HORIZON EUROPE SEEDS

UNIVERSITÀ DEGLI STUDI DI BARI ALDO MORO

Promuovere e sostenere proposte di ricerca altamente transdisciplinari basate sulla presenza di competenze, strutture e personale, che possano integrarsi efficacemente rafforzando la competitività dell'Università di Bari rispetto all'accesso ai finanziamenti europei, con particolare riferimento al programma Horizon Europe che si è avviato nel 2021.

Presentazione Prodotti Alimentari, Bioeconomia, Risorse Naturali, Agricoltura e Ambiente

16 giugno 2021

Horizon 2020 – Il dato italiano
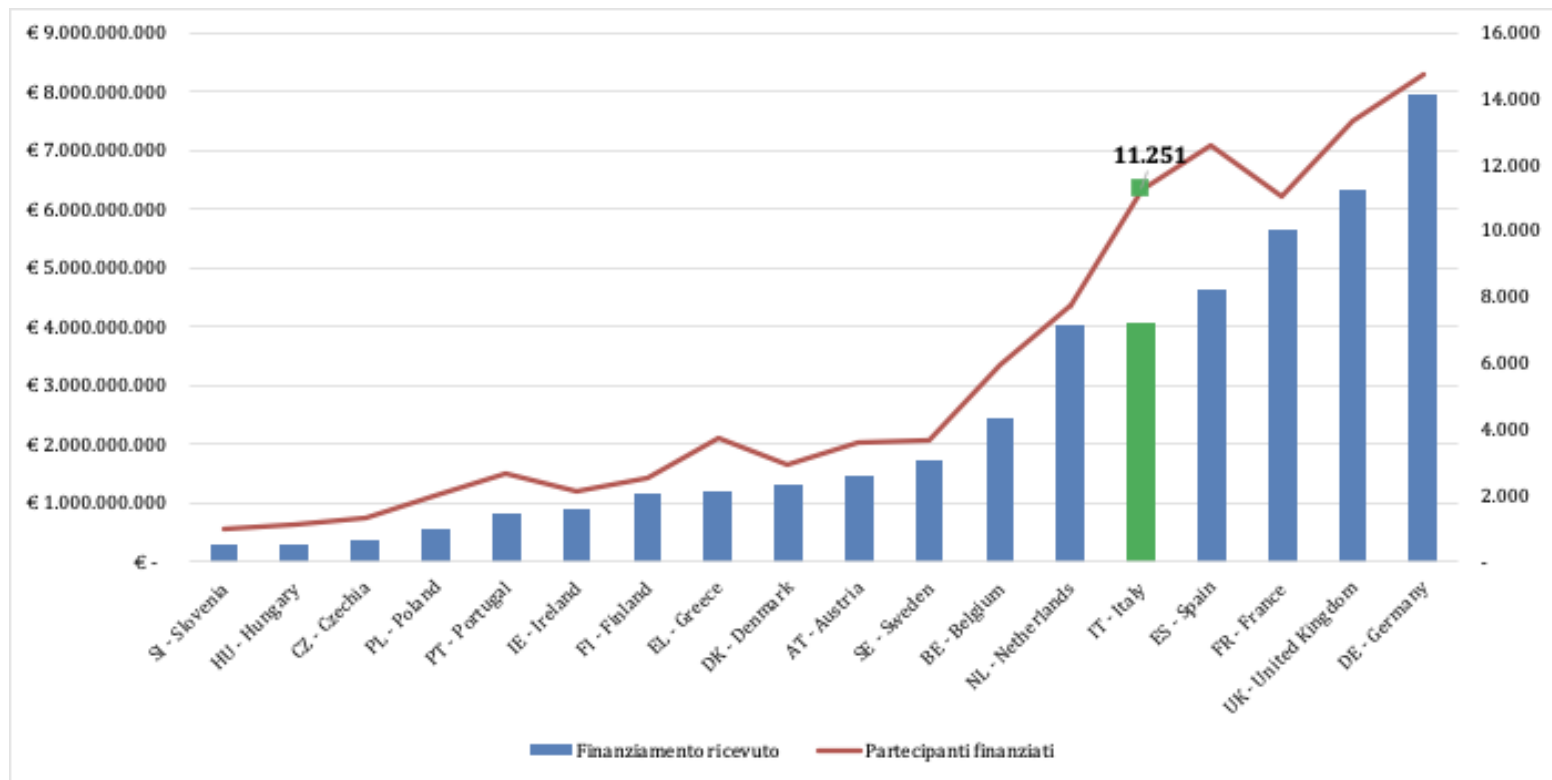
ITALIA

4° posto per partecipazioni

5° posto per contributo ricevuto

Cluster 6 mandate

The Horizon Europe mandate to Cluster 6 is to provide opportunities to enhance and balance environmental, social and economic goals and to set human economic activities on a path **towards sustainability.**

The underlying paradigm of Cluster 6 is therefore the need for a **transformative change of the EU economy and society** aimed at reducing **environmental degradation**, halting and **reversing the decline of biodiversity** and to better manage **natural resources** while serving the EU's **climate objectives** and ensuring **food** and **water** security.

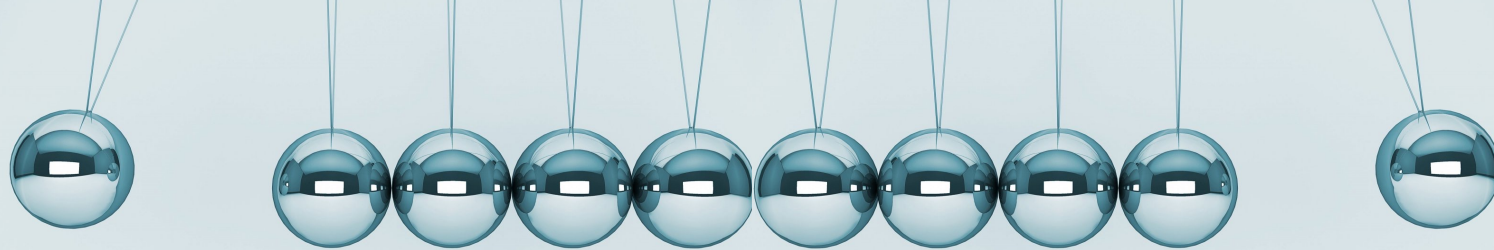The Strategic Plan has identified six long term targeted impacts where Cluster 6 will make a difference.

Cluster 6 Impacts

These impacts are:

Climate neutrality is achieved by reducing GHG emissions, maintaining natural carbon sinks, and enhancing the sequestration and storage of carbon in ecosystems, including by unfolding the potential of nature based solution, production systems on land and at sea as well as rural and coastal areas, where adaptations to climate change are also being fostered.

Biodiversity is back on a path to recovery, and ecosystems and their services are preserved and sustainably restored on land, inland water and at sea through improved knowledge and innovation.

Sustainable and circular management and use of natural resources as well as **prevention and removal of pollution** are mainstreamed, **unlocking the potential of the bioeconomy**, ensuring competitiveness and guaranteeing healthy soil, air, fresh and marine water for all, through better understanding of planetary boundaries and deployment of innovative technologies and other solutions, notably in primary production, forestry and bio-based systems.

