

Horizon Europe

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

#HorizonEU

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

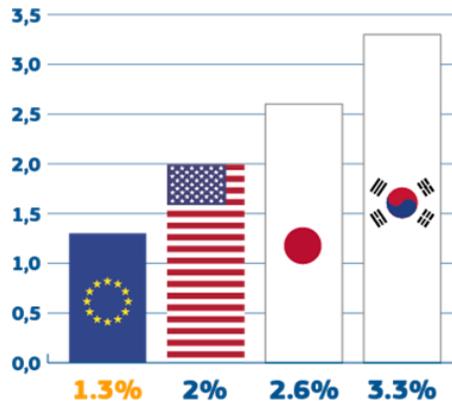


Horizon Europe - Investing to shape our future

While benefiting from world-class research and strong industries...

Our knowledge and skills are our main resources.

- **7%** of the world's population
- **20%** of global R&D
- **1/3** of all high-quality scientific publications



1.3%
EU business
R&D
investment

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

Sibiu recommendations: Europe can shape its future through research and innovation

- Focusing research and innovation on the **ecological, social and economic transitions** and related societal challenges
- Leveraging Europe's scientific strengths into **leadership in breakthrough and disruptive innovation**
- Setting **ambitious goals** for issues that affect us daily, such as skills development, the fight against cancer, harmful emissions, and the state of the oceans, including plastics
- Focusing on **cutting-edge research and innovation** projects spanning from research and innovation to deployment

Horizon Europe

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



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



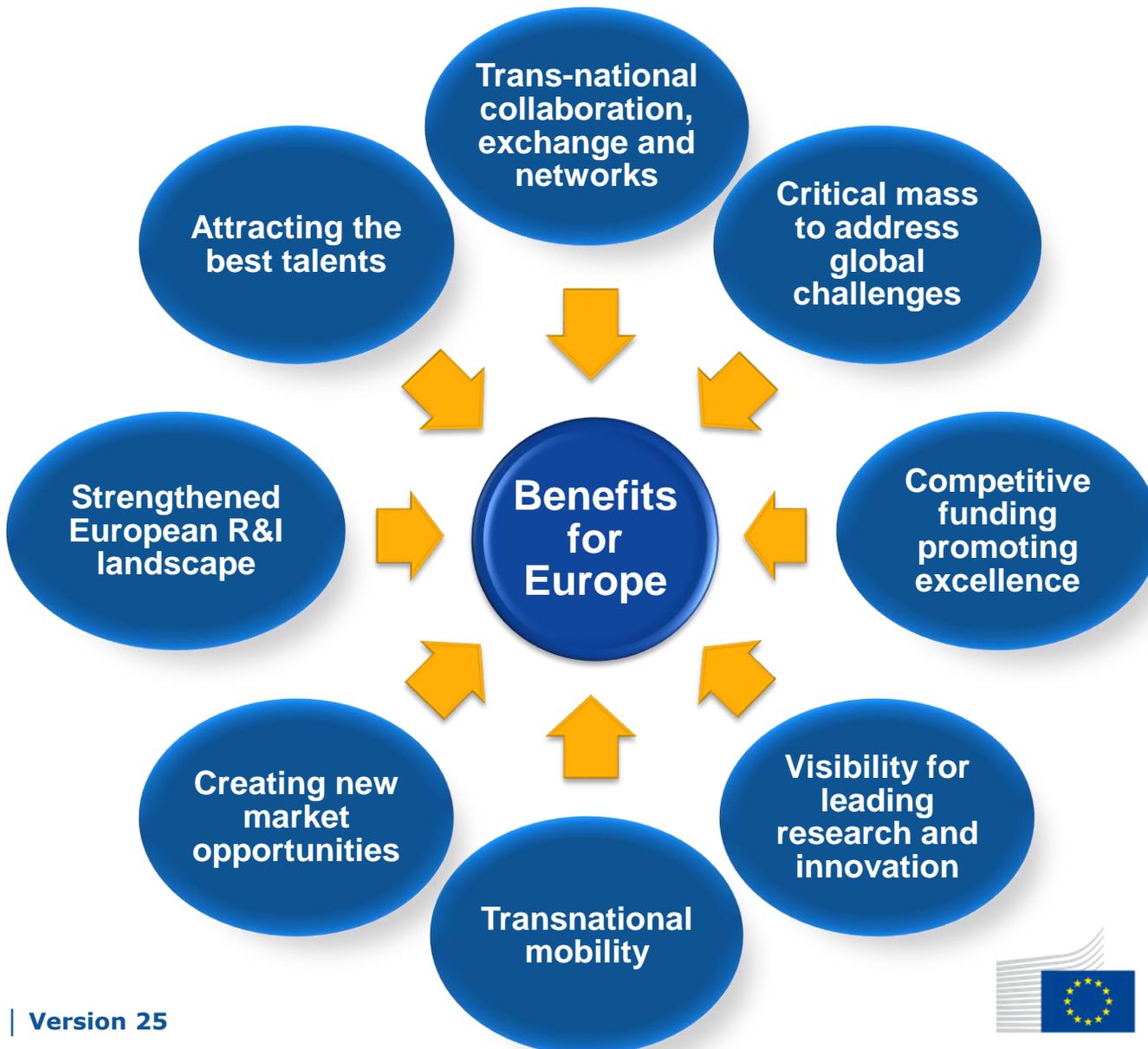
to boost Europe's innovation capacity, competitiveness and jobs



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

The Commission proposes a budget of € 100 billion for Horizon Europe.

