

# Commission proposal for **Horizon Europe**

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

Horizon Europe and Water Research

**#HorizonEU**

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DG Research & Innovation  
Water JPI Experts Workshop, Dublin, 22 October 2019



# Horizon Europe

is the Commission proposal for a **€ 100 billion** research and innovation funding programme for seven years (2021-2027)



**to strengthen the EU's scientific and technological bases**



**to boost Europe's innovation capacity, competitiveness and jobs**



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

**€ 4.1 billion** are proposed to be allocated for defence research, in a separate proposal for a European Defence Fund

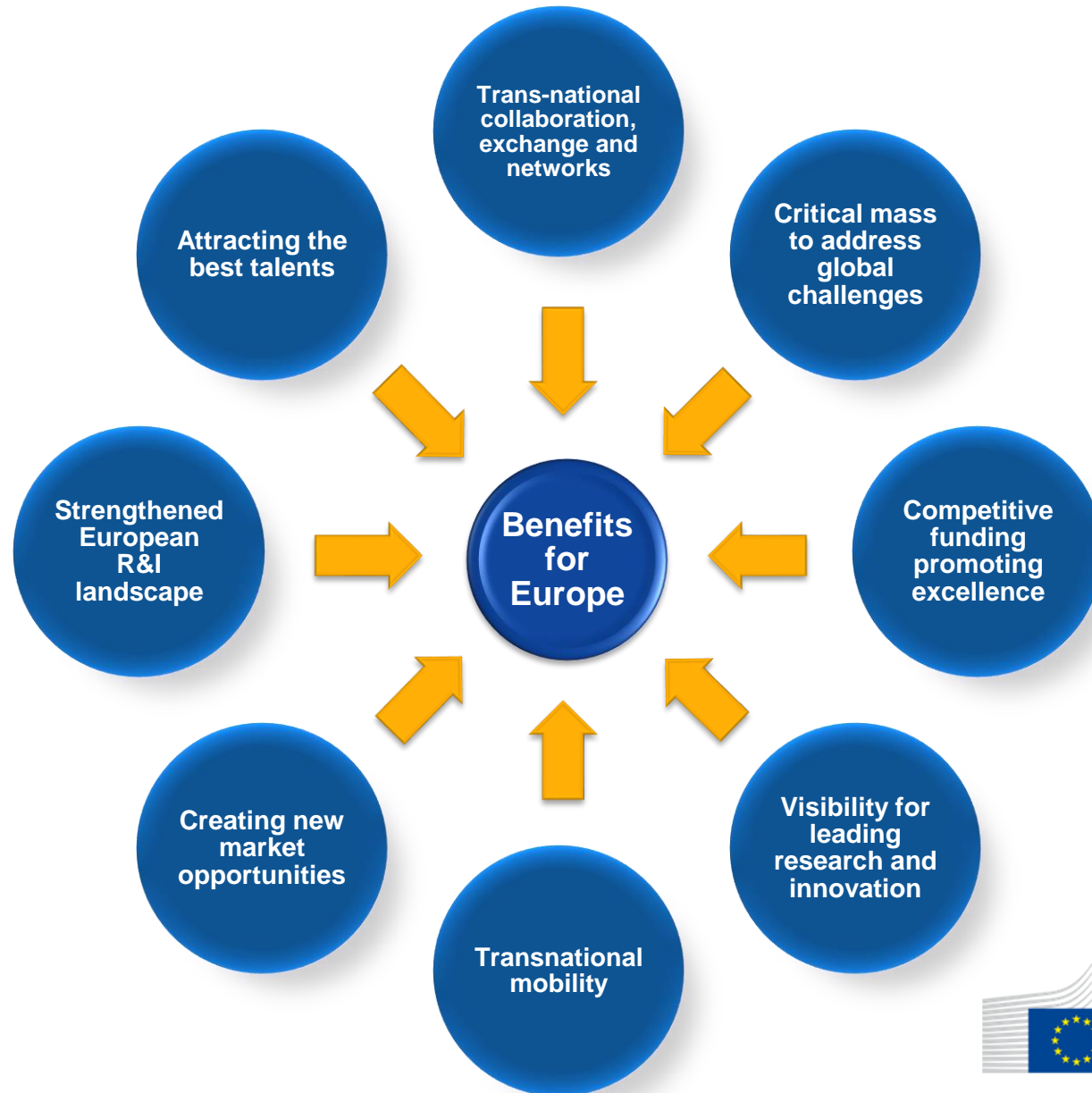
# Horizon Europe – Why?

