



# HORIZON EUROPE

THE EU  
RESEARCH &  
INNOVATION  
PROGRAMME 2021 – 27



This presentation is based on the political agreement of 11 December 2020 on the Horizon Europe. Information on some parts is pending revision.

# Our Vision

The EU's key funding programme for research and innovation:

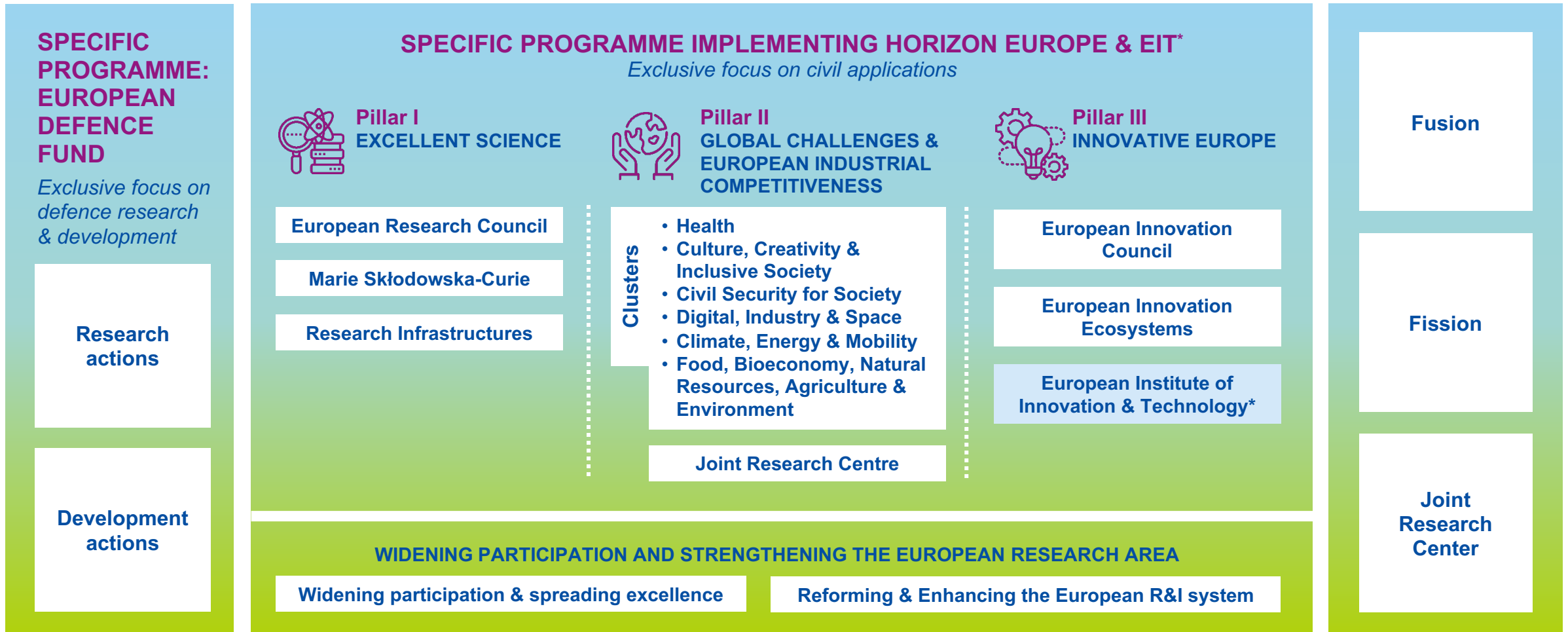
- Tackles climate change
- Helps to achieve the UN's Sustainable Development Goals
- Boosts the EU's competitiveness and growth
- Facilitates collaboration and strengthens the impact of research and innovation in developing, supporting and implementing EU policies while tackling global challenges
- Supports the creation and better diffusion of excellent knowledge and technologies
- Creates jobs, fully engages the EU's talent pool, boosts economic growth, promotes industrial competitiveness and optimises investment impact within a strengthened European Research Area.