Added value through Horizon Europe:



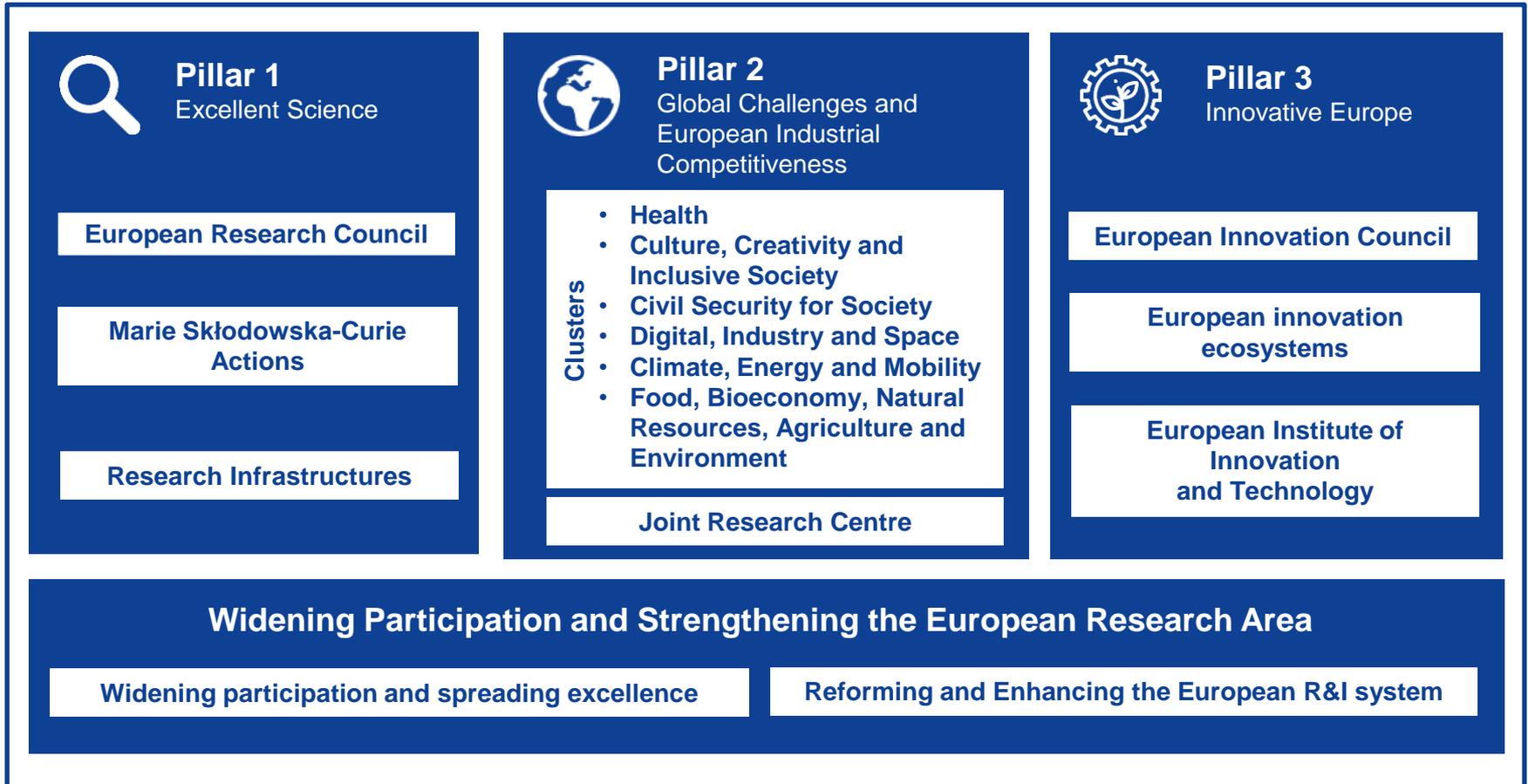
Horizon Europe – Political agreement

European Parliament and Council reached a common understanding on Horizon Europe on 19 March 2019

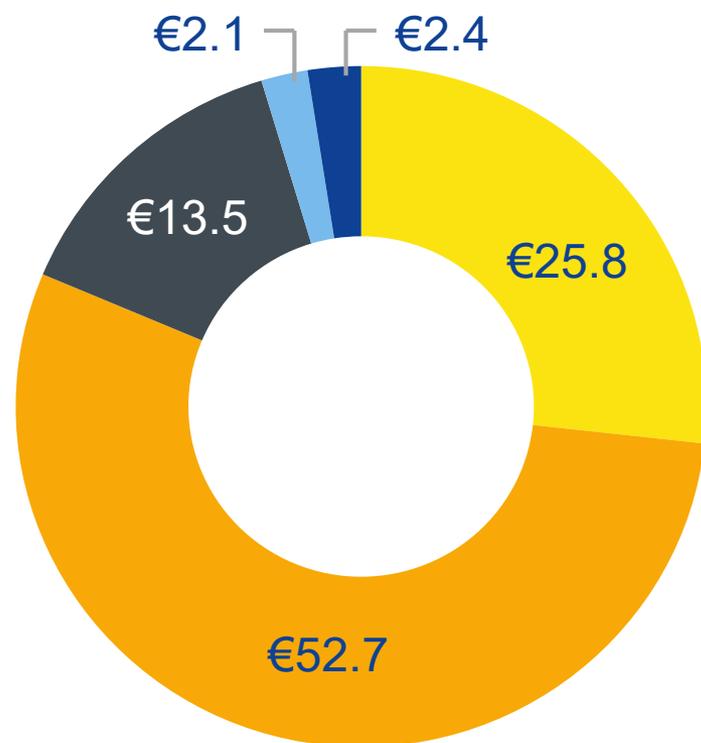
- Budget, synergies and third country association still pending, depending on the overall MFF negotiations
- Commission has started preparations for the implementation of Horizon Europe



Horizon Europe: Preliminary structure



Commission proposal for budget: €100 billion* (2021-2027)



€ billion
In current prices

- Excellent Science
- Global Challenges & European Ind. Comp.
- Innovative Europe
- Widening Part. & ERA
- Euratom

* This envelope includes EUR 3.5 billion allocated under the InvestEU Fund.