Cluster 6 Impacts
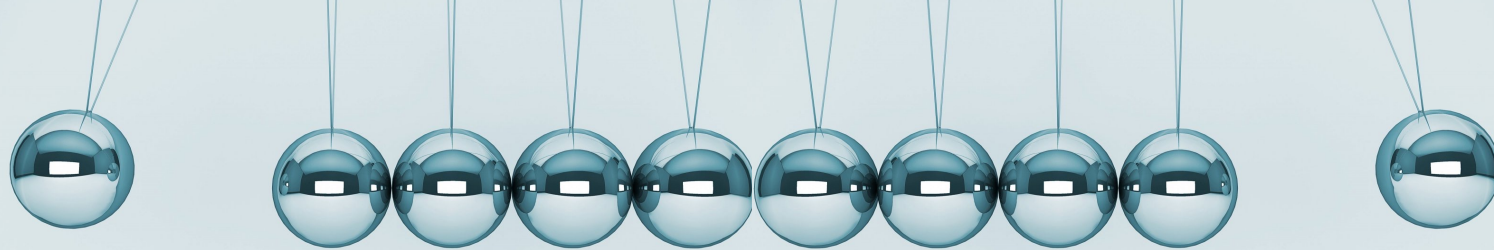
Food and nutrition security for all within planetary boundaries is ensured through knowledge, innovation and digitalisation in agriculture, fisheries, aquaculture and food systems, which are sustainable, resilient, inclusive, safe and healthy from farm to fork

Rural, coastal and urban areas are developed in a sustainable, balanced and inclusive manner thanks to a better understanding of the environmental, socio-economic, behavioural and demographic drivers of change as well as deployment of digital, social and community-led innovations

Innovative governance models enabling sustainability and resilience are established and monitored through enhanced and shared use of new knowledge, tools, foresight, and environmental observations as well as digital, modelling and forecasting capabilities

Cluster 6 activities will sustain the ambition of the EU on international fora in areas of paramount importance such as biodiversity, climate change, the management of natural resources, sustainable agriculture, food safety and food and nutrition security.
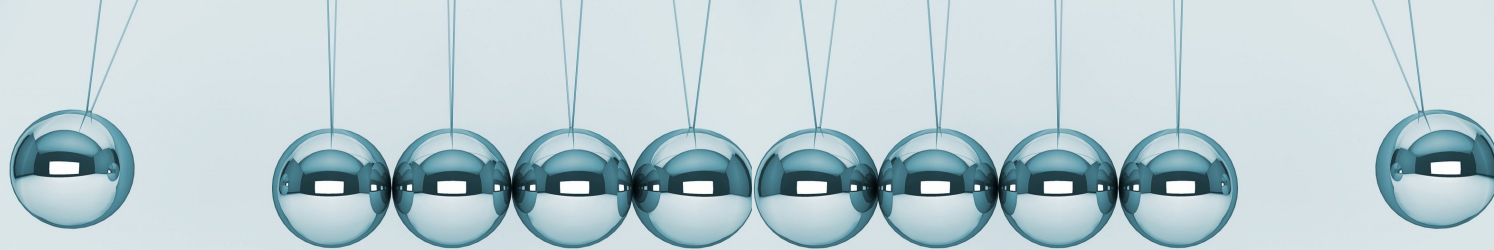
Horizon Europe is the research and innovation support programme in a system of European and national funding programmes that shares policy objectives. Through the programme, special attention will be given to ensuring cooperation between **universities, scientific communities and industry, including small and medium enterprises, and citizens and their representatives**, in order to bridge gaps between territories, generations and regional cultures, especially caring for the needs of the young in shaping Europe's future

The EU's Recovery and Resilience Facility (RRF) currently available in all **Member States** aims at financing projects that directly tackle the economic and social impacts from the Coronavirus crisis and support the green and digital transition. For project ideas that directly contribute to these objectives and that have a **strong focus in one member state** it is advisable to check access to the RRF for a fast and targeted support.
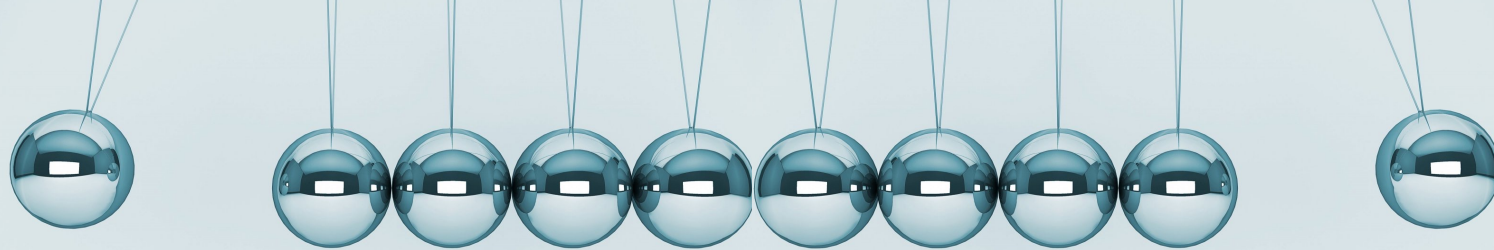
In line with the **European Green Deal objectives**, research and innovation activities should comply with the 'do no significant harm' principle. This compliance needs to be assessed during the course of the project and during the expected life cycle impact of an innovation if the innovation is commercialised. The robustness of the compliance must be customised to the envisaged technology readiness level (TRL) of the project. In this regard, the potential harm of innovation actions contributing to the European Green Deal will be monitored throughout the project's duration.

To be more effective in achieving impact, the proposals **shall synergize** with relevant initiatives funded at EU level, including the **Knowledge and Innovation Communities** (KICs) of the European Institute of Innovation and Technology (EIT).

For topics in this cluster, the consortia should consider their possible contribution to **Joint Research Centre (JRC)** relevant platforms for capitalising the knowledge developed in their projects, and to become more policy relevant, contributing in terms of data, indicators and knowledge.

*"The programme aims at giving Europe a new push to a **global positioning**. Horizon Europe is to be **the biggest and most ambitious EU Research Innovation programme ever**. It builds on the success of Horizon 2020 and improves it further by fostering a stronger support to breakthrough innovation through the **European Innovation Council**, by creating greater impact through **R&I missions** and by streamlining **partnerships** landscape."*

Mariya Gabriel, European Commissioner for Innovation, Research, Culture, Education and Youth

Horizon Europe evaluations

✓ **Three evaluation criteria:** Excellence, Impact and Quality of Implementation.

✓ **Careful choice of expert evaluators:** Experts are selected based on their expertise, but also on geographical and gender considerations. In addition, we apply rotation rules to incentivize the participation of new experts and to encourage participation of experts from all Member States in particular from widening countries, and to avoid closed clubs in our evaluation process.