Credits: <https://www.un.org/sustainabledevelopment/sustainable-development-goals/>

# HORIZON EUROPE

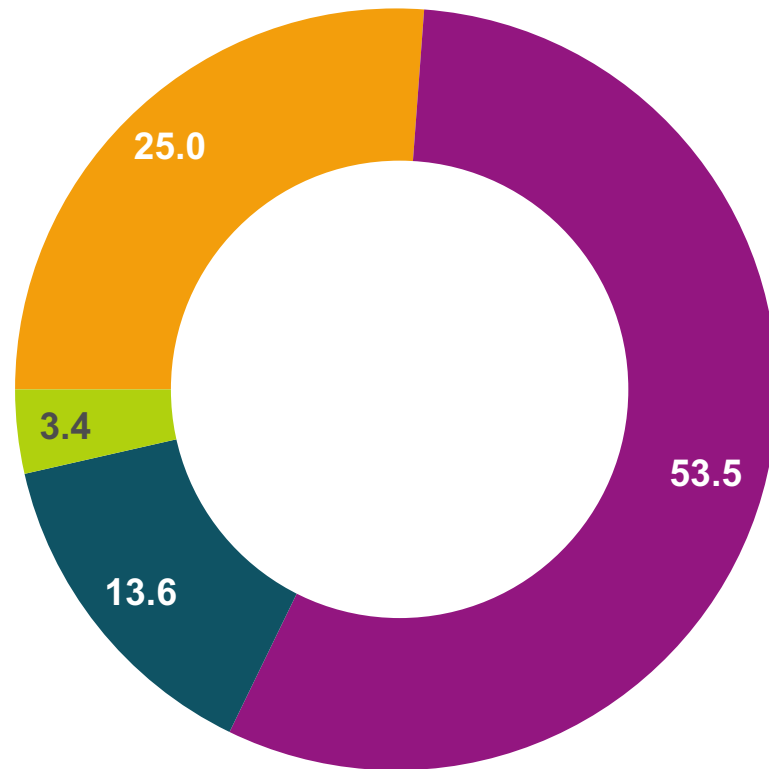
# EURATOM



\* The European Institute of Innovation & Technology (EIT) is not part of the Specific Programme

# Horizon Europe Budget: €95.5 billion (2021-2027)

(including €5.4 billion from NGEU – Next Generation Europe – programme of EU for Recovery from COVID-19 crisis)



## Political agreement December 2020

*€ billion in current prices*

- Excellent Science
- Global challenges and European ind. comp.
- Innovative Europe
- Widening Part and ERA

# Lessons Learned

from Horizon 2020 Interim Evaluation



Support breakthrough innovation



Create more impact through mission-orientation and citizens' involvement



Rationalise partnerships' landscape



Reinforce openness



Strengthen international cooperation



Encourage participation

# Key Novelties

in Horizon Europe



European Innovation Council



EU Missions



New approach to partnerships



Open science policy



Extended association possibilities



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**)

**European  
Innovation Council –  
a one-stop-shop**

- **Helping researchers and innovators create markets of the future, leverage private finance, scale up their companies**
- **Innovation centric, risk taking & agile, pro-active management and follow up**
- **Mostly 'bottom up', but also targeting strategic challenges**
- **EIC Programme Managers to develop visions for breakthroughs and steer portfolios**

Complementary instruments bridging the gap from idea to market

## **PATHFINDER**

**R&I grants**  
(from early technology  
to proof of concept)

## **TRANSITION**

**R&I grants**  
(proof of concept to  
pre-commercial)

## **ACCELERATOR**

**Grants & investment (via EIC Fund) for  
single SMEs & start-ups**  
(from pre-commercial to market & scale-up)



# EU Missions

## R&I Missions

Relating EU's research and innovation better to society and citizens' needs; with strong visibility and impact

A mission is a portfolio of actions 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, but may also benefit from actions carried out within other parts of the Programme as well as complementary actions carried out under other Union programmes.