Horizon Europe – Central elements

Lessons Learned

from Horizon 2020 Interim Evaluation

Key Novelties

in Horizon Europe

 Support breakthrough innovation →

European Innovation Council

 Create more impact through mission-orientation and citizens' involvement →

R&I Missions

 Strengthen international cooperation →

Extended association possibilities

 Reinforce openness →

Open science policy

 Rationalise the funding landscape →

New approach to Partnerships

 Encourage participation →

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 innovators create markets of the future, leverage private finance, scale up their companies, Innovation centric, risk taking & agile, proactive management and follow up

Two complementary instruments bridging the gap from idea to investable project

Pathfinder: grants
(from early technology
to pre-commercial)

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



R&I 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 (drawing on inputs from other pillars)

Adaptation to climate change, including societal transformation



Cancer

Mission areas



Healthy oceans, seas, coastal and inland waters



Climate-neutral and smart cities



Soil health and food



New approach to European Partnerships

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

Key features

- **Simple architecture and toolbox**
- **Coherent life-cycle approach**
- **Strategic orientation**

Co-programmed

Based on Memoranda of Understanding / contractual arrangements; implemented independently by the partners and by Horizon Europe

Co-funded

Based on a joint programme agreed and implemented by partners; commitment of partners for financial and in-kind contributions

Institutionalised

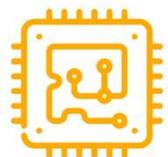
Based on long-term dimension and need for high integration; partnerships based on Articles 185 / 187 of TFEU and the EIT-Regulation supported by Horizon Europe

Health innovations



Sustainable bio-based solutions

Key digital and enabling technologies



Hydrogen and sustainable energy storage

Metrology



Clean, connected mobility

EU air traffic, aviation and rail



Innovative SMEs

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



European Commission



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

Extended openness to association

- Third countries with good capacity in science, technology and innovation
- Taking into account objective of driving economic growth in Europe through innovation
- General opening for international participation
- Intensified targeted actions (flagship initiatives, joint calls, etc.)



Open Science across the programme

Open Science

Better dissemination and exploitation of R&I results and support to active engagement of society

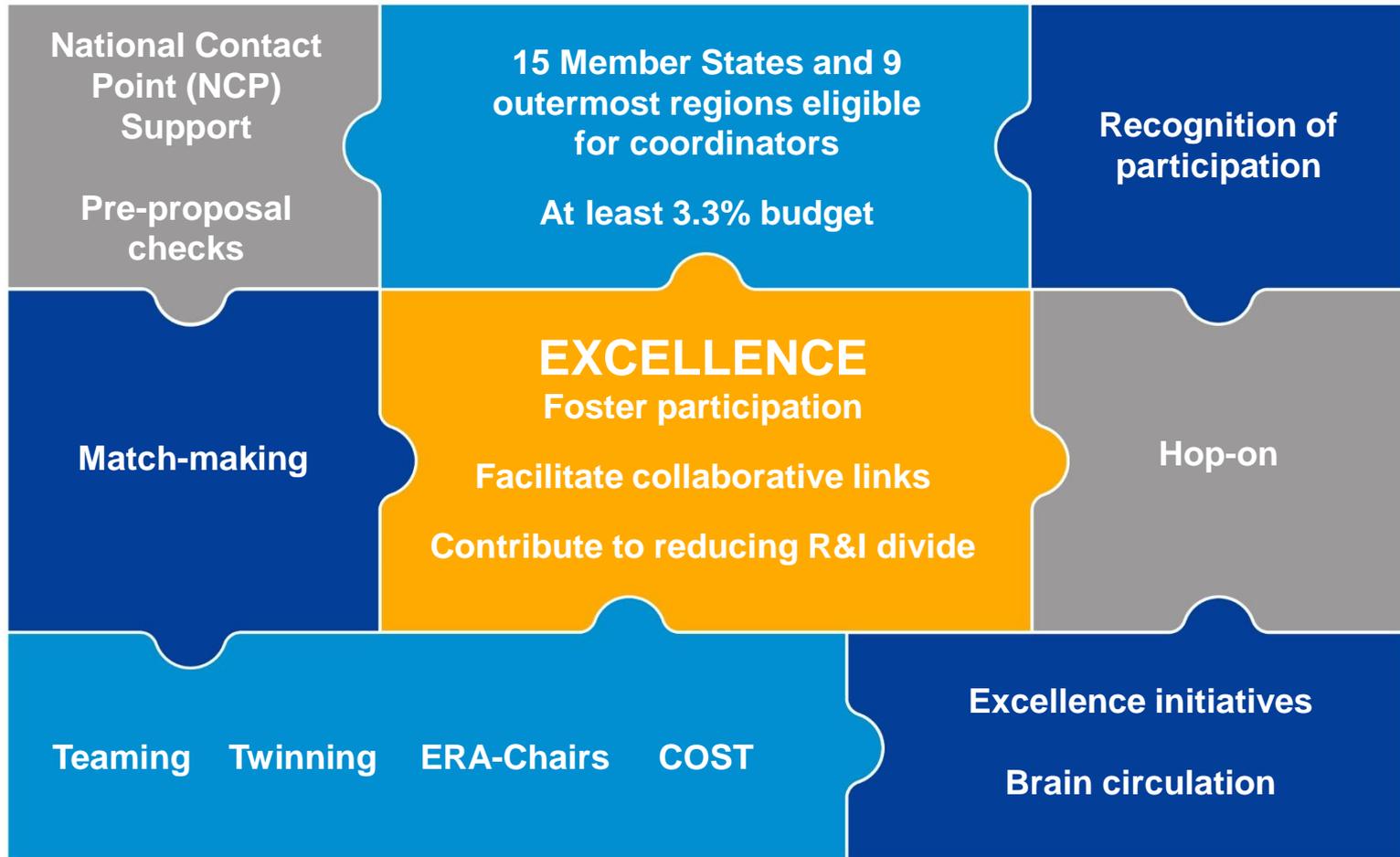
Mandatory Open Access to publications: beneficiaries shall ensure that they or the authors retain sufficient intellectual property rights to comply with open access requirements

Open Access to research data ensured: in line with the principle "as open as possible, as closed as necessary"; Mandatory Data Management Plan for FAIR (Findable, Accessible, Interoperable, Re-usable) and Open Research Data

- Support to researcher skills and reward systems for open science
- Use of European Open Science Cloud



Widening participation/spreading excellence



Horizon Europe – In detail

“
**We built a four wheel drive nano-car.
It would not have been possible
without the ERC funding.**
”

