GP
MANAGEMENT ADVISORY

HORIZON EUROPE

The EU Research & Innovation
Programme 2021-27

Funding and Tenders portal

Horizon Europe strategic plan

Table of Contents

Introduction

Horizon Europe is the ambitious EU research & innovation framework programme for **2021-2027** with a budget of **€95.5 billion.**

Its overarching goals are:

- 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 citizen's priorities and sustain our socio-economic model and values.

with a particular focus on creating impact or the European Green Deal, the digital and sustainability transition and recovery from the coronavirus-crisis.

The following activities are generally eligible for grants under Horizon Europe

Research and innovation actions (RIA) — Activities that aim primarily to establish new knowledge or to explore the feasibility of a new or improved technology, product, process, service or solution. This may include basic and applied research, technology development and integration, testing, demonstration and validation of a small-scale prototype in a laboratory or simulated environment.

Innovation actions (IA) — Activities that aim directly to produce plans and arrangements or designs for new, altered or improved products, processes or services. These activities may include prototyping, testing, demonstrating, piloting, large-scale product validation and market replication.

Coordination and support actions (CSA) — Activities that contribute to the objectives of Horizon Europe. This excludes R&I activities, except those carried out under the 'Widening participation and spreading excellence' component of the programme (part of 'Widening participation and strengthening the European Research Area'). Also eligible are bottom-up coordination actions which promote cooperation between legal entities from Member States and Associated Countries to strengthen the European Research Area, and which receive no EU co-funding for research activities.

Programme co-fund actions (CoFund) — A programme of activities established or implemented by legal entities managing or funding R&I programmes, other than EU funding bodies. Such a programme of activities may support: networking and coordination; research; innovation; pilot actions; innovation and market deployment; training and mobility; awareness raising and communication; and dissemination and exploitation. It may also provide any relevant financial support, such as grants, prizes and procurement, as well as Horizon Europe blended finance13 or a combination thereof. The actions may be implemented by the beneficiaries directly or by providing financial support to third parties.

Innovation and market deployment actions (IMDA) — Activities that embed an innovation action and other activities necessary to deploy an innovation on the market. This includes the scaling-up of companies and Horizon Europe blended finance.

Training and mobility actions (TMA) — Activities that aim to improve the skills, knowledge and career prospects of researchers, based on mobility between countries and, if relevant, between sectors or disciplines.

Pre-commercial procurement actions (PCP) — Activities that aim to help a transnational buyers' group to strengthen the public procurement of research, development, validation and, possibly, the first deployment of new solutions that can significantly improve quality and efficiency in areas of public interest, while opening market opportunities for industry and researchers active in Europe. Eligible activities include the preparation, management and follow-up, under the coordination of a lead procurer, of one joint PCP and additional activities to embed the PCP into a wider set of demand-side activities.

Public procurement of innovative solutions actions (PPI) — Activities that aim to strengthen the ability of a transnational buyers' group to deploy innovative solutions early by overcoming the fragmentation of demand for such solutions and sharing the risks and costs of acting as early adopters, while opening market opportunities for industry. Eligible activities include preparing and implementing, under the coordination of a lead procurer, one joint or several coordinated PPI by the buyers' group and additional activities to embed the PPI into a wider set of demand-side activities.

Strategic plan 2021-2024

The strategic plan defines the orientations for the first four years of the programme and outlines the contributions of its various parts. By establishing a strategic research and innovation agenda, it takes an important step towards the work programmes.
The strategic plan defines **four key strategic orientations**. They mirror the political priorities of the European Union, outline the way research and innovation can address them and enable better impact measurement.

Four key strategic orientations for greater impact

Each of the key strategic orientations encompasses three to four **impact areas**, which in turn link to a number of **expected impacts**. They are a core element of the impact-driven approach of Horizon Europe, because they describe the long-term effects to which research and innovation are due to contribute. In total, the strategic plan defines 32 expected impacts that cover a wide range of social, economic, ecological and scientific aspirations.

The strategic plan outlines how the six Clusters of Horizon Europe's Pillar II, 'Global challenges and European industrial competitiveness', will contribute to the key strategic orientations and the corresponding expected impacts. Every expected impact links to at least one Cluster, in order to ensure full coverage. While the focus of the strategic plan is on Pillar II, it also covers relevant activities in the other two pillars and the part 'Widening Participation and Strengthening the European Research Area'. This is to ensure synergies across all Horizon Europe programme components.

