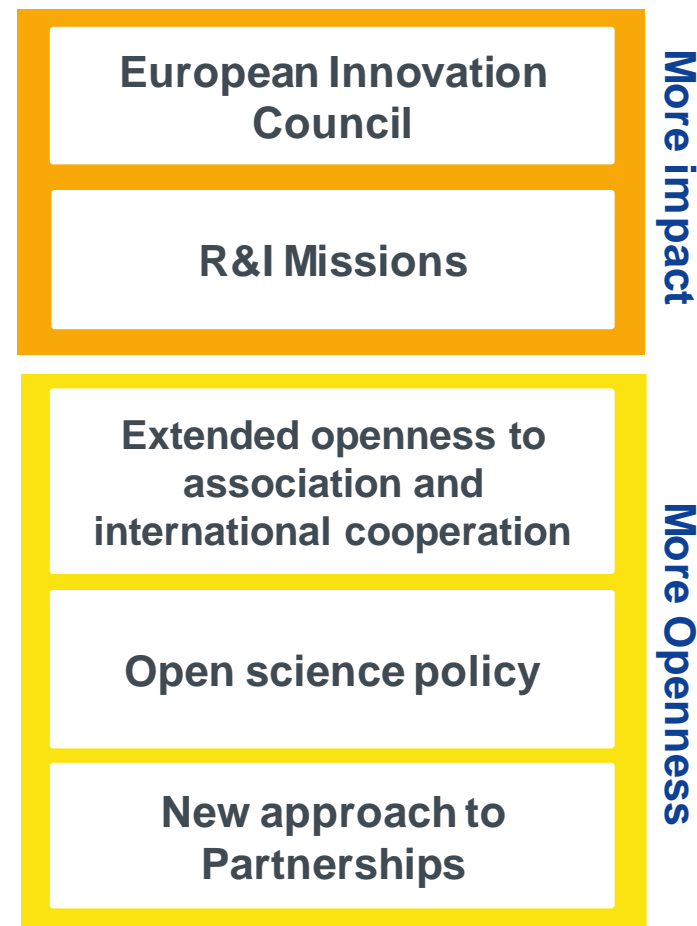


➡ leverages an estimated **€ 200 bn** of investments into R&I; **market-based finance** for the exploitation and scale-up of European R&I

Horizon Europe – What's new?

Key Novelties

[See Impact Assessment]





European Innovation Council

The EIC will support 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

Connecting to citizens: Missions will relate EU's research and innovation to society and citizens' needs, with strong visibility and impact

A mission will consist of 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 criteria

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)



R&I Missions: why?

Impact Assessment annex 8-2, Lamy advice

Building on experience and lessons of Horizon 2020 (e.g. focus areas), we need:

- Greater **scale** and **concentration of resources**
- Greater **clarity** in objective, and timeframe to achieve it
- Greater **coherence**, including through **portfolio** approach
- Greater involvement of **stakeholders, users**, and **public** awareness
- Greater possibility for **leveraging** other inputs



R&I Missions: what do we want to achieve?

Impact Assessment annex 8-2

- Prioritise investments on global **challenges** where the EU adds most value
- Focus on areas with **transformative potential** for science, technology, industry or society
- Induce **collaboration** cross-sector and cross-discipline, including SSH
- Stimulate **demand** for innovative solutions by involving civil society
- Highlight the **contribution** of R&I to solving challenges
- **Inspire** and mobilise **citizens** around clear time-bound goals
- **Set the direction** for public and private R&I in Europe, leverage further investments, improve societal uptake of results



R&I Missions: criteria

Art. 7 of the FP/RfP Regulation: *Missions*

- have a clear **EU-added value** and contribute to reaching Union priorities
- **be bold** and inspirational, and hence have wide societal or economic relevance
- indicate a **clear direction** and be targeted, measurable and time-bound
- be centered on ambitious but realistic **research and innovation** activities
- spark activity **across disciplines** (incl. SSH), sectors and actors
- be open to **multiple, bottom-up solutions**



R&I Missions: how?

Art. 6(7) of the FP/RfP Regulation: *Implementation and forms of funding*

Art. 11 of the SP Decision: *Work Programme*

Annex I to the SP Decision: *Strategic Planning*

Impact assessment annex 8-2

- **Mission areas** will be identified in the draft Strategic Plan for consultation with Member States and stakeholders
- Specific missions will be **co-designed** with Member States, the Parliament, stakeholders, end-users and citizens
- Missions will be implemented through dedicated **calls for proposals** in the Work Programmes
- Calls will be **non-prescriptive** and open to new solutions and newcomers



R&I Missions: how?