Prof. Ben Feringa

Nobel laureate 2016, Davos 2018

Pillar 1

EXCELLENT SCIENCE:

reinforcing and extending the excellence of the Union's science base

European Research Council

- Frontier research by the best researchers and their teams

Commission proposal:
€ 16.6 billion

Marie Skłodowska-Curie Actions

- Equipping researchers with new knowledge and skills through mobility and training

Commission proposal:
€ 6.8 billion

Research Infrastructures

- Integrated and inter-connected world-class research infrastructures

Commission proposal:
€ 2.4 billion

**“ Horizon 2020
allows my organisation
to demonstrate our research excellence
and our commitment to work
for the benefit of society
on a much larger scale
than would otherwise
be possible! ”**

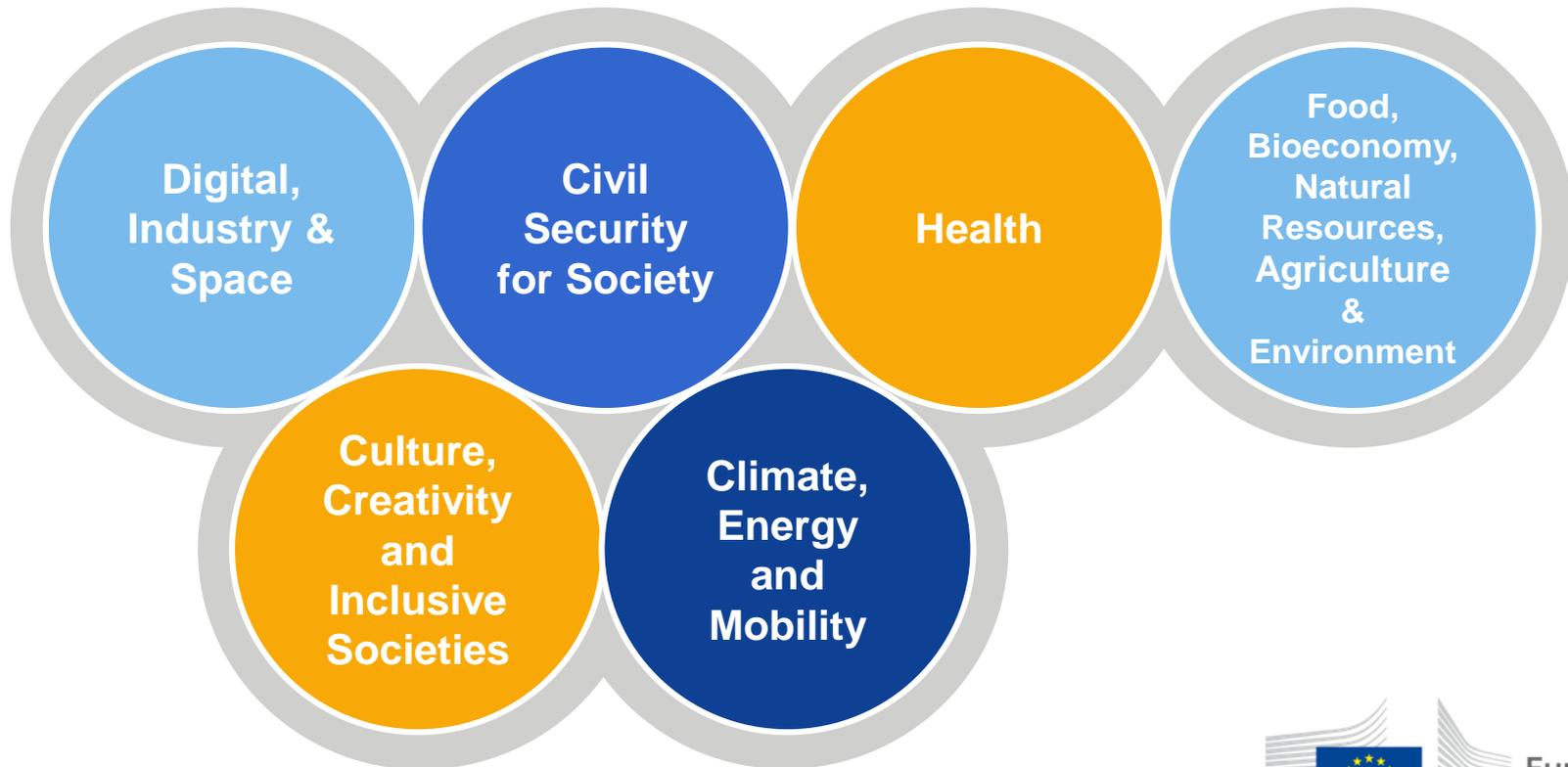
From a Norwegian Research Institute

Pillar 2 - Clusters

Global Challenges & European Industrial Competitiveness:

boosting key technologies and solutions underpinning EU policies & Sustainable Development Goals

Commission proposal for budget: € 52.7 billion



“

**Embracing both
research and innovation
under one programme Horizon 2020
has given a boost to bringing
Europe's excellent research to
the market preparing the ground
for the innovations
of tomorrow**

”

University Association



European
Commission

Pillar 3

INNOVATIVE EUROPE:

stimulating market-creating breakthroughs and ecosystems conducive to innovation

European Innovation Council

- Support to innovations with breakthrough and market creating potential

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

European innovation ecosystems

- Connecting with regional and national innovation actors

European Institute of Innovation and Technology (EIT)

- Bringing key actors (research, education and business) together around a common goal for nurturing innovation

Commission proposal: € 3 billion

“

Horizon 2020
has been an exceptional help
in consolidating my career
in my home country
(versus in the USA)

”

Researcher from Hungary

Widening Participation and Strengthening the European Research Area: optimising strengths & potential for a more innovative Europe

Widening Participation and Spreading Excellence, e.g.

- Teaming & twinning
- ERA Chairs
- COST
- Support to NCPs
- Brain circulation and excellence initiatives
- “Hop-on“

Common understanding: At least 3.3 % of Horizon Europe budget

Reforming and enhancing the European R&I system

- Scientific evidence & foresight
- Open Science
- Policy Support Facility
- Attractive researcher careers
- Citizen science, Responsible Research & Innovation
- Gender equality

Euratom research and training programme (2021-2025)

■ Objective

Research and training activities to reduce nuclear safety and security risks, development of safe nuclear technologies and optimal radiation protection.