Horizon Europe KEY STRATEGIC ORIENTATIONS (KSO)	Horizon Europe Impact Areas	EIT KICs contribution to the KSO and the relevant expected impacts
KSO 1 Promoting an open strategic autonomy by leading the development of key digital and enabling technologies, sectors and value chains to accelerate and steer the digital and green transitions through human-centred technologies and innovations	A competitive and secure data-economy	EIT Digital
	Industrial leadership in key and emerging technologies that work for people	EIT Climate KIC; EIT InnoEnergy; EIT Digital; EIT Raw Materials; EIT Manufacturing;
	Secure and cyber secure digital technology	EIT Digital
	High quality digital services for all	EIT Digital
KSO 2 Restoring Europe's ecosystems and biodiversity, and managing sustainably natural resources to ensure food security and a clean and healthy environment	Enhancing ecosystems and biodiversity on land and in waters	EIT Climate KIC; EIT Food; EIT InnoEnergy
	Clean and healthy air, water and soil	EIT Climate KIC; EIT Food
	Sustainable food systems and nutrition security	EIT Food
KSO 3 Making Europe the first digitally led circular, climate-neutral and sustainable economy through the transformation of its mobility, energy, construction and production systems	Climate change mitigation and adaptation	EIT Climate-KIC; EIT InnoEnergy; EIT Digital
	Affordable and clean energy	EIT InnoEnergy; EIT Digital
	Smart and sustainable transport	EIT Urban Mobility; EIT Digital
	Circular and clean economy	EIT Raw Materials; EIT Climate-KIC; EIT Food
KSO 4 Creating a more resilient, inclusive and democratic European society, prepared and responsive to threats and disasters, addressing inequalities and providing high-quality health care, and empowering all citizens to act in the green and digital transitions	A resilient EU prepared for emerging threats	EIT Climate-KIC; EIT Health; EIT Food; EIT Digital
	A secure and open EU society	EIT Digital; EIT Climate-KIC; EIT InnoEnergy
	Good health and high quality accessible healthcare	EIT Health; EIT Food
	Inclusive growth and new job opportunities	All KICs

The strategic plan also prepares the ground for **five EU Missions**. They are a commitment to solve major societal challenges in a holistic and interdisciplinary way

- fighting cancer,
- adapting to climate change,

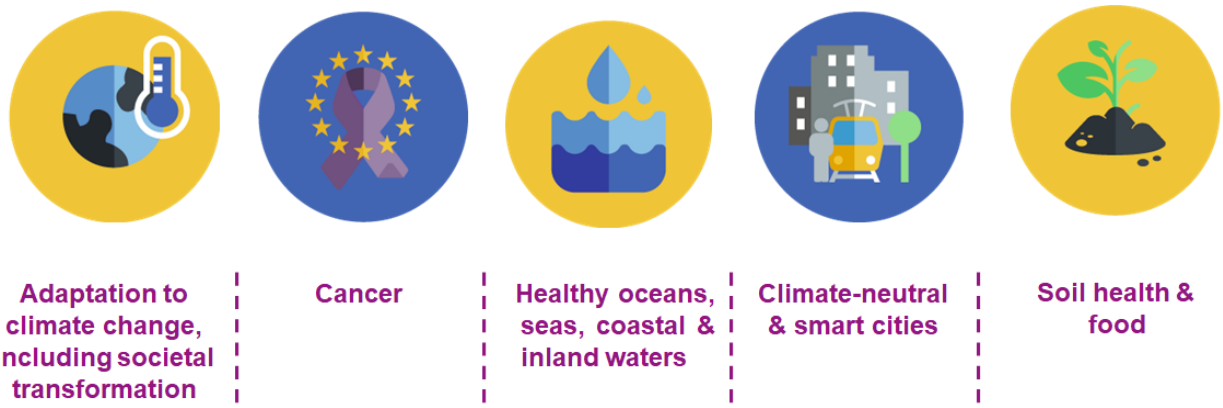
- protecting our oceans,
- living in greener cities,
- ensuring soil health for food, people, nature, and climate.

The priorities set out in Horizon Europe's strategic plan will be implemented through the Horizon Europe work programme. It sets out funding opportunities for research and innovation activities through thematic calls for proposals and topics.

Mission areas

Horizon Europe will incorporate research and innovation missions to increase the effectiveness of funding by pursuing clearly defined targets. 5 mission areas have been identified, each with a dedicated mission board and assembly. The board and assembly help specify, design and implement the specific missions which will launch under Horizon Europe.

Each mission will operate as a portfolio of actions – such as research projects, policy measures or even legislative initiatives - to achieve a measurable goal that could not be achieved through individual actions. The missions will contribute to the goals of the European Green Deal, Europe's Beating Cancer Plan as well as the Sustainable Development Goals.



Work programmes under Horizon Europe

Work programmes set out funding opportunities under Horizon Europe.

One specific programme under Horizon Europe is implemented through the following:

The main work programme

- Marie Skłodowska-Curie actions and research infrastructures under Pillar I
- all clusters under Pillar II

- European innovation ecosystems under Pillar III
- the part widening participation and strengthening the European Research Area

Other work programmes cover

- European Research Council (ERC)
- Joint Research Centre (JRC)
- European Innovation Council (EIC)

A significant part of Pillar II of Horizon Europe will be implemented through institutionalised partnerships, particularly in the areas of Mobility, Energy, Digital and Bio-based economy, which will also have separate work programmes.

The activities of the European Institute of Technology (EIT) are set out in separate programming documents.

Horizon Europe is also implemented through another specific programme (the European Defence Fund) and is complemented by the Euratom Research and Training Programme. Each of these will also have a separate work programme.