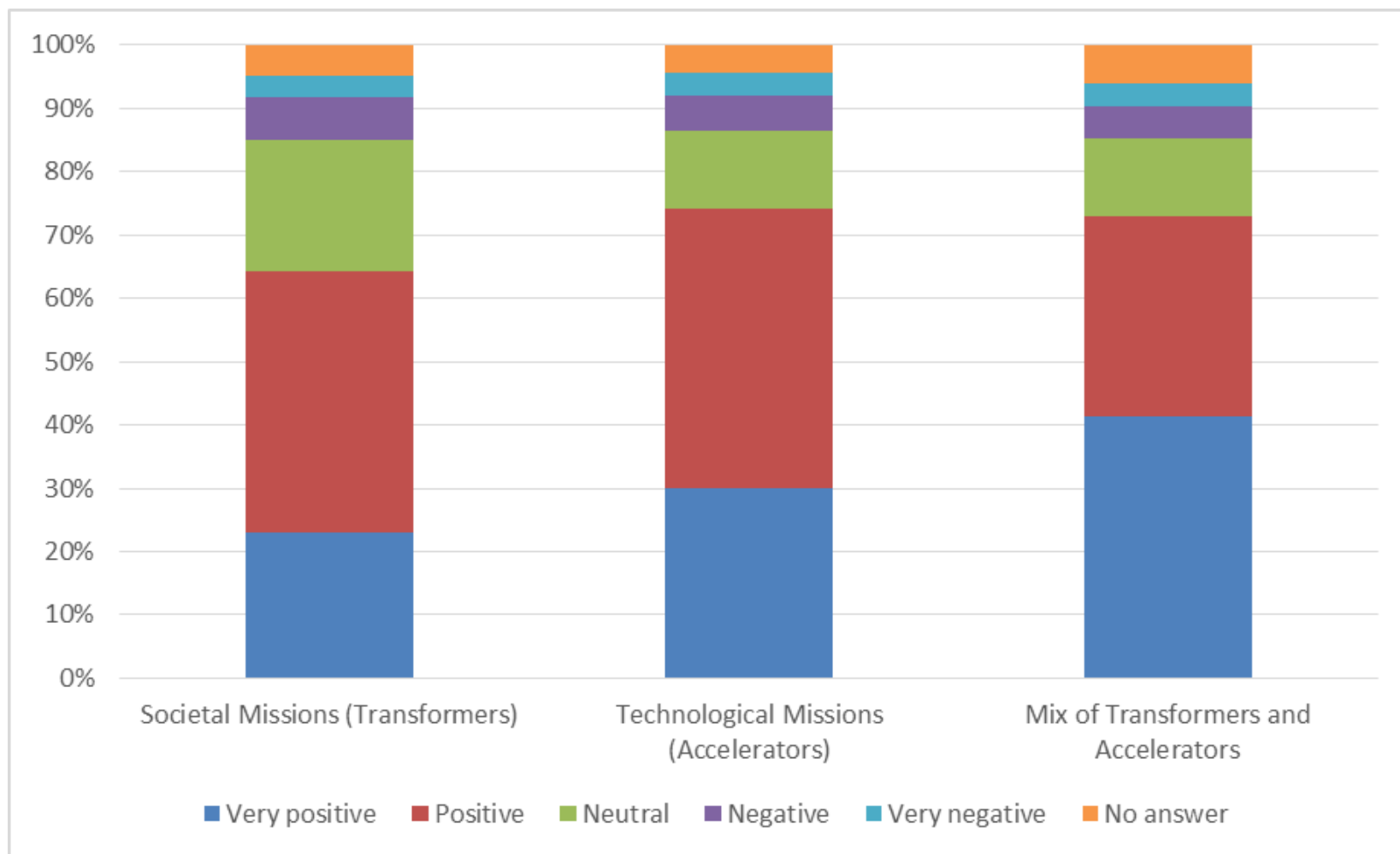
Art. 26 of the FP/RfP Regulation: *Evaluation*

Art. 5 of the SP Decision: *Missions*

Impact assessment annex 8-2

- A **mission board** may be established for each mission: around 15 members including end-users
- Mission Boards have an **advisory role** in designing the mission and its implementation
- Missions will be implemented through a coherent **portfolio** of projects
- Missions will be implemented **through existing executive agencies** according to the content of the mission

Q: How do you assess the potential of a mission-oriented R&I funding for increasing the impact on investment?