■ Key novelties

- Increased focus on non-power applications of radiation (medical, industrial, space)
 - Opening mobility opportunities for nuclear researchers through inclusion in Marie Skłodowska-Curie Actions
 - Simplification: Specific objectives from currently 14 to 4, covering both direct actions (implemented by JRC) and indirect actions
- **Commission proposal for budget:** € 2.4 billion (2021-2027)

InvestEU for Research and Innovation (R&I)

Stimulates more investment in research and innovation, notably by the private sector; leverages and complements national/regional initiatives

No market distortion: intervention only to address financing gaps in the R&I delivery chain (notably due to high risk)

Support through:

- **InvestEU Fund**
- **InvestEU Assistance**
- **InvestEU Portal**

Leverages an estimated **€ 200 bn** of investments into R&I; **market-based finance** for the exploitation and scale-up of European R&I

“ Horizon 2020 is a great opportunity to strengthen collaboration and active partnerships between industry, academia and the supply chain and a key driver to maintain industrial leadership ”

Company from The Netherlands

Horizon Europe – How?

Simple and fit for purpose rules

- Further alignment to the Financial Regulation
- Increased use of **simplified forms of grants** where appropriate (building on the H2020 lump sum pilot experience)
- Broader acceptance of **usual cost accounting practices**
- Enhanced **cross-reliance on audits** benefiting beneficiaries taking part in several Union programmes

while ensuring continuity and consistency for beneficiaries by maintaining

- Attractive H2020 funding model, including up to 100% funding rate of direct costs
- Single set of rules principle

Commission proposal for synergies with other Union programmes

Horizon Europe



Other Union Programmes, including

Common Agricultural Policy
ERDF
External Instrument
Maritime & Fisheries Fund
InvestEU

LIFE
Connecting Europe Facility
ESF+
Digital Europe
Space Programme

Erasmus
Innovation Fund
Internal Security Fund
Single Market Programme



Enhanced synergies

Compatibility

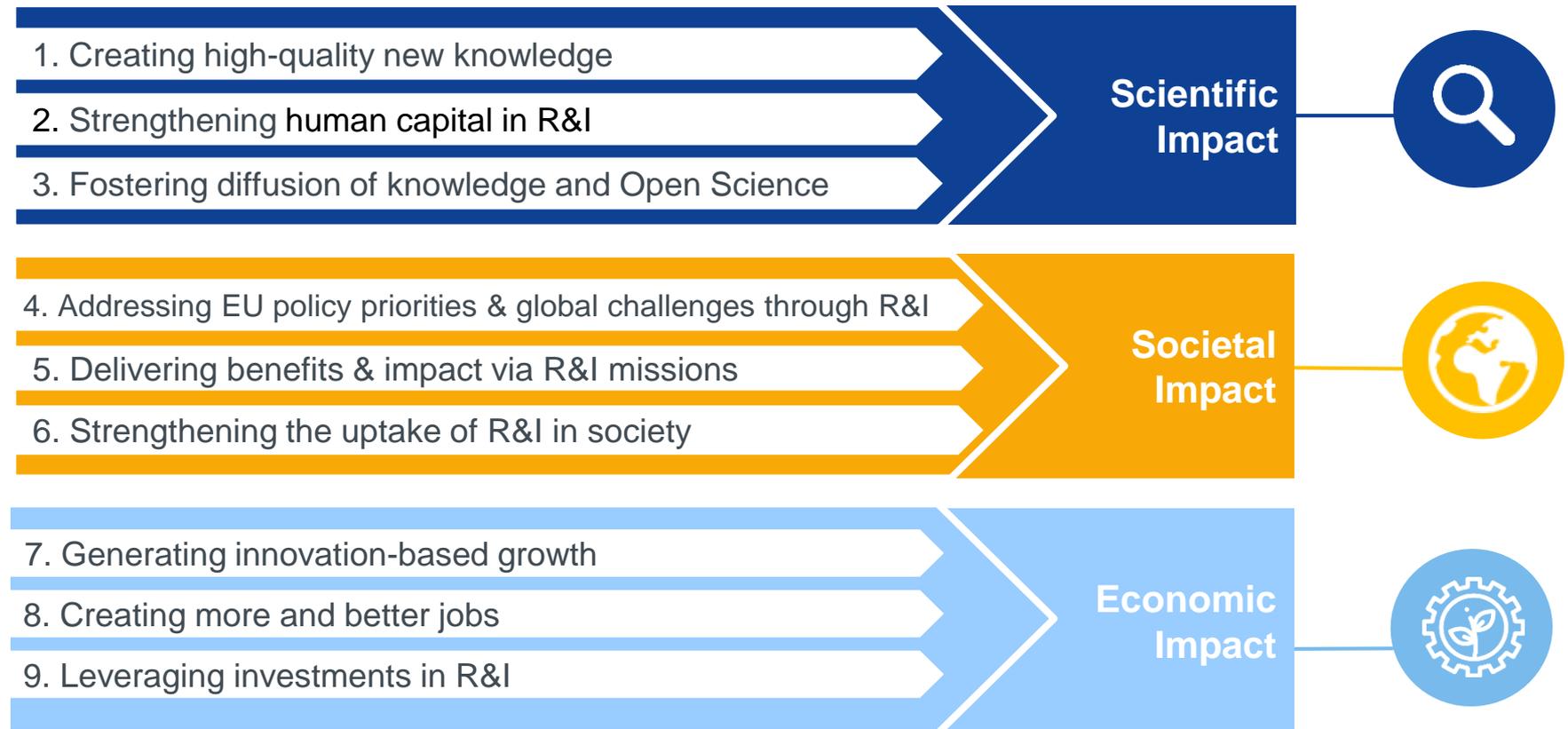
Harmonisation of funding rules; flexible co-funding schemes; pooling resources at EU level