# Five Missions Areas



**Adaptation to  
climate change,  
including societal  
transformation**



**Cancer**



**Healthy oceans,  
seas, coastal &  
inland waters**



**Climate-neutral  
& smart cities**



**Soil health &  
food**





# New approach to European Partnerships

New generation of objective-driven and more ambitious partnerships in support of agreed EU policy objectives

## Key Features

- **Strategic orientation**
- **Systemic approach**
- **Simple architecture and toolbox**
- **Common set of criteria for the life-cycle**

### 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 Art 185/187 of TFEU and the EIT legal acts for 2021-2027



# International Cooperation

## International Cooperation

Tackling together global societal challenges; access to the world's best talents, expertise and resources; enhanced supply and demand of innovative solutions

## Association to Horizon Europe

- Third countries with good capacity in science, technology and innovation
- Taking into account objective of driving economic growth in Europe through innovation
- Intensified targeted actions
- Strengthened support to multilateral cooperation
- Openness to international participation balanced with the promotion of EU strategic autonomy



# Open Science across the programme

**Open  
Science**

**Mainstreaming of open science practices for improved quality and efficiency of R&I, and active engagement of society**

**Mandatory immediate Open Access to publications:** beneficiaries must retain sufficient IPRs to comply with open access requirements;

**Data sharing as ‘open as possible, as closed as necessary’:** mandatory Data Management Plan for FAIR (Findable, Accessible, Interoperable, Reusable) research data

- Work Programmes may incentivize or oblige to adhere to **open science practices** such as involvement of citizens, or to use the **European Open Science Cloud**
- Assessment of open science practices through the **award criteria** for proposal evaluation
- Dedicated support to **open science policy actions**
- **Open Research Europe** publishing platform

## Pillar I

# 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

**€16 billion**

### Marie Skłodowska-Curie Actions

Equipping researchers with new knowledge and skills through mobility and training

**€6.6 billion**

### Research Infrastructures

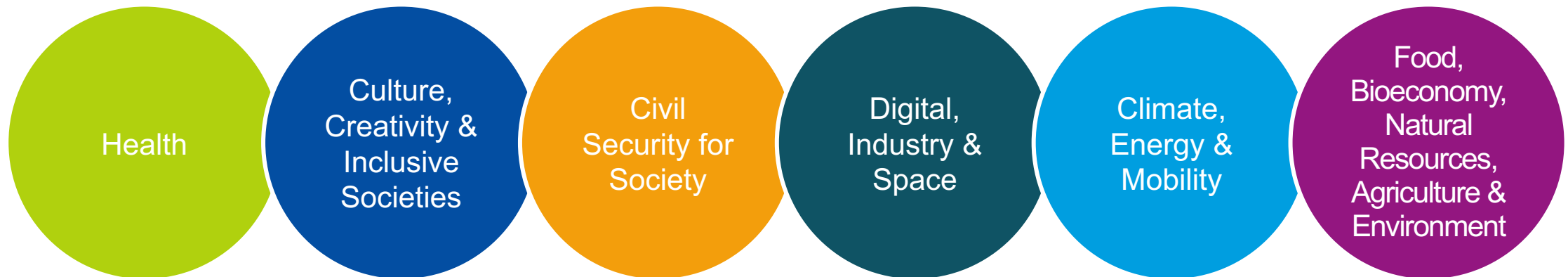
Integrated and inter-connected world-class research infrastructures

**€2.4 billion**

## Pillar II - Clusters

# GLOBAL CHALLENGES & EUROPEAN INDUSTRIAL COMPETITIVENESS:

boosting **key technologies** and solutions underpinning **EU policies & Sustainable Development Goals** (6 clusters and JRC – non-nuclear direct actions)



€53.5 billion

## Pillar II

# Budget for clusters & for JRC

*in current prices*

<b>Cluster 1</b>	<b>Health</b>	<b>€8.246 billion</b> (including €1.35 billion from NGEU)
<b>Cluster 2</b>	<b>Culture, Creativity &amp; Inclusive Societies</b>	<b>€2.280 billion</b>
<b>Cluster 3</b>	<b>Civil Security for Society</b>	<b>€1.596 billion</b>
<b>Cluster 4</b>	<b>Digital, Industry &amp; Space</b>	<b>€15.349 billion</b> (including €1.35 billion from NGEU)
<b>Cluster 5</b>	<b>Climate, Energy &amp; Mobility</b>	<b>€15.123 billion</b> (including €1.35 billion from NGEU)
<b>Cluster 6</b>	<b>Food, Bioeconomy, Natural Resources, Agriculture &amp; Environment</b>	<b>€8.952 billion</b>
	<b>JRC (non-nuclear direct actions)</b>	<b>€1.970 billion</b>