Experts for evaluation – expertise first but also geographical, gender and industry academia diversity

Female experts per programme

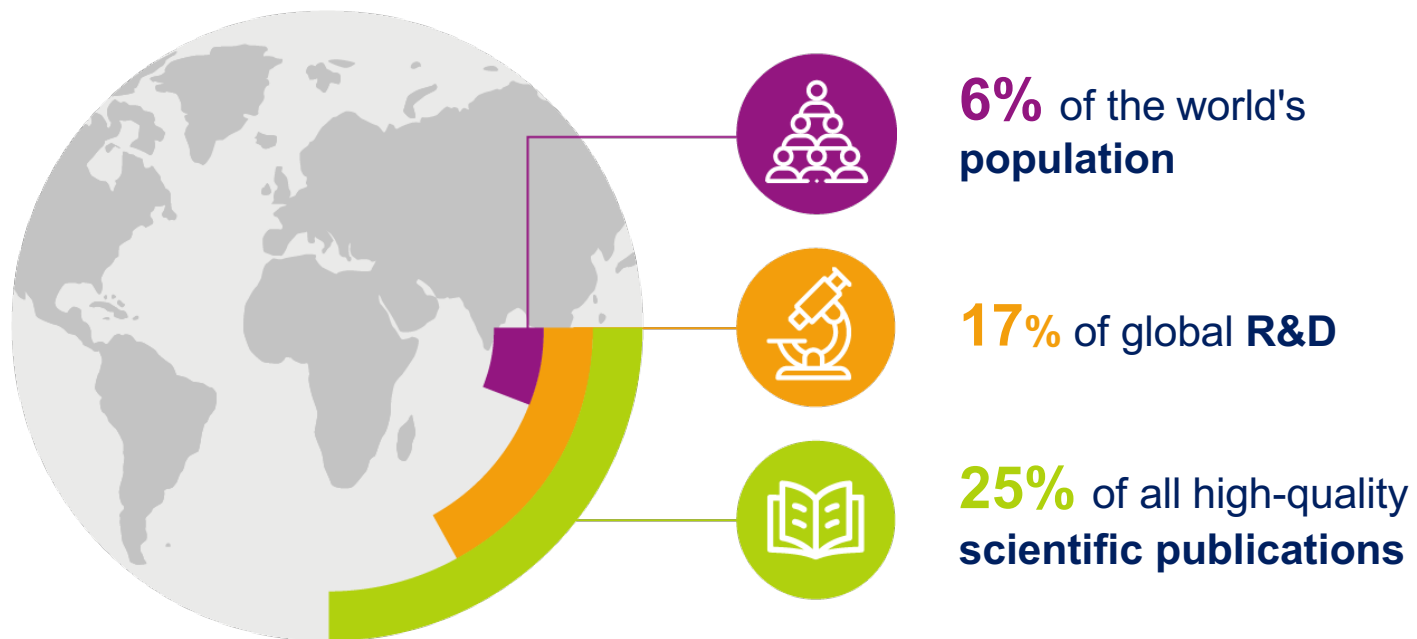| FP6	FP7	Horizon 2020	Horizon Europe
28%	35%	40%	Target 50%
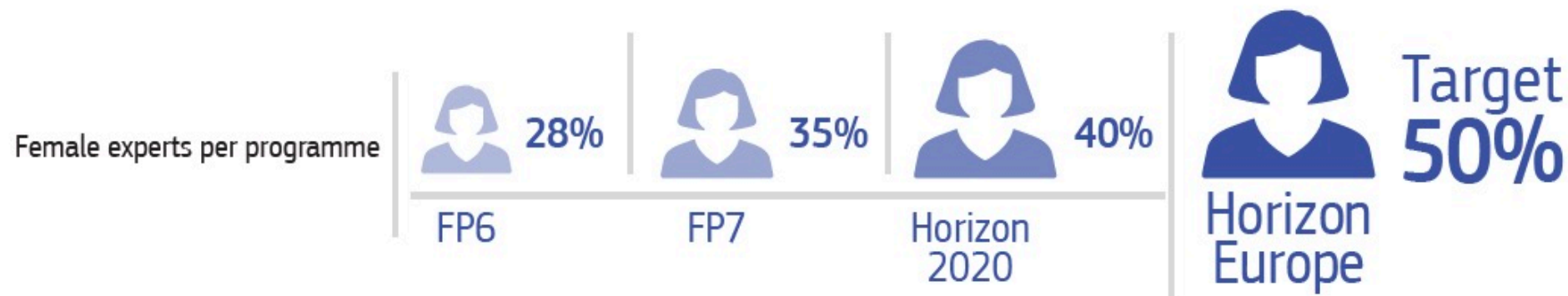
EU Vision

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.

… about global positioning: EU knowledge and skills are our main resources.

6% of the world's **population**

17% of global **R&D**

25% of all high-quality **scientific publications**

…Europe can do better at transforming this into **leadership in innovation** and **entrepreneurship**

1.5% EU business **R&D investment**

| 1.5 | 2.1 | 2.6 | 1.7 | 3.6 | % |
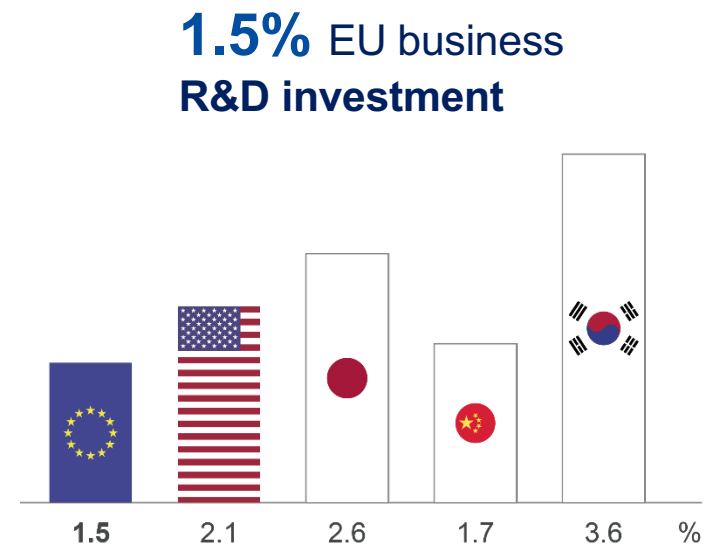
EU data is for 2019.

Data for USA, Japan, China and South Korea are for 2018.

Numbers represent R&D as % of GDP

HORIZON EUROPE

EURATOM

SPECIFIC PROGRAMME: EUROPEAN DEFENCE FUND

Exclusive focus on defence research & development

Research actions

Development actions

SPECIFIC PROGRAMME IMPLEMENTING HORIZON EUROPE & EIT*
Exclusive focus on civil applications

**Pillar I
EXCELLENT SCIENCE**

European Research Council

Marie Skłodowska-Curie

Research Infrastructures

**Pillar II
GLOBAL CHALLENGES & EUROPEAN INDUSTRIAL COMPETITIVENESS**

Clusters

- Health
- Culture, Creativity & Inclusive Society
- Civil Security for Society
- Digital, Industry & Space
- Climate, Energy & Mobility
- Food, Bioeconomy, Natural Resources, Agriculture & Environment

Joint Research Centre

**Pillar III
INNOVATIVE EUROPE**

European Innovation Council

European Innovation Ecosystems

European Institute of Innovation & Technology*

WIDENING PARTICIPATION AND STRENGTHENING THE EUROPEAN RESEARCH AREA

Widening participation & spreading excellence

Reforming & Enhancing the European R&I system

Fusion

Fission

Joint Research Center

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

La delegazione Italiana – Cluster 6

Danilo Porro (CNR- Milano)
Fabio Fava (UniBO – Bologna)
Gianluca Sarà (uniPA – Palermo)
Paola Bonfante (uniTO- Torino)
Patrizia Brigidi (uniBO – Bologna)
Pier Paolo Roggero (UniSS – Sassari)
…and co-experts.