Coherence and complementarity

Alignment of strategic priorities in support of a common vision

Horizon Europe – Impact, flexibility, co-design

Key impact pathways to track progress



Strategic Plan for implementing Horizon Europe

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

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

Strategic plan gives direction to the work programme



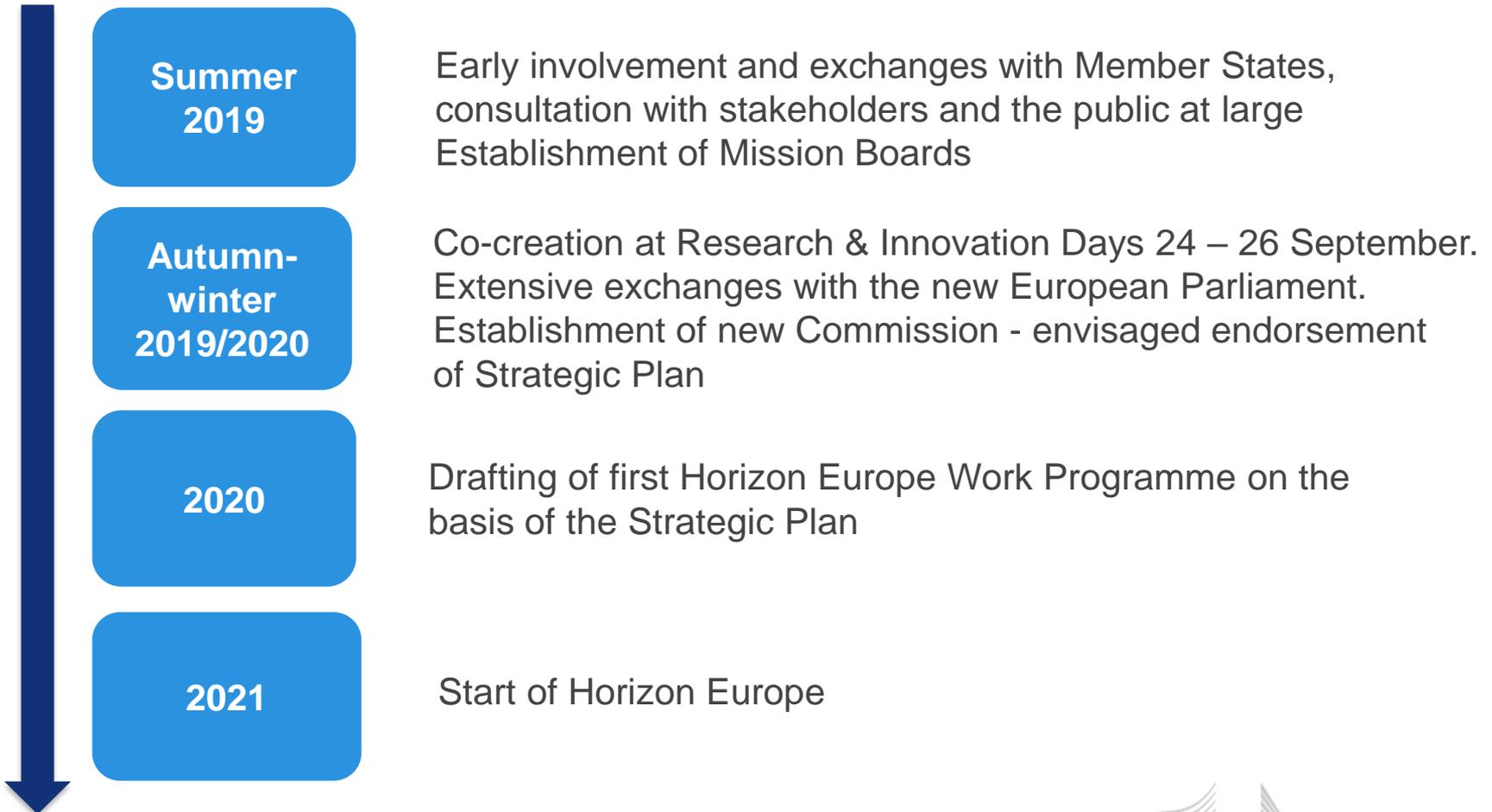
Main Features

Early involvement and extensive exchanges with Member States

Extensive exchanges with the European Parliament

Consultations with stakeholders and public at large

Steps towards the first Horizon Europe work programme



EUROPEAN RESEARCH & INNOVATION DAYS

24 → 26
SEPTEMBER

20
19

KANAL ♡ CENTRE POMPIDOU
Brussels, BELGIUM

#RiDaysEU
@EUScienceInnov

© European Union, 2019

Research and innovation days, 24 – 26 September 2019

- Bringing together policy-makers, researchers, innovators, civil society representatives and other interested stakeholders
- Three days to debate, solve and innovate – to help shape the future of research and innovation policy

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

- The Strategic Plan,
- Missions
- Institutional partnerships

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Horizon Europe dedicated website

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

European Innovation Council

<http://ec.europa.eu/research/eic>

EU budget for the future

http://ec.europa.eu/budget/mff/index_en.cfm



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

Carlos Moedas, Commissioner, 20/3/2019





Thank you!

