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

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

1.3% EU business R&D investment
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:

- Trans-national collaboration, exchange and networks
- Critical mass to address global challenges
- Attracting the best talents
- Competitive funding promoting excellence
- Strengthened European R&I landscape
- Visibility for leading research and innovation
- Creating new market opportunities
- Transnational mobility
Horizon Europe – What?
Horizon Europe: evolution not revolution

Specific objectives of the Programme

- Support the creation and diffusion of high-quality knowledge
- Strengthen the impact of R&I in supporting EU policies
- Foster all forms of innovation and strengthen market deployment

Optimise the Programme’s delivery for impact in a strengthened ERA

Pillar 1
Open Science
- European Research Council
- Marie Skłodowska-Curie Actions
- Research Infrastructures

Pillar 2
Global Challenges and Industrial Competitiveness
- Health
- Inclusive and Secure Society
- Digital and Industry
- Climate, Energy and Mobility
- Food and natural resources
- Joint Research Centre

Pillar 3
Open Innovation
- European Innovation Council
- European innovation ecosystems
- European Institute of Innovation and Technology

Strengthening the European Research Area
- Sharing excellence
- Reforming and Enhancing the European R&I system
Budget: €100 billion* (2021-2027)

- Open Science: €25.8 billion
- Global Challenges & Ind. Competitiveness: €52.7 billion
- Open Innovation: €13.5 billion
- Strengthening ERA: €2.1 billion
- Euratom: €2.4 billion

* 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.

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)
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

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

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
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

<table>
<thead>
<tr>
<th>Clusters</th>
<th>Budget (€ billion)</th>
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<tbody>
<tr>
<td>Health</td>
<td>€ 7.7</td>
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<tr>
<td>Inclusive and Secure Society</td>
<td>€ 2.8</td>
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<tr>
<td>Digital and Industry</td>
<td>€ 15</td>
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<tr>
<td>Climate, Energy and Mobility</td>
<td>€ 15</td>
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<tr>
<td>Food and Natural Resources</td>
<td>€ 10</td>
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**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'

<table>
<thead>
<tr>
<th>Clusters</th>
<th>Areas of intervention</th>
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<tbody>
<tr>
<td><strong>Health</strong></td>
<td>* Health throughout the life course</td>
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<td></td>
<td>* Non-communicable and rare diseases</td>
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<td>* Tools, technologies and digital solutions for health and care</td>
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<td>* Environmental and social health determinants</td>
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<td></td>
<td>* Infectious diseases</td>
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<td>* Health care systems</td>
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<td><strong>Inclusive and Secure Societies</strong></td>
<td>* Democracy</td>
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<td></td>
<td>* Social and economic transformations</td>
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<td>* Protection and Security</td>
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<td>* Cultural heritage</td>
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<td></td>
<td>* Disaster-resilient societies</td>
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<td>* Cybersecurity</td>
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<tr>
<td><strong>Digital and Industry</strong></td>
<td>* Manufacturing technologies</td>
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<td></td>
<td>* Advanced materials</td>
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<td>* Next generation internet</td>
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<td></td>
<td>* Circular industries</td>
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<td></td>
<td>* Key digital technologies</td>
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<td>* Artificial intelligence and robotics</td>
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<td>* Advanced computing and Big Data</td>
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<td></td>
<td>* Low carbon and clean industry</td>
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<tr>
<td><strong>Climate, Energy and Mobility</strong></td>
<td>* Climate science and solutions</td>
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<td></td>
<td>* Energy systems and grids</td>
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<td>* Communities and cities</td>
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<td>* Industrial competitiveness in transport</td>
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<td>* Smart mobility</td>
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<td>* Energy supply</td>
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<td>* Buildings and industrial facilities in energy transition</td>
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<td></td>
<td>* Clean transport and mobility</td>
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<td></td>
<td>* Energy storage</td>
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<tr>
<td><strong>Food and Natural Resources</strong></td>
<td>* Environmental observation</td>
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<tr>
<td></td>
<td>* Agriculture, forestry and rural areas</td>
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<td></td>
<td>* Food systems</td>
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<td>* Circular systems</td>
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<tr>
<td></td>
<td>* Biodiversity and natural capital</td>
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<td>* Sea and oceans</td>
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<td>* Bio-based innovation systems</td>
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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

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

€ 10.5 billion, incl. up to € 500 million for ecosystems

€ 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

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

€ 1.7 billion

Budget doubled

€ 0.4 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 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
- Space Programme
- LIFE
- Erasmus
- Enlargement
- Connecting Europe Facility
- Internal Security Fund
- Digital Europe
- Innovation Fund
- Single Market Programme
- Space Programme
- Erasmus+
- Digital Europe
- Innovation Fund
- Single Market Programme
- Space 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

1. Creating high-quality new knowledge
2. Strengthening human capital in R&I
3. Fostering diffusion of knowledge and Open Science

4. Addressing EU policy priorities through R&I
5. Delivering benefits & impact via R&I missions
6. Strengthening the uptake of innovation in society

7. Generating innovation-based growth
8. Creating more and better jobs
9. Leveraging investments in R&I
Next steps

- **Ongoing**: Parliament and Council negotiations on Union budget 2021-2027, including budget for Horizon Europe

- **From 7 June**
  - Parliament and Council negotiations on the basis of the Commission proposal for Horizon Europe

- **2nd half 2018/2019**
  - Strategic planning to prepare first work programmes under Horizon Europe, including co-design of missions and setting up of partnerships

- **1 January 2021**
  - Envisaged start of Horizon Europe
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https://www.facebook.com/cmoedas/

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/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/](http://mobidiag.com/)
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
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.

Country: Ireland
Project Name: 3D2DPrint
Funding: €2 499 942

Read more on: https://bit.ly/2kvg0e0
'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!

#HorizonEU

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