Dr. Massimo Iannetta
Shadow Strategic Programme Committee
Cluster 6
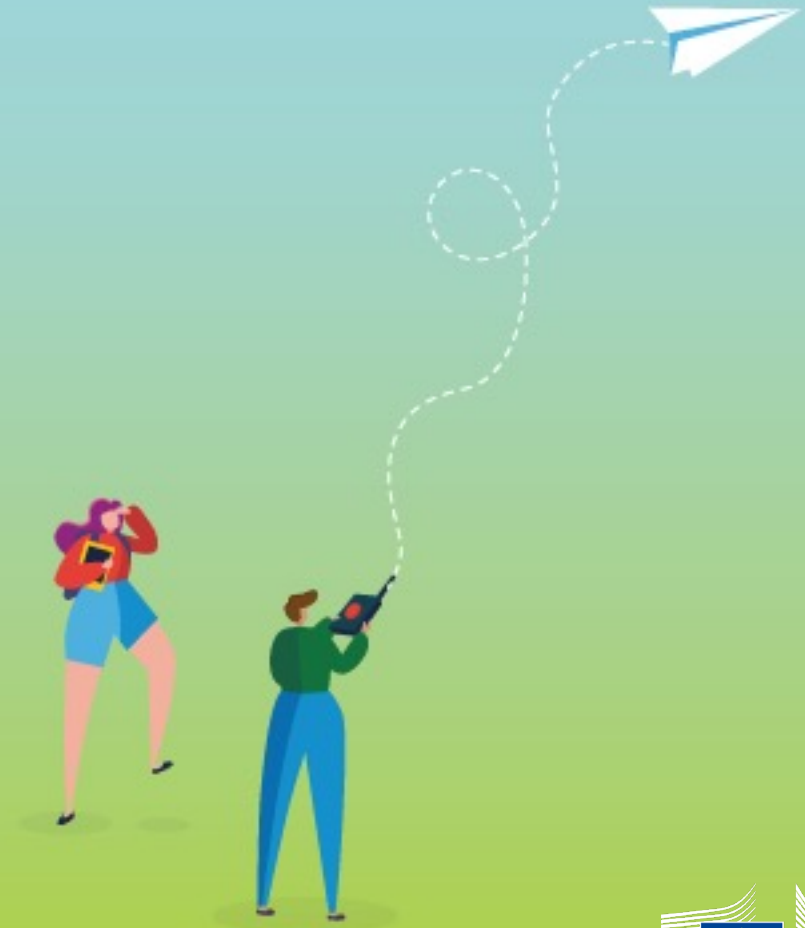
Horizon Europe legislation defines three types of impact tracked through Key Impact Pathways

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

Scientific Impact

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

Societal Impact

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

Economic Impact

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)

- ■ Excellent Science (Pillar I)
- ■ Global challenges and European ind. comp. (Pillar II)
- ■ Innovative Europe (Pilla III)
- ■ Widening Part and ERA

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 researches 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

GLOBAL CHALLENGES & EUROPEAN INDUSTRIAL COMPETITIVENESS:

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

Health

Culture, Creativity & Inclusive Societies

Civil Security for Society

Digital, Industry & Space

Climate, Energy & Mobility

Food, Bioeconomy, Natural Resources, Agriculture & Environment
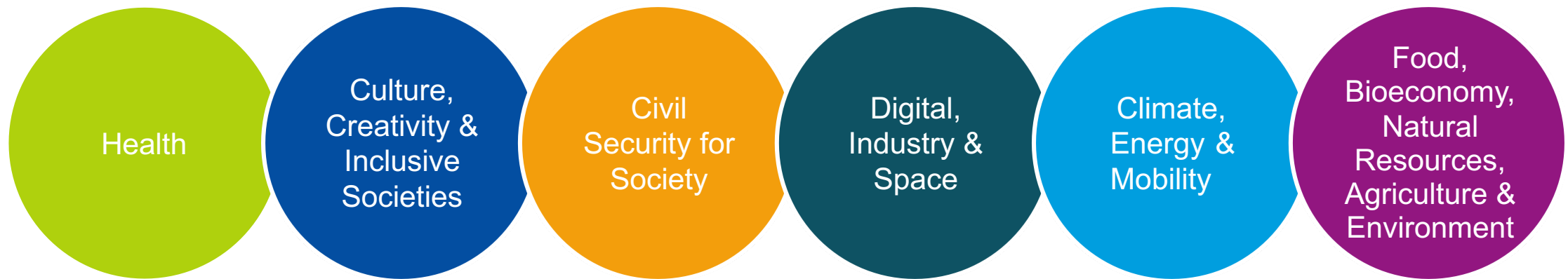
€ 53.5 billion

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

€ 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**

Budget at a glance

Widening
4%

Pillar III
14%

Pillar 1
27%

Pillar II
55%
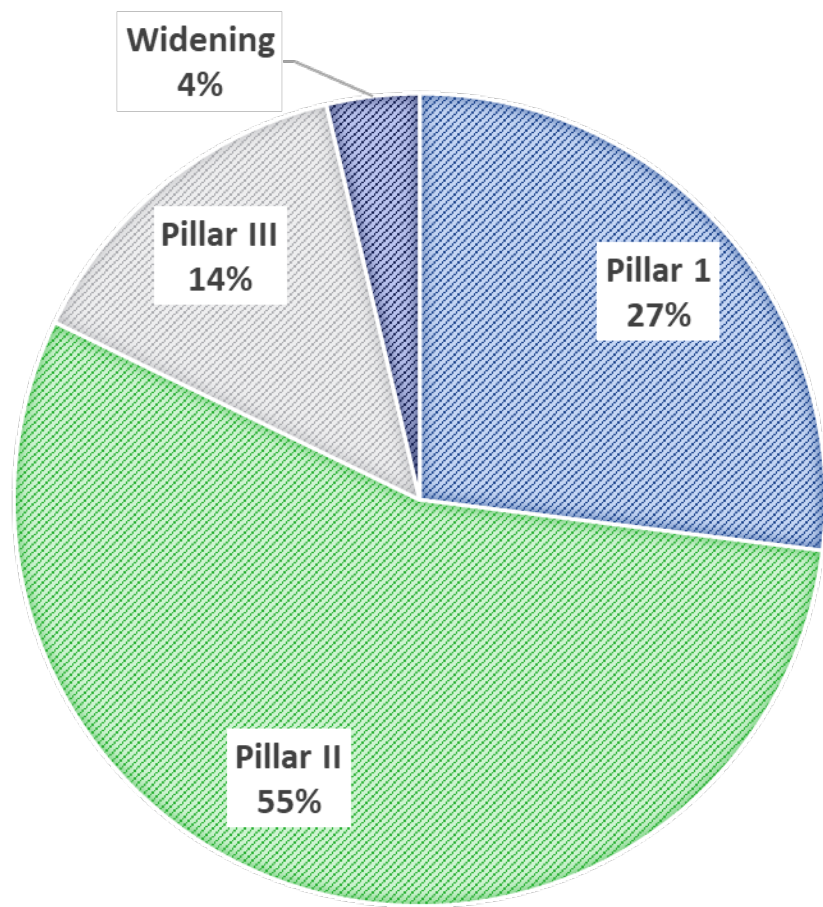
6. Food, Bioeconomy, Natural Resources, Agriculture and Environment
20%