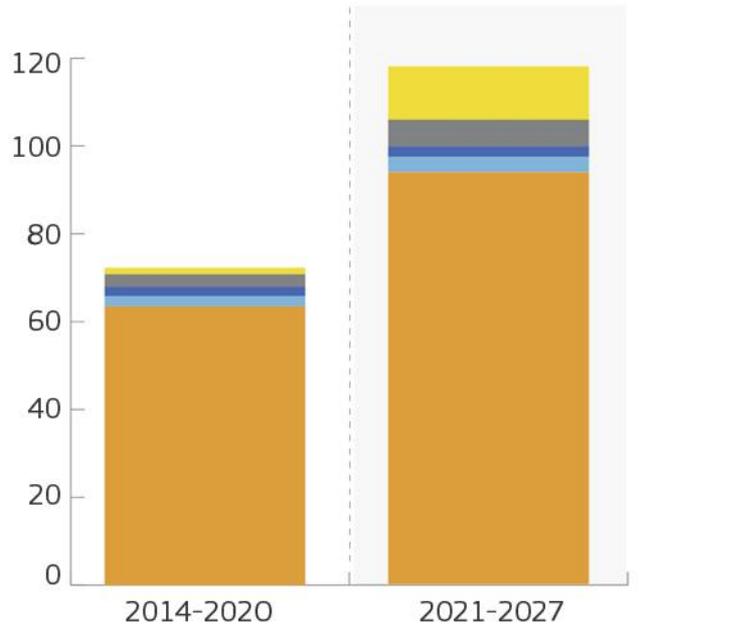
#HorizonEU

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

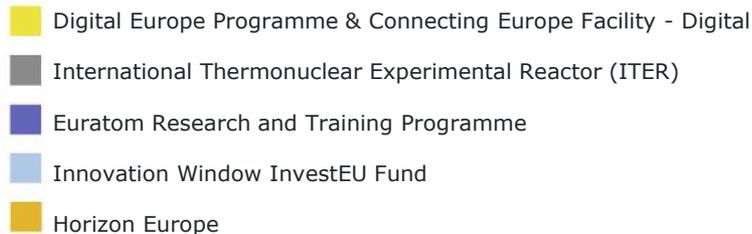
Annex with additional material

The next long-term EU budget (2021-2027):

Investing in the future



Building on the success of the EU's past flagship research and innovation programmes, the Commission proposes to **increase investment in research-innovation and digital** by allocating **€ 114.2 billion** for the future Multiannual Financial Framework.



Source: European Commission
Note: Compared to the Multiannual Financial Framework 2014-2020 at EU-27 (estimate)

Key elements of the Commission proposal are preserved

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

Key changes introduced by Council and EP

- ✓ **Cluster inclusive and secure society is split**
- ✓ **Fast track procedure in pillar II and in the EIC Pathfinder for bottom-up proposals, small consortia and time-to grant not exceeding 6 months**
- ✓ **EIC to provide two types of support: blended and grants-only**
- ✓ **Areas for possible missions and institutionalised partnerships based on Article 185/7 TFEU are listed**
- ✓ **Widening participation: additional measures and increased budget prospect**
- ✓ **Strategic planning as Commission implementing act to facilitate implementation**



New FTI procedure in pillar II and EIC Pathfinder

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

Structure
(3 pillars; 6 clusters)

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

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

Objectives

- Strengthening collaborative links (specific objective)
- Fostering wider participation (operational objective)

Dedicated budget to Widening of 3.3% (new recital)

Budget
(bracketed; MFF related)

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



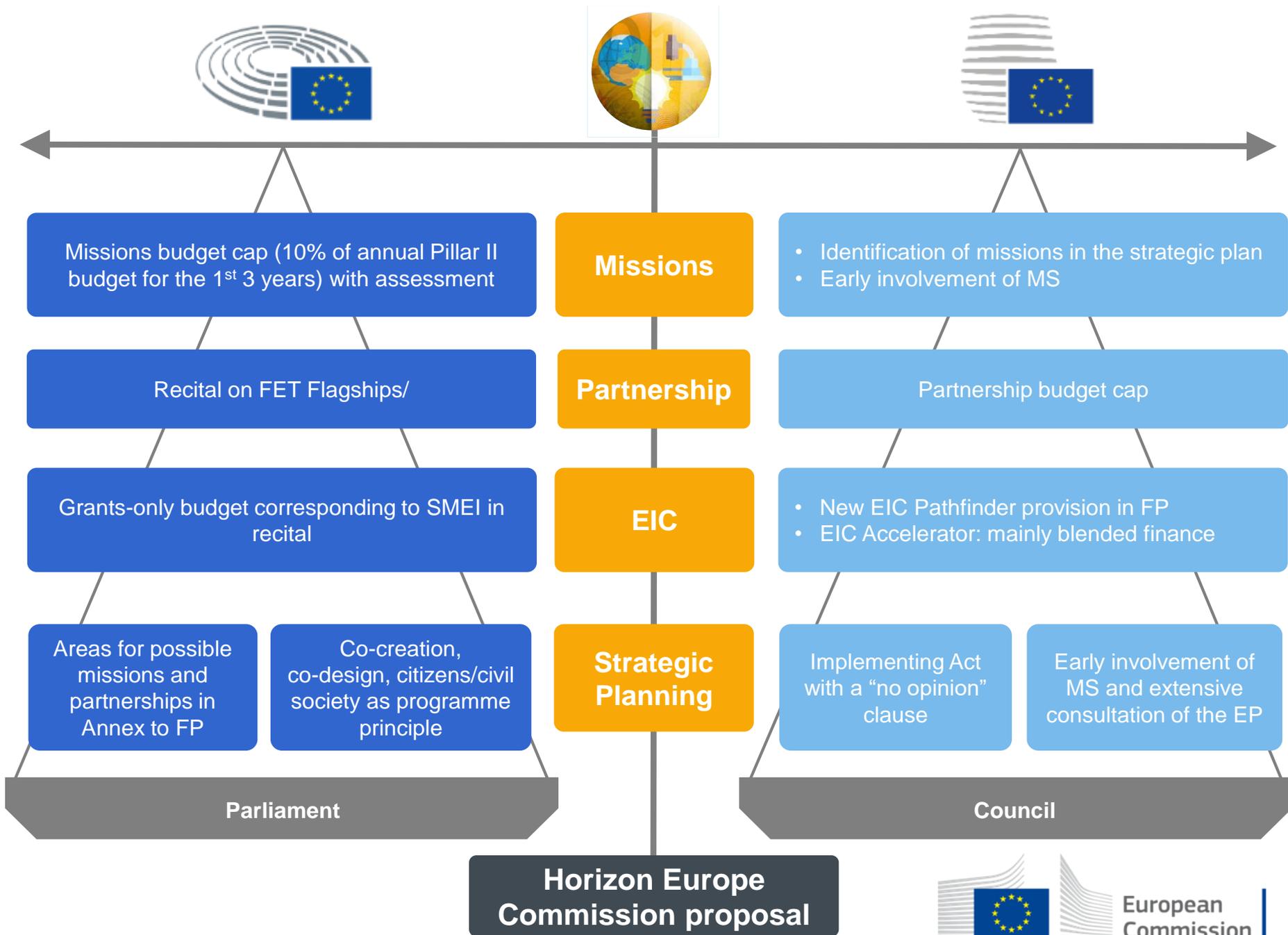
Parliament



Council

Horizon Europe Commission proposal







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

**Widening participation
(doubling of budget)**

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

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

Remuneration of staff

- Commission proposal of project-based remuneration with a reference to social security charges
- Widening budget recital