Source: Online survey to all Horizon 2020 participants, December 2017. Based on 1.863 respondents



European
Commission



R&I Missions: what is expected ?

Competitiveness Council on 28 September Member States

Non paper ideas (caveat: no agreement and only for discussion, and as leaked by Science Business)

- Missions and partnerships will only form a relatively minor part of the Horizon Europe in budgetary terms
- The largest part of the 'Global Challenges and Industrial Competitiveness' pillar of Horizon Europe will be decided through normal work programmes, following strategic planning (missions and partnerships in it)
- "man on the moon" approach – Missions to reconnect EU research with citizens with inspirational goals
- Missions should connect with stakeholders and citizens



R&I Missions: what is expected ?

Broad stakeholder consultation carried out by the Commission:

- 1190 responses for 2074 proposed concrete missions
- Areas of digitisation/artificial intelligence (16%), health and well-being (10%), socio-economic transformation (10%) and sustainable production (7%)
- four areas of high potential for missions, and 10 areas of high potential for institutional partnerships
- Call for expressions of interest for a transparent composition of Mission Boards, one for each mission area (kick off in 2019), to validate (or invalidate) the mission with stakeholders, and advise on objectives, research and innovation tasks and specific requirements (societal aspects, international dimension etc.).



R&I Missions: what is expected ?

- Co-design with stakeholders and, as appropriate, the public at large
- Mission Boards would also have a continuing role throughout the life of the missions, to advise the Commission on their implementation and to report to Member States, the Parliament and the public on their progress
- Potential Mission areas based on the consultation:
 - Digitisation (Build the first universal quantum computer in Europe)
 - Health (Beating cancer: Cure paediatric cancer)
 - Clean Europe (Healthy Oceans: Eliminating plastic waste in rivers and seas)
 - Food/Agriculture (Sustainable land)



International Cooperation effort of unprecedented scale

International Cooperation

Will ensure effective tackling of 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

- Encouraging uptake of **Open Science practices** through earmarked funding, including to enhance **researcher skills** in Open Science and support **reward systems** that promote it
- **FAIR (findable, accessible, interoperable, re-usable) and Open Data:** research data is open by default (with opt-out possibilities) and a data management plan is obligatory
- **Open Access** to publications: no reimbursement of article processing charge (APC) for publications in hybrid journals
- **Monitoring system** to ensure compliance with Horizon Europe provisions



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

Institutional

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



New approach to partnerships: why?

Impact Assessment annex 8-5

- Need to **rationalise** the European R&I partnerships landscape
- Need to improve the **openness** and transparency of R&I partnerships
- Need to **link** the R&I partnerships to future EU R&I missions and/or strategic priorities



R&I Partnerships: what is expected ?

Competitiveness Council on 28 September Member States

Non paper ideas (caveat: no agreement and only for discussion, and as leaked by Science Business)

- European partnerships aim at boosting the impact of public intervention at EU level by leveraging and integrating other sources of funding (public, private, foundations...)
- Partnership as a way foster industrial modernisation and societal transformation
- Areas for partnerships, i.e. stronger EU added value, substantial modernisation, changes in membership, and clear termination dates
- Industrial partnerships should have more ambitious objectives on climate and energy (e.g. carbon neutral production of steel, concrete, etc.) and give EU leadership in digitisation (e.g. in health, transport)



R&I Partnerships: what is expected ?

- Portfolio of institutionalised partnerships for MS before the Impact Assessment exercise and after that MS invited to provide feedback
- With relevant private and public sector partners to develop partnerships that meet expectations, ambitions and conditions set out in the Horizon Europe proposal
- Potential areas of institutional partnerships:
 1. Health innovation (medical treatments, devices and technologies)
 2. Global health (national health research systems + philanthropy funding)
 3. Key digital technologies, including AI
 4. Metrology (speed, accuracy and cost of measurement)
 5. Air traffic management, including for novel avionics, drones
 6. Aviation, CO2 emissions and noise (electric/alternative systems)
 7. Rail, including automation and digitisation
 8. Bio-based solutions (including biomass and maritime resources)
 9. Fuel cells and hydrogen storage technologies
 10. Connected, autonomous mobility

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



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

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



European
Commission

Strategic planning to define multiannual work programmes and calls for proposals

Objectives: Transparency and stakeholder involvement; impact maximisation; prioritisation; 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

Next steps





Thank you!

#HorizonEU

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

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