Horizon Europe programme structure

Pillar I Excellent Science	**Pillar II** Global Challenges and European Industrial Competitiveness	**Pillar III** Innovative Europe
European Research Council Marie Sklodowska-Curie Actions Research Infrastructures	• 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 Non-nuclear direct actions of the Joint Research Centre	European Innovation Council European Innovation Ecosystems European Institute of Innovation and Technology

Part: Widening participation and strengthening the European Research Area	
Widening participation and spreading excellence	Reforming and enhancing the European Research and Innovation system

Specific programme: European Defence Fund
Exclusive focus on defence research and development European Defence Fund website

Complementary programme: Euratom Research and Training Programme

Focus on nuclear fusion and fission research and training
Euratom Research and Training Programme

Pillar I: Excellent Science

The Excellent Science pillar aims to increase the EU's global scientific competitiveness. It supports frontier research projects defined and driven by top researchers themselves through the **European Research Council**, funds fellowships for experienced researchers, doctoral training networks and exchanges for researchers through **Marie Skłodowska-Curie Actions**, and invests in **world-class research infrastructures**.

The pillar is composed of three programs.
For first two programs topics are not predefined by European Commision, they determined by researchers themselves

European Research Council (ERC)

Objectives and Principles of ERC Funding

- Provide attractive, long-term funding to support excellent investigators and their research teams to pursue groundbreaking, high-gain/high-risk research
- Lead to advances at the frontiers of knowledge and to set a clear and inspirational target for frontier research across Europe.
- ***Scientific excellence*** is the sole criterion on the basis of which ERC frontier research grants are awarded.
- Applications can be made in any field of research: putting particular emphasis on the frontiers of science, scholarship and engineering.
- Independent researchers of any age and career stage can apply for attractive long-term funding
- The ERC awards flexible, long-term funding for a period of up to five years for the Starting, Consolidator and Advanced Grants.
- An ERC grant can cover up to 100% of the total eligible direct costs of the research plus a contribution towards indirect costs
- Principal Investigators from anywhere in the world can apply for an ERC grant. The ERC is particularly keen to encourage excellent proposals **from Principal Investigators based in non-associated third countries** wishing to carry out a project with a host institution in the EU or in one of the Associated Countries.
- The ERC frontier research grants aim to empower individual researchers and provide the best settings to foster their creativity
- Host institutions must provide appropriate conditions for the Principal Investigator to independently direct the research and manage its funding
- An ERC grant is awarded to the institution that engages and hosts the Principal Investigator.
- The ERC welcomes applications from Principal Investigators **hosted by private for-profit research centres**, including industrial laboratories.
- ***Open science***: Open science is a core principle of the ERC. Under Horizon Europe, beneficiaries of ERC grants must ensure open access to all peer-reviewed scientific publications10 relating to their results. Beneficiaries are required to submit a data management plan within the first six months of project implementation. These provisions are designed to facilitate access, re-use and preservation of the research data generated during the ERC funded research work.
- ***Gender Balance:*** Under Horizon Europe, beneficiaries of ERC grants must take all measures to promote equal opportunities between men and women in the implementation of the action and aim for a gender balance at all levels of personnel assigned to the action
- ***Ethical principles:*** The proposed research and innovation activities must comply with ethical principles and relevant national, Union and international legislation.

- ***Research Integrity***: It is essential to maintain and promote a culture of research integrity at all stages of the evaluation and granting process to make ERC competitions fair and efficient and to maintain the trust of both the scientific community and society as a whole. Cases of scientific misconduct such as fabrication, falsification, plagiarism or misrepresentation of data that may arise during the evaluation or throughout the life cycle of an ERC funded project will be addressed vigorously by the ERC within the applicable legal and procedural framework.

ERC Frontier Research Grants

The objectives, maximum amount and durations of the frontier research grants awarded by the ERC are given in the table below. The maximum amount of the grants is reduced pro rata temporis for projects of a shorter duration.
Additional funding up to the amounts set out in the table below can be requested in the proposal to cover the following eligible costs when these are necessary to carry out the proposed work:

1. "start-up" costs for Principal Investigators moving to the EU or an Associated Country from elsewhere as a consequence of receiving the ERC grant and/or
2. the purchase of major equipment and/or
3. access to large facilities and/or
4. other major experimental and field work costs, excluding personnel costs.

Profile of Principal Investigator

Profile of the ERC Starting Grant Principal Investigator

- Produced at least one important publication as main author or without the participation of their PhD supervisor
- Demonstrate a promising track record of early achievements appropriate to their research field and career stage
- Additional, if applicable info in https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/wp-call/2021/wp_horizon-erc-2021_en.pdf

Profile of the ERC Consolidator Grant Principal Investigator

- Shown research independence and evidence of maturity, for example by having produced several important publications as main author or without the participation of their PhD supervisor
- Demonstrate a promising track record of early achievements appropriate to their research field and career stage,
- Additional, if applicable info in https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/wp-call/2021/wp_horizon-erc-2021_en.pdf

Profile of the ERC Advanced Grant Principal Investigator

Details of requirements or alternatives of PI described in
https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/wp-call/2021/wp_horizon-erc-2021_en.pdf

