Horizon Europe

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

#HorizonEU

Based on the Commission Proposal for Horizon Europe, the common understanding between co-legislators and the Partial General Approach, both approved in April 2019
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

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

...Europe can do better at transforming this into leadership in innovation and entrepreneurship
Sibiu recommendations: Europe can shape its future through research and innovation

- Focusing research and innovation on the **ecological, social and economic transitions** and related societal challenges

- Leveraging Europe’s scientific strengths into **leadership in breakthrough and disruptive innovation**

- Setting **ambitious goals** for issues that affect us daily, such as skills development, the fight against cancer, harmful emissions, and the state of the oceans, including plastics

- Focusing on **cutting-edge research and innovation** projects spanning from research and innovation to deployment
Horizon Europe

The ambitious EU research and innovation framework programme (2021-2027)

to strengthen the EU's scientific and technological bases and the European Research Area (ERA)

to boost Europe's innovation capacity, competitiveness and jobs

to deliver on citizens' priorities and sustain our socio-economic model and values

The Commission proposes a budget of € 100 billion for Horizon Europe.
Added value through Horizon Europe:

- **Benefits for Europe**
  - Trans-national collaboration, exchange and networks
  - Critical mass to address global challenges
  - Competitive funding promoting excellence
  - Visibility for leading research and innovation
  - Transnational mobility
  - Creating new market opportunities
  - Strengthened European R&I landscape
  - Attracting the best talents

May 2019  │ Version 25
Horizon Europe – Political agreement
European Parliament and Council reached a common understanding on Horizon Europe on 19 March 2019

- Budget, synergies and third country association still pending, depending on the overall MFF negotiations

- Commission has started preparations for the implementation of Horizon Europe
Horizon Europe: Preliminary structure

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

Pillar 2
Global Challenges and European Industrial Competitiveness
- Clusters:
  - Health
  - Culture, Creativity and Inclusive Society
  - Civil Security for Society
  - Digital, Industry and Space
  - Climate, Energy and Mobility
  - Food, Bioeconomy, Natural Resources, Agriculture and Environment
- Joint Research Centre

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

Widening Participation and Strengthening the European Research Area
- Widening participation and spreading excellence
- Reforming and Enhancing the European R&I system
Commission proposal for budget: €100 billion* (2021-2027)

€ billion
In current prices

- €25.8: Excellent Science
- €13.5: Global Challenges & European Ind. Comp.
- €2.4: Innovative Europe
- €2.1: Widening Part. & ERA
- €2.4: Euratom

* This envelope includes EUR 3.5 billion allocated under the InvestEU Fund.
Horizon Europe – Central elements
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
- Encourage participation

Key Novelties in Horizon Europe

- European Innovation Council
- R&I Missions
- Extended association possibilities
- Open science policy
- New approach to Partnerships
- Spreading Excellence
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)

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

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, proactive management and follow up

May 2019 | Version 25
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).
Mission areas

Adaptation to climate change, including societal transformation

- Healthy oceans, seas, coastal and inland waters
- Cancer
- Climate-neutral and smart cities
- Soil health and food

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

- Health innovations
- Key digital and enabling technologies
- Metrology
- EU air traffic, aviation and rail
- Sustainable bio-based solutions
- Hydrogen and sustainable energy storage
- Clean, connected mobility
- Innovative SMEs
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 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
Widening participation/spreading excellence

- National Contact Point (NCP) Support
- Pre-proposal checks
- Match-making
- Teaming, Twinning, ERA-Chairs, COST
- 15 Member States and 9 outermost regions eligible for coordinators
- At least 3.3% budget
- Recognition of participation
- Hop-on
- Excellence initiatives
- Brain circulation

Foster participation
Facilitate collaborative links
Contribute to reducing R&I divide
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

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
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 - Clusters

Global Challenges & European Industrial Competitiveness: boosting key technologies and solutions underpinning EU policies & Sustainable Development Goals

Commission proposal for budget: € 52.7 billion
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

INNOVATIVE EUROPE:
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

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

Commission proposal: € 3 billion
Horizon 2020 has been an exceptional help in consolidating my career in my home country (versus in the USA)