Clusters are including a budget for Partnerships and Missions  
NGEU is Next Generation EU programme – Recovery Fund

## Pillar III

# INNOVATIVE EUROPE:

stimulating **market-creating breakthroughs** and **ecosystems** conducive to innovation

### European Innovation Council

Support to innovations with breakthrough and market creating potential

The budget: **€10.6 billion**, incl. up to **€527 million** for ecosystems (including NGEU – Recovery Fund parts dedicated to EIC).

### 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

circa **€3 billion**

Part

# Widening Participation & Strengthening the European Research Area (ERA):

## Widening Participation and Spreading Excellence

- Teaming, Twinning, ERA Chairs,
- European Cooperation in Science and Technology (COST)
- Boosting National Contact Points' (NCPs) activities, pre-proposal checks and advice
- Brain circulation
- Excellence initiatives:
- Possibility for entities from widening countries to join already selected collaborative R&I actions
- Recognition of participation
- Matchmaking services

**€2.96 billion**

## Reforming and enhancing the EU R&I system

- Strengthening the evidence base for R&I policy
- Foresight
- Support for policy makers to the ERA development
- Support to national R&I policy reform, including Policy Support Facility
- Attractive researcher careers and links with higher education
- Open science, citizen science and science communication
- Gender equality
- Ethics and integrity
- Support to international cooperation
- Scientific input to other policies
- Support to the Programme implementation
- Support for National Contact Points
- Support to dissemination & exploitation

**€0.44 billion**



# EURATOM research and training programme (2021-2025)

## Objective

Research and training activities to reduce risks in nuclear safety and security, 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

## Budget for years 2021-27

**€1.981 billion**

# INTERNATIONAL COOPERATION IN HORIZON EUROPE



[@EUScienceInnov](#) | [#EUResearchArea](#) | [#ResearchImpactEU](#) | [#HorizonEU](#)



European  
Commission



# Global approach to research & innovation

*Europe's strategy for international cooperation in a changing world\**

## WHAT IS THE AIM OF THE GLOBAL APPROACH TO RESEARCH AND INNOVATION (R&I)?

To preserve openness in research and innovation international cooperation while promoting a level playing field and reciprocity underpinned by fundamental values.

To strengthen multilateral partnerships to deliver new solutions to green, digital, health and innovation challenges.



## HOW WILL THIS BE ACHIEVED?

Modulating bilateral cooperation in line with European interests and values and EU's open strategic autonomy.

Accelerating sustainable and inclusive development, and the transition to resilient, knowledge-based societies and economies in low and middle-income countries.

Using a *Team Europe* approach, with actions by the EU, its financial institutions and Member States.





# International cooperation in Horizon Europe

## Main features

### General openness to international participation

- Entities from all over the world can take part in collaborative R&I projects
- Researchers and innovators of any nationality can apply for grants
- Entities from most low-middle income countries are automatically eligible for funding

### Targeted international cooperation actions

- Actions specifically relevant for international cooperation
- Targeted actions with key partners on specific thematic areas
- Cooperation with Africa under the Horizon Europe 'Africa Initiative'



# International cooperation in Horizon Europe Work Programme 2021-2022

## Key figures

**200+**

actions specifically relevant to international cooperation (ca. 1 in 5 total)

**75**

actions targeting cooperation with specific countries or regions

**30**

actions contributing to key multilateral initiatives

**€3B+**

total EU contribution to international cooperation actions



# International cooperation in Horizon Europe Work Programme 2021-2022

## Cluster 1 - Health

### Key figures

**7**

topics encourage  
international cooperation

**€320 million**

total EU contribution to these topics

### Examples of thematic areas

- Infectious diseases (Africa)
- Mental health
- Health impacts of climate change
- AI for treatment and care
- Repurposing medicines
- Antimicrobial resistance