Indicative summary of main calls from the 2021 budget

	Objectives	Eligible Principle Investigator	Maximum amount and duration of the grant	Call Opens	Call closes	Budget million EUR (estimated number of grants)	Planned dates to inform applicants after each step	Indicative date for signature of grant agreements
Starting Grant	Support for excellent Principal Investigators at the career stage at which they are starting their own independent research team or programme. Principal Investigators must demonstrate the ground-breaking nature, ambition and feasibility of their scientific proposal.	The date of the first PhD > 2 and ≤ 7 years prior to 1 January 2021 Cut-off dates: PhD awarded from 1 January 2014 to 31 December 2018 (inclusive)	Up to EUR 1,500,000 for a period of 5 years. Additional funding up to EUR 1,000,000.	25/02/2021	24/03/2021	619 (413)	26/08/2021 20/12/2021	19/04/2022
Consolidator Grant	Support for excellent Principal Investigators at the career stage at which they may still be consolidating their own independent research team or programme. Principal Investigators must demonstrate the ground-breaking nature, ambition and feasibility of their scientific proposal.	The date of the first PhD > 7 and ≤ 12 years prior to 1 January 2021 Cut-off dates: PhD awarded from 1 January 2009 to 31 December 2013 (inclusive)	Up to EUR 2,000,000 for a period of 5 years. Additional funding up to EUR 1,000,000.	11/03/2021	20/04/2021	633 (317)	22/11/2021 28/03/2022	26/07/2022
Advanced Grant	Support for excellent Principal Investigators at the career stage at which they are already established research leaders with a recognised track record of research achievements. Principal Investigators must demonstrate the ground-breaking nature, ambition and feasibility of their scientific proposal.	No specific criteria	Up to EUR 2,500,000 for a period of 5 years. Additional funding up to EUR 1,000,000.	20/05/2021	31/08/2021	626 (250)	28/01/2022 13/05/2022	10/09/2022
Synergy Grant		2-4 researchers (one can be based outside Europe).	Up to a maximum of €10 a period of 6 years					

Minimum time commitment

Principal Investigators funded through the ERC frontier research grants must spend a minimum percentage of their working time on the ERC project and a minimum percentage of their working time in an EU Member State or Associated Country as set out in the table below.

Minimum percentage of the working time of a Principal Investigator that must be spent	On the ERC project	In an EU Member State or Associated Country
Starting Grant	50%	50%
Consolidator Grant	40%	50%
Advanced Grant	30%	

Primary panel structure

Physical Sciences & Engineering

- PE1 Mathematics All areas of mathematics, pure and applied, plus mathematical foundations of computer science, mathematical physics and statistics.
- PE2 Fundamental Constituents of Matter Particle, nuclear, plasma, atomic, molecular, gas, and optical physics.
- PE3 Condensed Matter Physics Structure, electronic properties, fluids, nanosciences, biological physics.
- PE4 Physical and Analytical Chemical Sciences Analytical chemistry, chemical theory, physical chemistry/chemical physics.
- PE5 Synthetic Chemistry and Materials New materials and new synthetic approaches, structure-properties relations, solid state chemistry, molecular architecture, organic chemistry.
- PE6 Computer Science and Informatics Informatics and information systems, computer science, scientific computing, intelligent systems.
- PE7 Systems and Communication Engineering Electrical, electronic, communication, optical and systems engineering.
- PE8 Products and Processes Engineering Product and process design, chemical, civil, environmental, mechanical, vehicle engineering, energy processes and relevant computational methods.
- PE9 Universe Sciences Astro-physics/-chemistry/-biology; solar system; planetary systems; stellar, galactic and extragalactic astronomy; cosmology; space sciences; astronomical instrumentation and data.
- PE10 Earth System Science Physical geography, geology, geophysics, atmospheric sciences, oceanography, climatology, cryology, ecology, global environmental change, biogeochemical cycles, natural resources management. PE11 Materials Engineering Advanced materials development: performance enhancement, modelling, large-scale preparation, modification, tailoring, optimisation, novel and combined use of materials, etc.

Life Sciences

- LS1 Molecules of Life: Biological Mechanisms, Structures and Functions For all organisms: Molecular biology, biochemistry, structural biology, molecular biophysics, synthetic and chemical biology, drug design, innovative methods and modelling.
- LS2 Integrative Biology: From Genes and Genomes to Systems For all organisms: Genetics, epigenetics, genomics and other 'omics studies, bioinformatics, systems biology, genetic diseases, gene editing, innovative methods and modelling, 'omics for personalised medicine.
- LS3 Cellular, Developmental and Regenerative Biology For all organisms: Structure and function of the cell, cell-cell communication, embryogenesis, tissue differentiation, organogenesis, growth, development, evolution of development, organoids, stem cells, regeneration, therapeutic approaches.
- LS4 Physiology in Health, Disease and Ageing Organ and tissue physiology, comparative physiology, physiology of ageing, pathophysiology, inter-organ and tissue communication, endocrinology, nutrition, metabolism, interaction with the microbiome, non-communicable diseases including cancer (and except disorders of the nervous system and immunity-related diseases).