Parliament

Council

**Horizon Europe
Commission proposal**

Clusters in 'Global Challenges and European Industrial Competitiveness'

| Clusters | Areas of intervention | |
|---|---|--|
| Health | <ul style="list-style-type: none"> • Health throughout the life course • Non-communicable and rare diseases • Tools, technologies and digital solutions for health and care, including personalised medicine | <ul style="list-style-type: none"> • Environmental and social health determinants • Infectious diseases, including poverty-related and neglected disease • Health care systems |
| Culture, creativity and inclusive society | <ul style="list-style-type: none"> • Democracy and Governance • Social and economic transformations | <ul style="list-style-type: none"> • Culture, cultural heritage and creativity |
| Civil security for society | <ul style="list-style-type: none"> • Disaster-resilient societies • Protection and Security | <ul style="list-style-type: none"> • Cybersecurity |
| Digital, Industry and space | <ul style="list-style-type: none"> • Manufacturing technologies • Advanced materials • Next generation internet • Circular industries • Space, including Earth Observation • Emerging enabling technologies | <ul style="list-style-type: none"> • Key digital technologies, including quantum technologies • Artificial Intelligence and robotics • Advanced computing and Big Data • Low-carbon and clean industry • Emerging enabling technologies |
| Climate, Energy and Mobility | <ul style="list-style-type: none"> • Climate science and solutions • Energy systems and grids • Communities and cities • Industrial competitiveness in transport • Smart mobility | <ul style="list-style-type: none"> • Energy supply • Buildings and industrial facilities in energy transition • Clean, safe and accessible transport and mobility • Energy storage |
| Food, bioeconomy, natural resources, agriculture and environment | <ul style="list-style-type: none"> • Environmental observation • Agriculture, forestry and rural areas • Circular systems • Food systems | <ul style="list-style-type: none"> • Biodiversity and natural resources • Seas, oceans and inland waters • Bio-based innovation systems in the EU Bioeconomy |



Open science across the programme

Art. 10 - Open Science The approach

Open access to scientific publications to be ensured

Open access to research data to be ensured in line with principle 'as open as possible, as closed as necessary'

Responsible research data management to be ensured in line with FAIR principles

Other open science practices to be promoted and encouraged

Reciprocity in open science to be promoted and encouraged in all association and cooperation agreements with third countries

Art. 35 - Exploitation and Dissemination The modalities

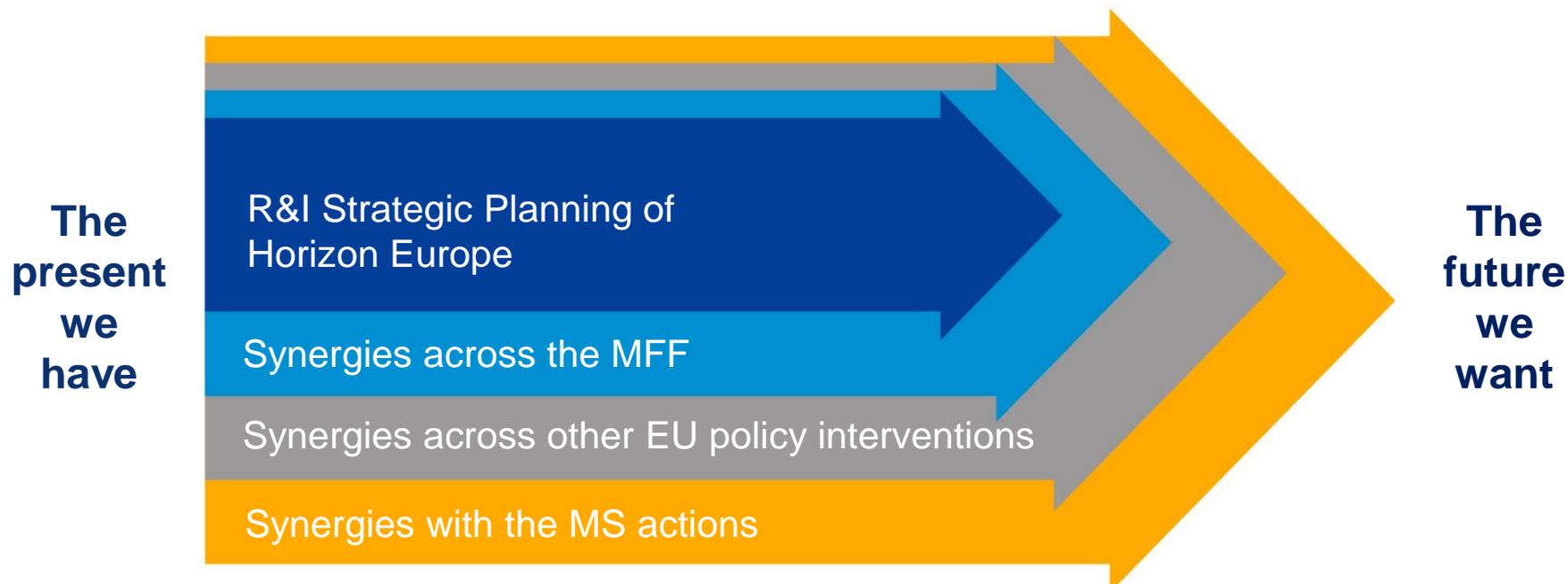
Open access to scientific publications obligatory: sufficient IPR to be retained

Open access to research data, 'as open as possible, as closed as necessary' : exceptions

Responsible research data management in line with FAIR principles; **Data Management Plan** mandatory; possible obligations (in specific WPs) to use the **European Open Science Cloud** for storing and providing access to data

Possible additional incentives or obligations through work programmes for **other open science practices**

The Strategic Planning Process:



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

Implementation Strategy to shift the focus from administration to content

- **Enhancing synergies with other EU programmes**
- **Simplifying the model grant agreements and guidance to be beneficiaries**
- **Funding and tenders portal – one-stop-shop for easy access to EU funding and project implementation**

Early consultation with stakeholders/programme ready to start in 2021