Researcher from Hungary
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
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 €200bn of investments into R&I; market-based finance for the exploitation and scale-up of European R&I.
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
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
- LIFE
- Connecting Europe Facility
- Erasmus
- Innovation Fund
- Internal Security Fund
- ESF+
- Digital Europe
- 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
Horizon Europe – Impact, flexibility, co-design
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 & global challenges through R&I
5. Delivering benefits & impact via R&I missions
6. Strengthening the uptake of R&I in society
7. Generating innovation-based growth
8. Creating more and better jobs
9. Leveraging investments in R&I
Strategic Plan for implementing Horizon Europe

The Strategic Plan (*new implementing act by the Commission*) will prepare the content in the work programmes and calls for proposals for the first four years

- Strategic orientation for R&I support, expected impacts
- Partnerships and missions
- Areas for international cooperation
- Issues such as:
  - Balance between research and innovation
  - Social Sciences and Humanities
  - Key Enabling Technologies and strategic value chains
  - Gender
  - Ethics and integrity
  - Dissemination and exploitation
Strategic plan gives direction to the work programme

Main Features
Early involvement and extensive exchanges with Member States
Extensive exchanges with the European Parliament
Consultations with stakeholders and public at large
Steps towards the first Horizon Europe work programme

- **Summer 2019**: Early involvement and exchanges with Member States, consultation with stakeholders and the public at large. Establishment of Mission Boards.
- **2020**: Drafting of first Horizon Europe Work Programme on the basis of the Strategic Plan.
- **2021**: Start of Horizon Europe.
EUROPEAN RESEARCH & INNOVATION DAYS

24→26 SEPTEMBER 2019
KANAL CENTRE POMPIDOU
Brussels, BELGIUM

#RiDaysEU @EUScienceInnov
Research and innovation days, 24 – 26 September 2019

- Bringing together policy-makers, researchers, innovators, civil society representatives and other interested stakeholders

  - Three days to debate, solve and innovate – to help shape the future of research and innovation policy

Three key elements of Horizon Europe to be discussed in particular:

- The Strategic Plan,
- Missions
- Institutional partnerships
Follow us and keep up to date via:

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https://www.facebook.com/EUScienceInnov/
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
We are now on track to launch the most ambitious ever European research and innovation programme in 2021, shaping the future for a strong, sustainable and competitive European economy and benefiting all regions in Europe.'

Carlos Moedas, Commissioner, 20/3/2019
Thank you!

#HorizonEU

http://ec.europa.eu/horizon-europe
Annex with additional material
The next long-term EU budget (2021-2027):

**Investing in the future**

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.

Source: European Commission
Note: Compared to the Multiannual Financial Framework 2014-2020 at EU-27 (estimate)
Key elements of the Commission proposal are preserved

- Three pillar structure addressing fundamental science, global challenges and innovation
- A new cross-sectoral clusters approach
- Missions as key novelty for more impact and visibility
- EIC as one-stop shop for innovation to help small companies to innovate and scale up
- Strategic planning as direction-setting for the work programmes
- New approach to partnerships to rationalise the landscape
- Impact pathways to track progress with the achievement of the Programme's objectives over time.
- Rules for participation aiming at further simplification and a more robust Open Access regime.
Key changes introduced by Council and EP

- Cluster inclusive and secure society is split

- Fast track procedure in pillar II and in the EIC Pathfinder for bottom-up proposals, small consortia and time-to-grant not exceeding 6 months

- EIC to provide two types of support: blended and grants-only

- Areas for possible missions and institutionalised partnerships based on Article 185/7 TFEU are listed

- Widening participation: additional measures and increased budget prospect

- Strategic planning as Commission implementing act to facilitate implementation
New FTI procedure in pillar II and EIC Pathfinder

Dedicated budget to Widening of 3.3% (new recital)

• **Principles** (new) incl. on assisting widening countries, SSH, INCO, gender, admin. burden, 3% investment target, 35% climate target;
• Contribution to reducing of the R&I divide

Separate cluster for security;
• Creativity added in the cluster on inclusive society

Separate PC-configurations on ERC, MSCA, security and widening and ad-hoc meetings on horizontal and/or cross-cutting issues, such as Space and Mobility

• Space budget “commensurate proportionally” to Horizon 2020 (recital)
• EIT budget removed from SP (linked with legal base)

**Structure** (3 pillars; 6 clusters)

**Objectives**
• Strengthening collaborative links (specific objective)
• Fostering wider participation (operational objective)