- LS5 Neuroscience and Disorders of the Nervous System Nervous system development, homeostasis and ageing, nervous system function and dysfunction, systems neuroscience and modelling, biological basis of cognitive processes and of behaviour, neurological and mental disorders.
- LS6 Immunity, Infection and Immunotherapy The immune system, related disorders and their mechanisms, biology of infectious agents and infection, biological basis of prevention and treatment of infectious diseases, innovative immunological tools and approaches, including therapies.
- LS7 Prevention, Diagnosis and Treatment of Human Diseases Medical technologies and tools for prevention, diagnosis and treatment of human diseases, therapeutic approaches and interventions, pharmacology, preventative medicine, epidemiology and public health, digital medicine.
- LS8 Environmental Biology, Ecology and Evolution For all organisms: Ecology, biodiversity, environmental change, evolutionary biology, behavioural ecology, microbial ecology, marine biology, ecophysiology, theoretical developments and modelling.
- LS9 Biotechnology and Biosystems Engineering Biotechnology using all organisms, biotechnology for environment and food applications, applied plant and animal sciences, bioengineering and synthetic biology, biomass and biofuels, biohazards.

Social Sciences & Humanities

- SH1 Individuals, Markets and Organisations Economics, finance, management.
- SH2 Institutions, Governance and Legal Systems Political science, international relations, law.
- SH3 The Social World and its Diversity Sociology, social psychology, social anthropology, education sciences, communication studies.
- SH4 The Human Mind and Its Complexity Cognitive science, psychology, linguistics, theoretical philosophy.
- SH5 Cultures and Cultural Production Literary studies, cultural studies, study of the arts, philosophy.
- SH6 The Study of the Human Past Archaeology and history. SH7 Human Mobility, Environment, and Space Human geography, demography, health, sustainability science, territorial planning, spatial analysis.

Marie Skłodowska-Curie

The Marie Skłodowska-Curie Actions are the EU flagship programme for doctoral and postdoctoral training, equipping researchers with new knowledge and skills through mobility across borders and exposure to different sectors and disciplines.

They enhance researchers' training and career development systems and institutional and national recruitment processes in line with the European Charter for Researchers and the Code of Conduct for the recruitment of researchers.

The Marie Skłodowska-Curie Actions fund the development of excellent doctoral and postdoctoral training programmes and collaborative research projects. They achieve a structuring impact on higher education institutions, research centres and other organisations way beyond academia by widely spreading excellence and setting standards for high-quality researcher education and training.
Areas of intervention

- supporting researchers in their training, skills and career development
- fostering trans-national, cross-sectoral and interdisciplinary mobility
- funding excellent doctoral and postdoctoral programmes, collaborative projects
- promoting public outreach

MSCA under Horizon Europe Information Event

Programs	Objective	Applicants	Calls/Budget
MSCA DOCTORAL NETWORKS	Multi-beneficiary Action to set up doctoral programmes, including • Industrial Doctorates: Training in academia and industry, Joint supervision • Joint Doctorates: Joint collaborations leading to a joint/multiple doctoral degree, Joint selection and supervision; pre-agreement for joint degrees required	Eligibility/organizations Consortia of universities, research institutions and research infrastructures, businesses including SMEs, and other socio-economic actors • At least three independent legal entities, each established in a different Member State or Associate Country; minimum of 1 beneficiary from a MS (on top of this minimum, any entity from any third country can join; no minimum for associated partners) • Eligibility/researchers • Supported researchers must be doctoral candidates (not already in possession of a doctoral degree at the date of recruitment)	18 May - 16 Nov; 402,95M€ 3 May - 15 Nov; 427,28M€
MSCA STAFF EXCHANGES	International, inter-sectoral and interdisciplinary mobility of R&I staff ("secondments") Knowledge transfer between participating organisations Collaboration between the academic and non-academic sectors (including SMEs) Cooperation across the globe	Consortium of at least 3 legal entities in 3 different countries, 2 of which in a different EU Member State or HE Associated Country	7 Oct 2021 – 9 March 2022; 72.5 M€ 6 Oct 2022 – 8 March 2023; 77.5 M€
MSCA AND CITIZENS	Coordination and Support Action to bring research and researchers closer to the public at large. • Enhance engagement with citizens on R&I • Increase awareness among the general public of the importance and benefits of R&I and its concrete impact on citizens' daily life • Raise young people's interest for research and science • Improves researchers' communication skills and competences	One or more legal entities established in an EU Member State or HE Associated country	17 Jun 2021 – 7 Oct 2021; 15 M€
MSCA COFUND	Mono-beneficiary action to co-fund new or existing national, regional, institutional schemes for doctoral training and postdoctoral fellowships	Single legal entity established in an EU Member State or HE Associated country. A minimum of three researchers must be recruited.	12 Oct 2021 – 10 Feb 2022; 89 M€ 11 Oct 2022 – 9 Feb 2023; 95 M€
MSCA POSTDOCTORAL FELLOWSHIPS	Foster excellence through implementation of research project Enhance the creative and innovative potential of researchers holding a PhD (training on transferable skills & career development) Focus on i3 (international, inter-sectoral, interdisciplinary) mobility Bridges and exposure to the non-academic sector	Legal entity in an EU Member State or HE Associated country	18 May 2021 – 15 Sept 2021 (tbc); 242 M€ [+indicative EUR 1 million for Euratom] 13 Apr 2022– 14 Sept 2022; 257 M€ [+indicative EUR 1 million for Euratom]