8,952 mlr €

1. Health
15%

2.Culture, Creativity and Inclusive Society
3%

3. Civil Security for Society
3%

5.Climate Energy and Mobility
30%

4. Digital, Industry and Space
29%
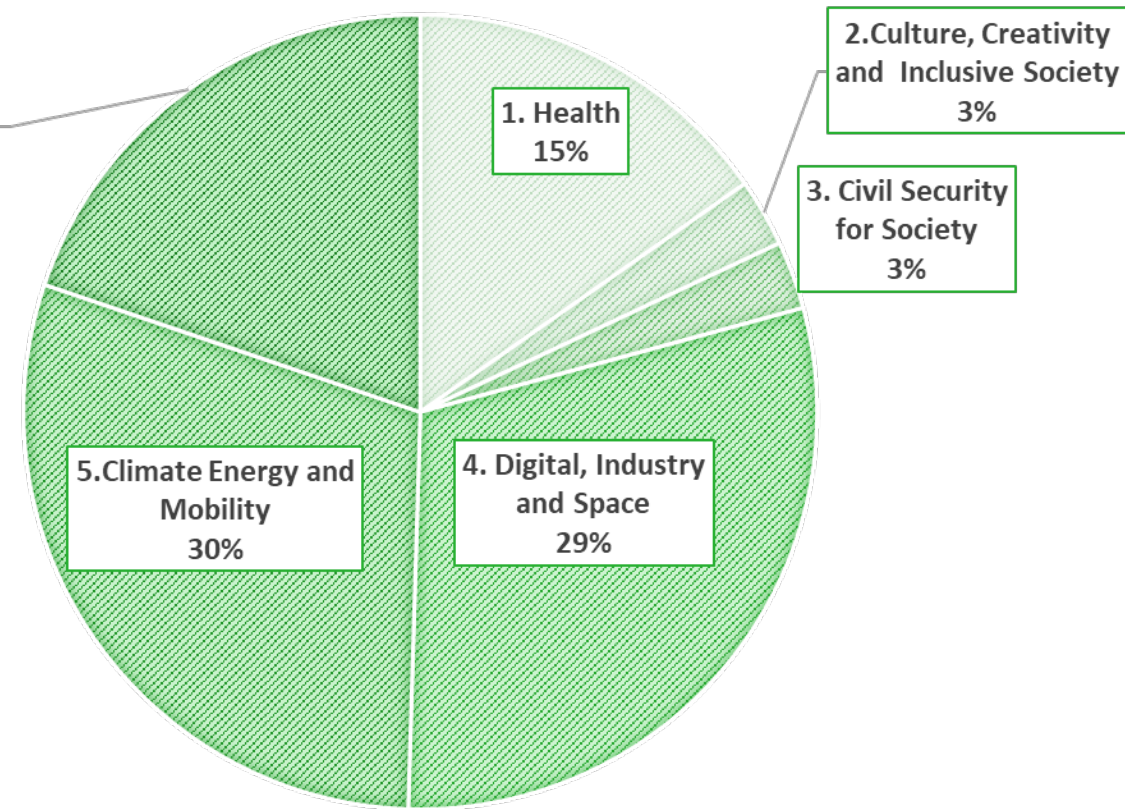
HORIZON EUROPE

A little bit …

.. about the detail of the HE genesis and of Cluster VI

Strategic Plan: starting from the Key Strategic Orientation

The **key strategic orientations** have been defined to set out the R&I contribution to EC **political priorities**. They aim at creating a strong bridge between R&I and EU **policy priorities**, and at giving directionality towards the UN **SDG**s –across all clusters (and HE parts) (KSO)

Commission Von der Leyen political priorities:

- **"European Green Deal"**

Climate Action, Farm to Fork Strategy, EU Biodiversity Strategy, Circular Economy Action Plan, Zero Pollution Ambitions, EU Industrial Strategy for Europe, ...

- "**An economy that works for people**"

- "**A Europe fit for the digital age**"

- "**A stronger Europe in the world**"

EU policies:

- Common Agricultural Policy
- Common Fisheries Policy
- Maritime Policy
- EU Arctic Policy
- EU General Food Law,
- EU Bioeconomy Strategy
- EU Forest Strategy
- Blue Growth Strategy
- Chemicals Strategy for Sustainability
- EU Plastics Strategy
- Data Strategy for Europe
- Food 2030 initiative

SDG:

Four Key Strategic Orientations

KSO A: Promoting an open strategic autonomy by leading the development of key digital, enabling and emerging technologies, sectors and value chains to accelerate and steer the digital and green transitions through human- centred technologies and innovations

KSO B: Restoring Europe's ecosystems and biodiversity, and managing sustainably natural resources to ensure food security and a clean and healthy environment

KSO C: Making Europe the first digitally **enabled circular**, **climate-neutral** and **sustainable economy** through the transformation of its mobility, energy, construction and production systems
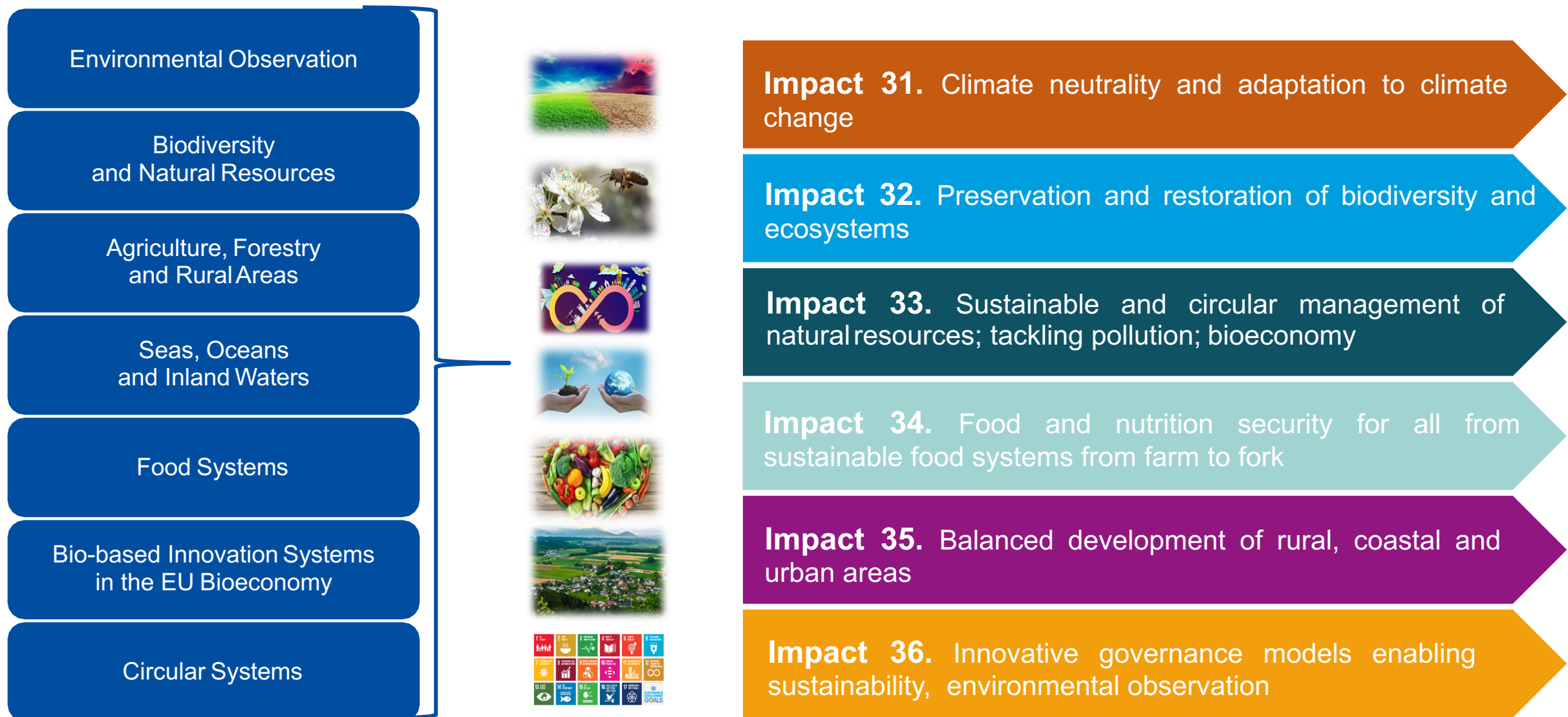
KSO D: Creating a more resilient, inclusive and democratic European society, prepared and responsive to threats and disasters, addressing inequalities and providing high-quality health care, and empowering all citizens to act in the green and digital transitions