# International cooperation in Horizon Europe Work Programme 2021-2022

## Cluster 2 – Culture, Creativity & Inclusive Society

### Key figures

**9**

topics encourage  
international cooperation

**€89 million**

total EU contribution to these topics

### Examples of thematic areas

- Politics and governance
- Cultural heritage
- Indicators for sustainable development
- Gender
- Migration



# International cooperation in Horizon Europe Work Programme 2021-2022

## Cluster 3 – Civil Security for Society

### Key figures

**16**

topics encourage  
international cooperation

**€91 million**

total EU contribution to these topics

### Examples of thematic areas

- Disaster resilience
- Border management
- Infrastructure resilience
- Fighting crime and terrorism





# International cooperation in Horizon Europe Work Programme 2021-2022

## Cluster 4 – Digital, Industry and Space

### Key figures

**30+**

topics encourage  
international cooperation

**€600+ million**

total EU contribution to these topics

### Examples of thematic areas

- Manufacturing, construction, processing
- Raw & advanced materials
- Next generation internet
- Nanomaterials health and environmental risks



# International cooperation in Horizon Europe Work Programme 2021-2022

## Cluster 5 – Climate, Energy & Mobility

### Key figures

**30+**

topics encourage or require international cooperation

**€540+ million**

total EU contribution to these topics

### Examples of thematic areas

- Connected & Automated Mobility
- Climate sciences
- Renewable energy
- Clean transport
- Biofuels (Mission Innovation)



# International cooperation in Horizon Europe Work Programme 2021-2022

## Cluster 6 – Food, Bioecon, Nat Res, Agricult & Envir

### Key figures

**55+**

topics encourage or require international cooperation

**€700+ million**

total EU contribution to these topics

### Examples of thematic areas

- Biodiversity & ecosystems (Africa, Brazil, Canada, LAC, Med, ...)
- Circular economy and bioeconomy
- Water, oceans, soil (incl. AORA, Arctic Ministerial, IRC on soil carbon,)
- Communities (Africa, Black Sea, JP, LAC, S. Med, US)
- Pollution



# International cooperation in Horizon Europe Work Programme 2021-2022

## Widening participation & strengthening the ERA

### Key figures

**12**

topics encourage or support international cooperation

**€64 million**

total EU contribution to these topics

### Examples of thematic areas

- FAIR data policy, citizen science
- Research ethics
- Open access
- Responsible R&I
- Service Facility for international cooperation



# International cooperation in Horizon Europe Work Programme 2021-2022

## Pillar I: Research Infrastructures

### Key figures

9

topics encourage or require international cooperation

€170+ million

total EU contribution to these topics

### Examples of thematic areas

- Research infrastructure services
  - *Areas: cancer, agriculture, environment, materials for circular economy, global value chains, frontier knowledge, COVID-19*
  - *Possibility for exceptional funding: AU; BR; CA; CN; IN; JP; MX; NZ; KO; RU; SG; US*



# International cooperation in Horizon Europe Work Programme 2021-2022

## Pillar I: MSCA and ERC

### Marie Skłodowska-Curie Actions

- Doctoral Networks
- Staff Exchanges
  - address inter-sectoral, *international* and interdisciplinary mobility
- Global Fellowships
  - 1 - 2 years in non-associated third country + 1 year return phase to EU or associated country
  - Open to EU or associated country nationals or long-term residents

### European Research Council

- ERC research teams include researchers of nationalities from all over the world



# International cooperation in Horizon Europe Work Programme 2021-2022

## Contribution to key multilateral initiatives



& others ...

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*Director-General Jean-Eric Paquet:* @JEPaquetEU

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**Horizon Magazine:** @HorizonMagEU

**Horizon Europe website:** <http://ec.europa.eu/horizon-europe>

**European Innovation Council:** <http://ec.europa.eu/research/eic>

**European Research Council:** <https://erc.europa.eu/>

**Funding & Tenders portal:** <https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/programmes/horizon>







# Thank you!

## #HorizonEU

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



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