Research Infrastructures

Research infrastructures are facilities that provide resources and services for the research communities to conduct research and foster innovation in their fields, including

- major equipment or sets of instruments
- knowledge-related facilities such as collections,
- archives of scientific data infrastructures
- computing systems
- communication networks

Horizon Europe will endow Europe with world-class sustainable research infrastructures which are open and accessible to the best researchers from Europe and beyond.

It will also encourage the use of existing research infrastructures, including those financed from funds under the EU's Cohesion Policy.

In doing so, enhancing the potential of the research infrastructures to support scientific advance and innovation, and to enable open and excellent science in accordance with the FAIR principles, alongside activities related to EU policies and international cooperation.

'Users' of Research Infrastructures can be individuals, teams and institutions from academia, business, industry and public services. They are engaged in the conception or creation of new knowledge, products, processes, methods and systems and also in the management of projects. Teams can include researchers, doctoral candidates, technical staff and students participating in research in the framework of their studies.

The charter for access sets out principles and guidelines as a reference when defining access policies for Research Infrastructures.

Pillar II: Global Challenges and European Industrial Competitiveness

The Global Challenges and European Industrial Competitiveness pillar supports research relating to societal challenges and reinforces technological and industrial capacities through clusters. It sets **EU-missions** with ambitious goals tackling some of our biggest problems. It also includes activities pursued by the **Joint Research Centre** which supports EU and national policymakers with independent scientific evidence and technical support.

Cluster	Areas of Intervention		Budget for clusters & for JRC
Health	• Health throughout the life course • Environmental and social health determinants • Non-communicable and rare diseases • Health care systems	• Infectious diseases including poverty-related and neglected diseases • Tools, technologies and digital solutions for health and care including personalised medicine	€8.246 billion (including €1.35 billion from NGEU)
Culture, Creativity and Inclusive Society	• Democracy • Cultural heritage	• Social and economic transformations	€2.280 billion

Civil Security for Society	• Disaster-resilient societies • Protection and security	• Cybersecurity	€1.596 billion
Digital, Industry and Space	• manufacturing technologies • key digital technologies including quantum technologies • emerging enabling technologies • low carbon and clean industries • space including earth observation	• advanced materials • artificial intelligence and robotics • next generation internet • advanced computing and Big Data • circular industries	€15.349 billion (including €1.35 billion from NGEU)
Climate, Energy and Mobility	• climate science and solutions • energy supply • energy systems and grids • smart mobility • energy storage	• buildings and industrial facilities in energy transition • communities and cities • industrial competitiveness in transport • clean, safe and accessible transport and mobility	€15.123 billion (including €1.35 billion from NGEU)
Food, Bioeconomy, Natural Resources, Agriculture and Environment	• environmental observation • biodiversity and natural resources • agriculture, forestry and rural areas	• seas, oceans and inland waters • food systems • bio-based innovation systems in the EU's bioeconomy • circular systems	€8.952 billion
	Non-nuclear direct actions of the Joint Research Centre		€1.970 billion

Pillar III: Innovative Europe

The Innovative Europe pillar aims to make Europe a frontrunner in market-creating innovation via the **European Innovation Council**. It also helps to develop the overall European innovation landscape through the **European Institute of Innovation and Technology (EIT)** which fosters the integration of the knowledge triangle of education, research and innovation.

European Innovation Council

The European Innovation Council (EIC) promotes breakthrough innovation with scale-up potential at the global level.
It focuses mainly on breakthrough, deeptech and disruptive innovation, targeting especially market-creating innovation.

			Open calls		Challenge driven calls		
	Who can apply	**What for**	**Call deadline(s)**	**Indicative Budget (EUR million)**	**Challenges**	**Call deadline(s)**	**Indicative Budget(EUR million)**
EIC Pathfinder	Consortia of at least three different independent legal entities (e.g. research organisations, universities, SMEs, industry) established in at least 3 different eligible countries. Single applicants or small consortia (two partners) may be able to apply for Pathfinder Challenges according to the call specifications.	Grants of up to EUR 3 million (open) or EUR 4 million (challenge driven) (or more if properly justified) to achieve the proof of principle and validate the scientific basis of breakthrough technology (TRL 1-4)	19 May 2021	168.00	1. Awareness inside 2. Tools to measure & stimulate activity in brain tissue 3. Emerging Technologies in Cell & Gene Therapy 4. Novel routes to green hydrogen production 5. Engineered living materials	27 October 2021	132.00
EIC Transition	Single applicants (SMEs, spin-offs, start-ups, research organisations, universities) or small consortia (two to 5 partners). Applications must build on results from eligible Pathfinder, FET or ERC Proof of Concept projects	Grants of up to EUR 2.5 million (or more if properly justified) to validate and demonstrate technology in application relevant environment (TRL 4 to 5/6) and develop market readiness	22 September 2021	59.60	1. Medical devices 2. Energy harvesting and storage technologies	22 September 2021	40.50
EIC Accelerator	Single Start-ups and SMEs (including spin-outs), individuals (intending to launch a start-up/ SME) and in exceptional cases small mid-caps (fewer than 500 employees)	Blended finance: up to EUR 2.5 million grant component for technology development and validation (TRL 5/6 to 8); EUR 0.5 - 15 million investment component for scaling up and other activities.Grant only/grant first under certain conditions. Investment component only for small mid-caps or as follow up to grant only (i.e. for SMEs, including start-ups)	Any time (short applications) Full applications by 9 June 2021 and 6 October 2021	592.50	1. Strategic Health and Digital Technologies 2. Green Deal innovations for the economic recovery	Any time (short applications) Full applications by 9 June 2021 and 6 October 2021	495.10