Horizon Europe Intervention Logic
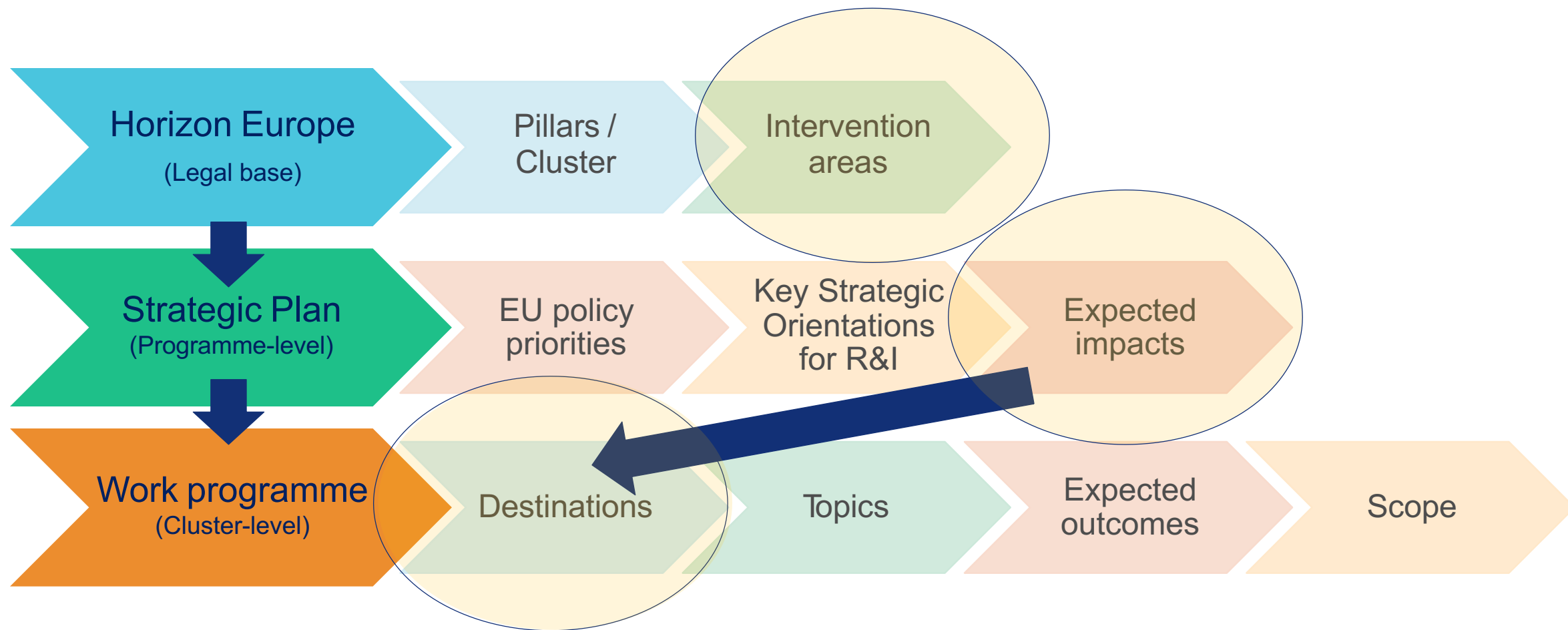
Cluster 6: from intervention Areas (Legal base) to Expected Impacts (Strategic plans- Programme level):

- 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 Bioeconomy
- Circular Systems

Impact 31. Climate neutrality and adaptation to climate change

Impact 32. Preservation and restoration of biodiversity and ecosystems

Impact 33. Sustainable and circular management of natural resources; tackling pollution; bioeconomy

Impact 34. Food and nutrition security for all from sustainable food systems from farm to fork

Impact 35. Balanced development of rural, coastal and urban areas

Impact 36. Innovative governance models enabling sustainability, environmental observation

Cluster 6: expected Impacts to Destinations (Work Programme, Cluster level)

Impact 31

Impact 32

Impact 33

Impact 34

Impact 35

Impact 36

- **Destination 5**: Land, oceans and water for climate action
- **Destination 1:** Biodiversity and ecosystem services
- **Destination 3:** Circular economy and bioeconomy sectors
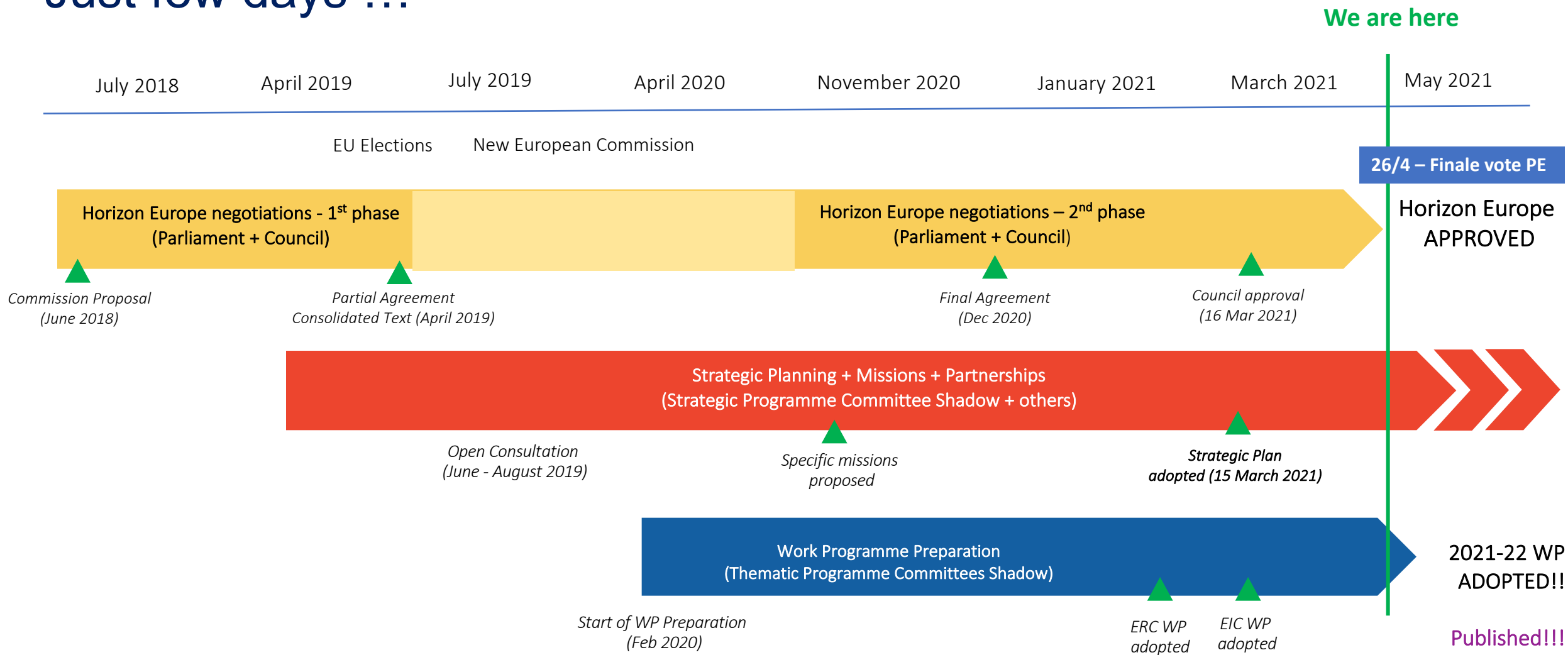- **Destination 4:** Clean environment and zero pollution
- **Destination 2:** Fair, healthy and environmentally-friendly food systems from primary production to consumption
- **Destination 6:** Resilient, inclusive, healthy and green rural, coastal and urban communities
- **Destination 7:** Innovative governance, environmental observations and digital solutions in support of the Green Deal