**Budget** (bracketed; MFF related)

Parliament

Council

Horizon Europe Commission proposal
Areas for possible missions and partnerships in Annex to FP

Missions budget cap (10% of annual Pillar II budget for the 1st 3 years) with assessment

Recital on FET Flagships/

Grants-only budget corresponding to SMEI in recital

Co-creation, co-design, citizens/civil society as programme principle

Identification of missions in the strategic plan

Early involvement of MS

New EIC Pathfinder provision in FP

EIC Accelerator: mainly blended finance

Implementing Act with a “no opinion” clause

Early involvement of MS and extensive consultation of the EP

Horizon Europe Commission proposal
Widening participation (doubling of budget)

- Fixed list of widening MS in main article
- Excellence Initiatives
- Widening budget recital ‘at least 3.3%’

Remuneration of staff

- Support to NCPs
- “Advancing Europe package” with
- “hop on” provision
- Match making services

- Reference to remuneration gap in a recital
- MS to take measures on salaries, Commission to monitor the evolution

Horizon Europe Commission proposal

- Commission proposal of project-based remuneration with a reference to social security charges
- Widening budget recital
### Clusters in 'Global Challenges and Industrial Competitiveness'

<table>
<thead>
<tr>
<th>Clusters</th>
<th>Areas of intervention</th>
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</table>
| **Health** | • Health throughout the life course  
• Non-communicable and rare diseases  
• Tools, technologies and digital solutions for health and care, including personalised medicine  
• Environmental and social health determinants  
• Infectious diseases, including poverty-related and neglected disease  
• Health care systems |
| **Culture, creativity and inclusive society** | • Democracy and Governance  
• Social and economic transformations  
• Culture, cultural heritage and creativity |
| **Civil security for society** | • Disaster-resilient societies  
• Protection and Security  
• Cybersecurity |
| **Digital, Industry and space** | • Manufacturing technologies  
• Advanced materials  
• Next generation internet  
• Circular industries  
• Space, including Earth Observation  
• Emerging enabling technologies  
• Key digital technologies, including quantum technologies  
• Artificial Intelligence and robotics  
• Advanced computing and Big Data  
• Low-carbon and clean industry  
• Emerging enabling technologies |
| **Climate, Energy and Mobility** | • Climate science and solutions  
• Energy systems and grids  
• Communities and cities  
• Industrial competitiveness in transport  
• Smart mobility  
• Energy supply  
• Buildings and industrial facilities in energy transition  
• Clean, safe and accessible transport and mobility  
• Energy storage |
| **Food, bioeconomy, natural resources, agriculture and environment** | • Environmental observation  
• Agriculture, forestry and rural areas  
• Circular systems  
• Food systems  
• Biodiversity and natural resources  
• Seas, oceans and inland waters  
• Bio-based innovation systems in the EU Bioeconomy |
Open science across the programme

<table>
<thead>
<tr>
<th>Art. 10 - Open Science</th>
<th>Art. 35 - Exploitation and Dissemination</th>
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<tbody>
<tr>
<td><strong>The approach</strong></td>
<td><strong>The modalities</strong></td>
</tr>
<tr>
<td>Open access to scientific publications to be ensured</td>
<td>Open access to scientific publications obligatory: sufficient IPR to be retained</td>
</tr>
<tr>
<td>Open access to research data to be ensured in line with principle 'as open as possible, as closed as necessary'</td>
<td>Open access to research data, 'as open as possible, as closed as necessary' : exceptions</td>
</tr>
<tr>
<td>Responsible research data management to be ensured in line with FAIR principles</td>
<td>Responsible research data management in line with FAIR principles; Data Management Plan mandatory; possible obligations (in specific WPs) to use the European Open Science Cloud for storing and providing access to data</td>
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<tr>
<td>Other open science practices to be promoted and encouraged</td>
<td>Possible additional incentives or obligations through work programmes for other open science practices</td>
</tr>
<tr>
<td>Reciprocity in open science to promoted and encouraged in all association and cooperation agreements with third countries</td>
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The Strategic Planning Process:

- The present we have
  - R&I Strategic Planning of Horizon Europe
  - Synergies across the MFF
  - Synergies across other EU policy interventions
  - Synergies with the MS actions

- The future we want

... and our strategic plan will attract attention and cooperation at international/global level
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