This funding has no predefined thematic priorities and is open to proposals in any field of science, technology or application

EIC Pathfinder Open

You should apply if you are looking for support from EIC Pathfinder Open to realise an ambitious vision for radically new technology, with potential to create new markets and/or to address global challenges. EIC Pathfinder Open supports early stage development of such future technologies (e.g. various activities at low Technology Readiness Levels 1-4), based on high-risk/high-gain science-towards-technology breakthrough research (including 'deep-tech'). This research must provide the foundations of the technology you are envisioning.

EIC Pathfinder Open may support your work, especially if it is highly risky: you may set out to try things that will not work; you may be faced with questions that nobody knows the answer to yet; you may realise that there are many aspects of the problem that you do not master. On the contrary, if the path you want to follow is incremental by nature or known, EIC Pathfinder Open will not support you.

This call is open for collaborative research. Your proposal must be submitted by the coordinator, on behalf of a consortium that includes at least three independent legal entities, each one established in a different Member State or Associated Country and with at least one of them established in a Member State. The legal entities may for example be universities, research organisations, SMEs, start-ups, industrial partners or natural persons.

EIC Transition Open

EIC Transition funds innovation activities that go beyond the experimental proof of principle in the laboratory. It supports both the maturation and validation of your novel technology in the lab and in relevant application environments (by making use of prototyping, formulation, models, user testing or other validation tests) as well as the development of a business case and business model towards the innovation's future commercialisation.

Your proposed activities must include further technology development on the results achieved in a previous project and follow user-centric methodologies to increase chances of the innovation's future success in the market.

At the end of your Transition project, you should be ready for the next stage, which can be to apply for EIC Accelerator (if you are a SME, including start-ups or spin-offs), to seek other investors or sources of funding, to enter licensing or collaboration agreements with third parties, or other routes to market deployment

You can apply for EIC Transition either as:

- A single legal entity established in a Member State or an Associated Country ('mono-beneficiary') if you are an SME or a research performing organisation (university, research or technology organisation, including teams, individual Principle Investigators and inventors in such institutions who intend to form a spinout company). Larger companies (i.e. which do not qualify as SMEs) are not eligible to apply as a single legal entity; or
- A small consortium of minimum two25 and maximum five independent legal entities ('multi-beneficiary') that may for example include universities, research organisations, SMEs or larger companies, user/customer organisations or potential end users (e.g. hospitals, utilities, industry, regulatory and standardisation bodies, public authorities).

EIC Accelerator Open

The EIC Accelerator supports companies (principally start-ups and SMEs) to scale up high impact innovations with the potential to create new markets or disrupt existing ones.

The EIC Accelerator focuses in particular on innovations building on scientific discovery or technological breakthroughs ('deep tech') and where significant funding is needed over a long time frame before returns can be generated ('patient capital'). Such innovations often struggle to attract financing because the risks and time period involved are too high. Funding and support from the EIC Accelerator is designed to enable such innovators to attract the full investment amounts needed for scale up in a shorter time frame.

The EIC Accelerator supports the later stages of technology development as well as scale up. The technology component of your innovation must therefore have been tested and validated in a laboratory or other relevant environment (e.g. at least Technology Readiness Level 5/6 or higher). The EIC Accelerator looks to support companies where the EIC support will act as a catalyst to crowd in other investors necessary for the scale up of the innovation.

In order to apply you must meet one of the following eligibility conditions:

- A single company classified as a SME and established within a Member State or an Associated Country
- A single company classified as a 'Small mid-cap' (up to 500 employees) established in a Member State or an Associated Country, but your application can only be for rapid scale up purposes (e.g. Technology Readiness Level 9) and only for the investment component;
- One or more natural persons (including individual entrepreneurs) or legal entities, which are either:
    1. from a Member State or an Associated Country28 intending to establish an SME or small mid-cap (as defined above) in a Member State or Associated Country by the time of signing the Accelerator contract or, in the case blended finance is awarded, at the latest when agreeing on its investment component;
    2. intending to invest in an SME or small mid-cap in a Member State or an Associated Country and who may submit a proposal on behalf of that SME or small mid-cap, provided that a prior agreement exist with the company. The contract will be signed with the beneficiary company only;
    3. from a non-associated third country intending to establish an SME (including start-ups) or to relocate an existing SME to a Member State or an Associated Country, by the time of submitting a full application. Your company must prove its effective establishment in a Member State or an Associated Country. The Commission may set specific conditions and milestones in the contract to ensure that the interest of the Union is met.