Just few days …

We are here

July 2018   April 2019   July 2019   April 2020   November 2020   January 2021   March 2021   May 2021

EU Elections   New European Commission

26/4 – Finale vote PE

Horizon Europe negotiations - 1st phase
(Parliament + Council)

Horizon Europe negotiations – 2nd phase
(Parliament + Council)

Horizon Europe
APPROVED

*Commission Proposal
(June 2018)*

*Partial Agreement
Consolidated Text (April 2019)*

*Final Agreement
(Dec 2020)*

*Council approval
(16 Mar 2021)*

Strategic Planning + Missions + Partnerships
(Strategic Programme Committee Shadow + others)

*Open Consultation
(June - August 2019)*

*Specific missions
proposed*

**Strategic Plan
adopted (15 March 2021)**

Work Programme Preparation
(Thematic Programme Committees Shadow)

2021-22 WP
ADOPTED!!

*Start of WP Preparation
(Feb 2020)*

*ERC WP
adopted*

*EIC WP
adopted*

Published!!!

First Deadlines: October 2021

Cluster 6: Work Programme 2021-2022 budget distribution per destination

Destination	Number of topics	Budget [mln EUR] '21-'22	% Share
observations and digital solutions in support of the Green Deal	42	183,5 + 170	19,3%
Other actions	12	28,4 + 7,8	2%
Total	192	922,9 + 910,3	100%

DEADLINES *(mainly !!!)*

Call 2021: 6 /10   (2021)
Call 2022: 15/02 – 22/09 (2022)

Some definition ….

- **Research and innovation actions (RIA)** primarily consist of activities aiming to establish new knowledge and/or to explore the feasibility of a new or improved technology, product, process, service or solution. They may include basic and applied research, technology development and integration, testing and validation on a small-scale prototype in a laboratory or simulated environment (TRL 3-5), 100%.

- **Innovation actions (IA)** consist of activities directly aiming at producing plans and arrangements or designs for new, altered or improved products, processes or services. They may include prototyping, testing, demonstrating, piloting, large-scale product validation and market replication (TRL 6-8); 70%.

- **Coordination and support actions (CSA)** consist of accompanying measures such as standardisation, dissemination, awareness-raising and communication, networking, coordination or support services, policy dialogues and mutual learning exercises and studies, including design studies for new infrastructure and may also include complementary activities of strategic planning, networking and coordination between programmes in different countries; 100%.

Parterships and Missions

"*The programme aims at giving Europe a new push to a **global positioning**. Horizon Europe is to be **the biggest and most ambitious EU Research Innovation programme ever**. It builds on the success of Horizon 2020 and improves it further by fostering a stronger support to breakthrough innovation through the **European Innovation Council**, by creating greater impact through R&I **missions** and by streamlining **partnerships** landscape.*"

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

- **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

Overview of 49 candidate European Partnerships

HORIZON EUROPE PILLAR II - Global challenges & European industrial competitiveness

CLUSTER 1: Health	CLUSTER 4: Digital, Industry & Space	CLUSTER 5: Climate, Energy & Mobility	CLUSTER 6: Food, Bioeconomy, Agriculture, …
Innovative Health Initiative	Key Digital Technologies	Clean Hydrogen	Circular Bio-based Europe
Global Health Partnership	Smart Networks & Services	Clean Aviation	Rescuing Biodiversity to Safeguard Life on Earth
Transformation of health systems	High Performance Computing	Single European Sky ATM Research 3	Climate Neutral, Sustainable & Productive Blue Economy
Chemicals risk assessment	European Metrology (Art. 185)	Europe's Rail	Water4All
ERA for Health	AI-Data-Robotics	Connected and Automated Mobility (CCAM)	Animal Health & Welfare*
Rare diseases*	Photonics	Batteries	Accelerating Farming Systems Transitions*
One-Health Anti Microbial Resistance*	Made in Europe	Zero-emission waterborne transport	Agriculture of Data*
Personalised Medicine*	Clean steel – low-carbon steelmaking	Zero-emission road transport	Safe & Sustainable Food System*
Pandemic Preparedness* *Co-funded or co-programmed*	Processes4Planet	Built4People	
	Global competitive space systems**	Clean Energy Transition	
		Driving Urban Transitions	

PILLAR III - Innovative Europe

EIT (KNOWLEDGE & INNOVATION COMMUNITIES)	SUPPORT TO INNOVATION ECOSYSTEMS
InnoEnergy	Innovative SMEs
Climate	
Digital	
Food	
Health	
Raw Materials	
Manufacturing	
Urban Mobility	
Cultural and Creative Industries	

Legend:
- Institutionalised Partnerships (Art 185/7)
- Institutionalised Partnerships / EIT KICs
- Co-Programmed
- Co-Funded

CROSS-PILLARS II & III

European Open Science Cloud

* Calls with opening dates in 2023-24
** Calls with opening dates not before 2022

Cluster 6 Co-funded partnerships in Work Programmes

CO-Funded Partnership	Year	HE expected contribution	
Rescuing biodiversity to safeguard life on Earth	2021-2022	165	Dest. 1
A climate neutral, sustainable and productive Blue Economy	2021-2022	150	Dest. 7
European Partnership Water Security for the Planet (Water4All)	2021-2022	126	Dest. 5
Accelerating farming systems transition: agroecology living labs and research infrastructures	2023-2024	150	
Animal health: fighting infectious diseases	2023-2024	180	
Environmental observations for a sustainable EU agriculture	2023-2024	100	
Safe and sustainable food systems for people, planet and climate	2023-2024	175	
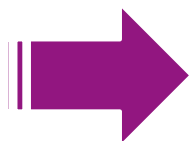
Total budget for all co-funded partnerships around EUR 1 billion (figures are subject to changes depending on MS commitments).

Outside the WP: Circular bio-based Europe (Joint Undertkating): EUR 1 billion

Cluster 6 Co-funded partnerships in Work Programmes

CO-Funded Partnership –Key principles

EU co-funding is a constant rate (typically 30%)

Each consortium agree internally on how the EU co-fuding is best used

All co-finded European Partnerships will have corresponding topics in HE Work Programme

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.