European Innovation Ecosystems

The EU aims to create more connected and efficient innovation ecosystems to support the scaling of companies, encourage innovation and stimulate cooperation among national, regional and local innovation actors.

- builds interconnected, inclusive innovation ecosystems across Europe by drawing on the existing strengths of national, regional and local ecosystems and pulling in new, less well-represented actors and territories to set, undertake, and achieve collective ambitions towards challenges for the benefit of society, including the green, digital, and social transitions
- reinforces network connectivity within and between innovation ecosystems to accelerate sustainable business growth with high societal value
- supports the European Partnership for Innovative SMEs (Eurostars 3)
- complements the European Regional Development Fund support for innovation ecosystems and interregional partnerships around smart specialisation topics

European Institute of Innovation and Technology

Increase Europe's ability to innovate by nurturing entrepreneurial talent and supporting new ideas.

- strengthening sustainable innovation ecosystems across Europe
- fostering the development of entrepreneurial and innovation skills in a lifelong learning perspective and support the entrepreneurial transformation of EU universities
- bringing new solutions to global societal challenges to the market

- creating synergies and added-value within Horizon Europe

Widening Participation & Strengthening the European Research Area (ERA)

Widening Participation and Strengthening the European Research Area (ERA) increases support to EU Member States in their efforts to make the most of their national research and innovation potential.

Widening participation and spreading excellence

Widening Participation and Spreading Excellence actions under Horizon Europe, contribute to building research and innovation capacity for countries lagging behind.

They will strengthen their potential for successful participation in transnational research and innovation processes, promote networking and access to excellence.

Participants in the programme will be able to upgrade their research and innovation systems, making them stronger and allowing the EU as a whole to advance together, in line with the policy objectives of the European Research Area.

Areas of intervention

- Teaming: Support/create centres of excellences as role models to stimulate excellence, new investments and reforms of national research and innovation systems.
- Twinning: Develop excellence in chosen research and innovation domain, increase visibility of the research institutions and universities, and upskill its staff.
- ERA Chairs, to support universities or research organisations from eligible countries to attract and maintain high quality human resources and help excellent scientists and their teams to become game changers in their field.
- European Cooperation in Science and Technology (COST), a cross-border scientific network helping excellent researchers and innovators get access to the European and international networks.

Reforming and enhancing the EU R&I system

Policy reforms at national level will be mutually reinforced and complemented through the development of EU-level policy initiatives, research, networking, partnering, coordination, data collection and monitoring and evaluation.

Areas of intervention

- strengthening the evidence base for research and innovation policy, for a better understanding of the different dimensions and components of national and regional research and innovation ecosystems, including drivers, impacts, associated polices
- foresight activities, to anticipate emerging needs and trends, in coordination and co-design with national agencies and future-oriented stakeholders
- support for policy makers, funding bodies, research performing organisations (including universities) or advisory groups working on the European Research Area and related policies
- accelerating the transition towards open science, by monitoring, analysing and supporting the development and uptake of open science policies and practices

- support for synergies between research and innovation and higher education policies and programmes, in particular towards a modernised higher education sector, benefitting from targeted transformations in higher education, research, and innovation
- support for interconnected knowledge ecosystems, strong in knowledge creation, circulation and use
- strengthening research careers, to ensure research and innovation talents benefit from attractive careers, and a highly skilled workforce can circulate freely

Specific programme: European Defence Fund

Project with €13 billion budget aiming at supporting competitive collaborative defence projects throughout the entire cycle of research and development.
European Defence Fund website

Complementary programme: Euratom Research and Training Programme

The Euratom Research and Training Programme (2021-2025) is a complementary funding programme to Horizon Europe which covers nuclear research and innovation.

It uses the same instruments and rules for participation as Horizon Europe. The budget is €1.38 billion to implement the new programme for the period 1 January 2021 to 31 December 2025.

The Euratom Research and Training programme has the following specific objectives

- improve and support nuclear safety, security, safeguards, radiation protection, safe spent fuel and radioactive waste management and decommissioning, including the safe and secure use of nuclear power and of non-power applications of ionising radiation
- maintain and further develop expertise and competence in the nuclear field within the community
- foster the development of fusion energy as a potential future energy source for electricity production and contribute to the implementation of the European fusion roadmap
- support the policy of the EU and its members on continuous improvement of nuclear safety, safeguards and security

It will expand research into non-power applications of ionising radiation and make improvements in the areas of education, training and access to research infrastructures.

The Euratom programme puts a strong emphasis on developing nuclear skills and competence. This will allow Europe to maintain world leadership in nuclear safety and waste management and to attain the highest level of protection from radiation.

It will support the mobility of researchers in the nuclear field in the framework of Horizon Europe's Marie Skłodowska-Curie Actions (MSCA).