5 EU Missions areas

Adaptation to climate change, including societal transformation

Cancer

Healthy oceans, seas, coastal & inland waters

Climate-neutral & smart cities

Soil health & food

- **Conquering Cancer: Mission Possible**
Targets by 2030: more than 3 million lives saved, living longer and better: achieve a thorough understanding of cancer, prevent what is preventable, optimise diagnosis and treatment, support the quality of life of all people exposed to cancer, and ensure equitable access to the above across Europe.
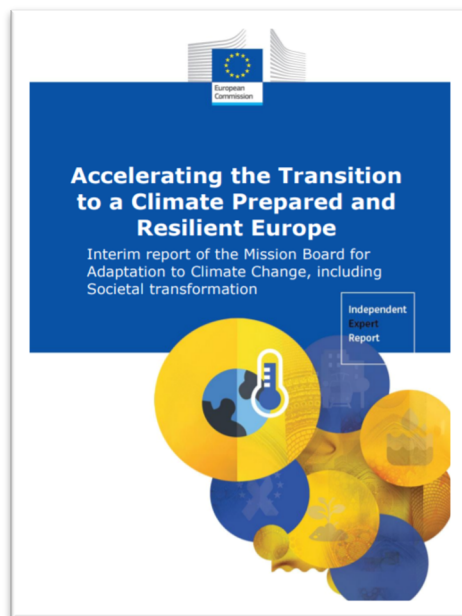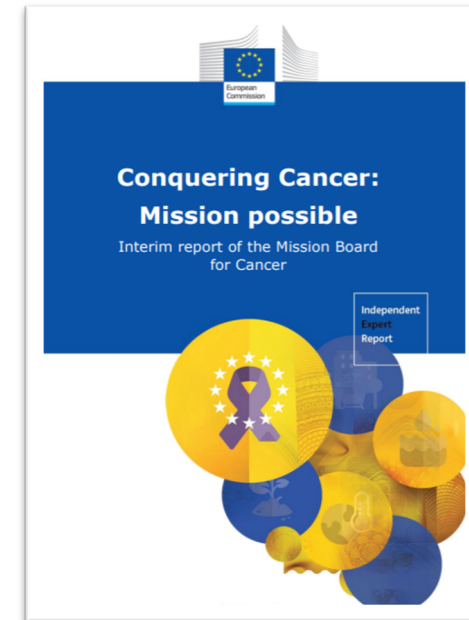
- **A Climate Resilient Europe - Prepare Europe for climate disruptions and accelerate the transformation to a climate resilient and just Europe by 2030**
Targets by 2030: prepare Europe to deal with climate disruptions, accelerate the transition to a healthy and prosperous future within safe planetary boundaries, and scale up solutions for resilience that will trigger transformations in society.

- Mission Starfish 2030: Restore our Ocean and Waters

Targets by 2030: filling the knowledge and emotional gap, regenerating marine and freshwater ecosystems, zero pollution, decarbonising the blue economy, and revamping governance. These mutually supportive objectives will enable the regeneration of the water cycle as a whole.
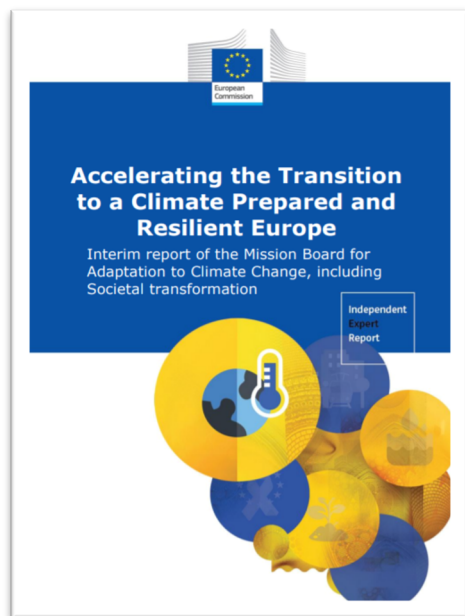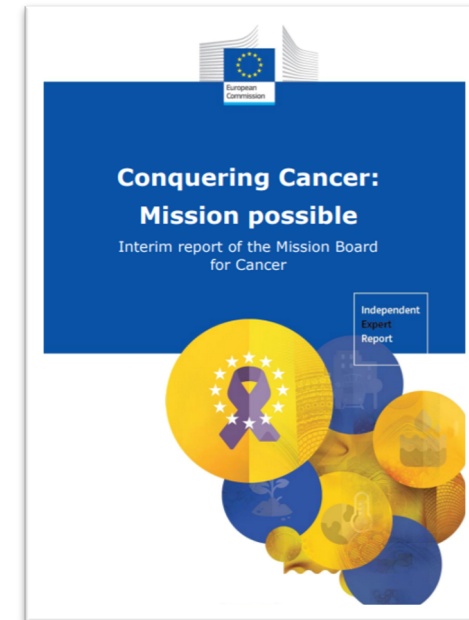

- 100 Climate-Neutral Cities by 2030 - by and for the citizens

Targets by 2030: support, promote and showcase 100 European cities in their systemic transformation to climate neutrality by 2030 and turn these cities into innovation hubs for all cities, benefitting quality of life and sustainability in Europe.

- Caring for Soil is Caring for Life

Targets by 2030: at least 75% of soils in the EU are healthy for food, people, nature and climate. The proposed mission combines research and innovation, education and training, investments and the demonstration of good practices using "Living labs" (experiments and innovation in a laboratory on the ground) and "Lighthouses" (places to showcase good practices).
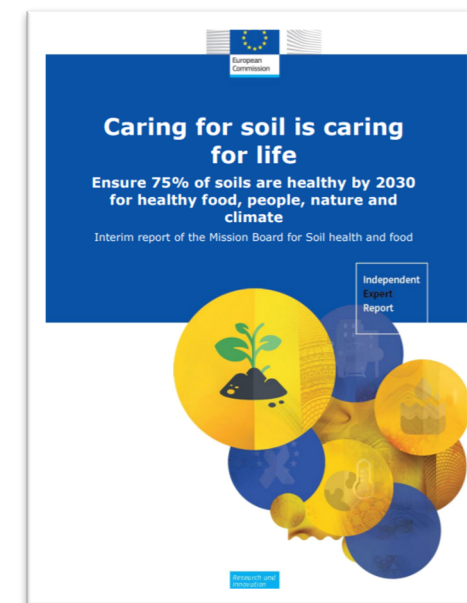
The EU missions' idea is to tackle these societal challenges in a new way: targeted, time-bound and with a measurable goal. They bring together policies and instruments as a coherent, joined-up approach to ensure a strong impact on society and drive long-term, systemic and disruptive change. It is a huge ambition that we plan to fulfil together for a sustainable Europe for all. M. GAbriel

EU Missions

What a EU mission is NOT

Missions are an entirely new approach based on **portfolios of actions** working towards broadly defined goals, not be confused with existing methods and instruments.

Missions are not the same as:

- ❑ **R&I** Programmes
- ❑ R&I**Partnerships**
- ❑ **Focus Areas** from Horizon 2020
- ❑ Single projects or topics
- ❑ Horizon Europe **Clusters**

Implementing Missions

Missions may involve:

- Launch **specific calls** in Horizon Europe and other programmes
- Identify specific actions to change/ improve **policy context** critical for missions success
- Make use of the appropriate **partnerships**
- Mobilise **structural funds**
- Establish the appropriate **links with national programmes**
- Combine efforts with **third country**

There is no fixed budget for each mission. Article 7 of the draft HE Regulation stipulates that during the first three years of the programme, a **maximum of 10%** of the **annual budget of Pillar II** shall be programmed through specific calls for implementing the missions.