# Horizon Europe: investing in R&I to shape our future

- The vision:
  - " a Europe that protects,  
a Europe that empowers,  
a Europe that defends"  
*Jean-Claude Juncker*
- Tackling **climate change**  
(35 % budgetary target)
- Helping to achieve **Sustainable Development Goals**
- Boosting the Union's  
**competitiveness and growth**



# Added value through Horizon Europe:



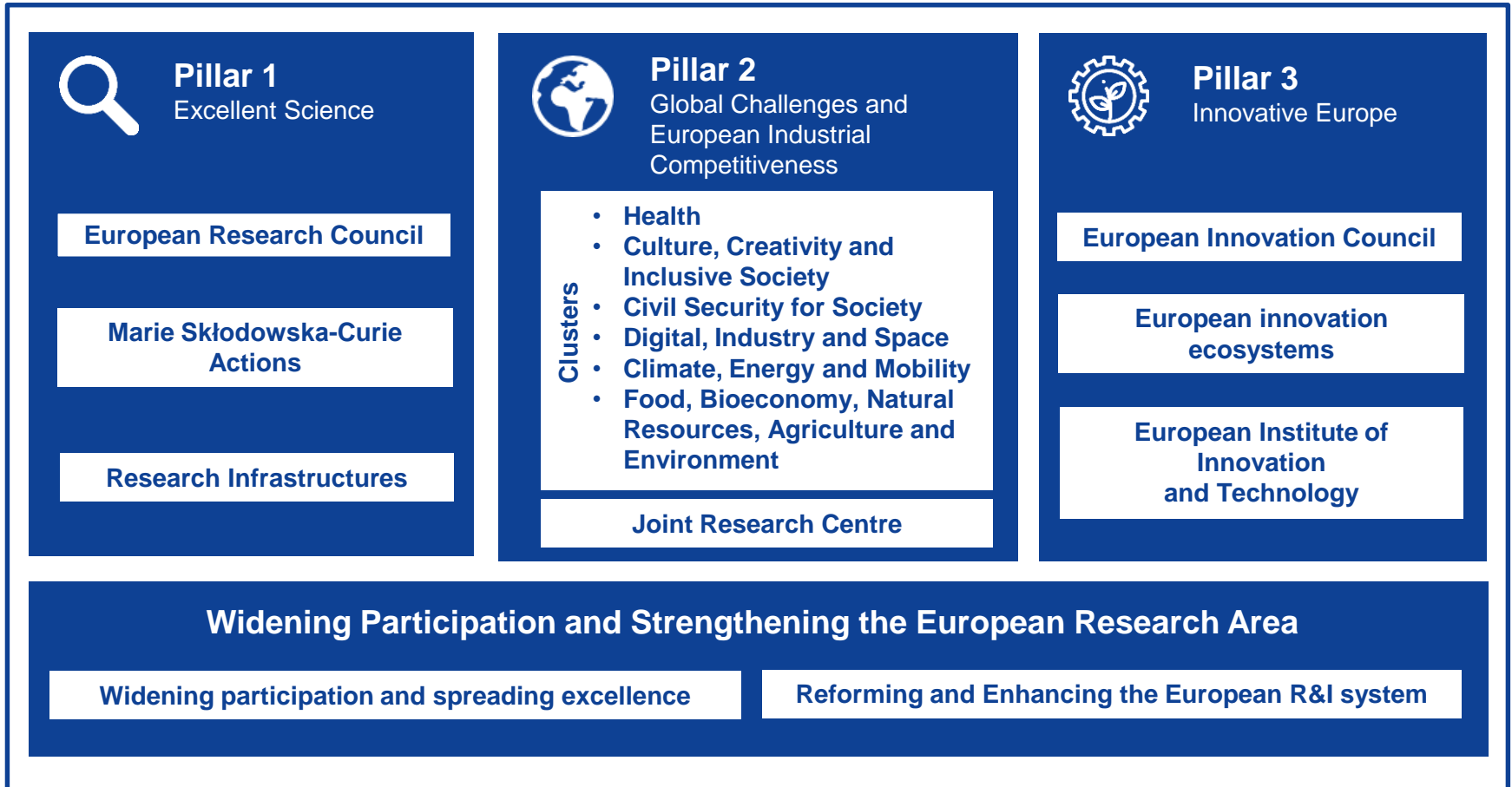
# Horizon Europe – Political agreement

# 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

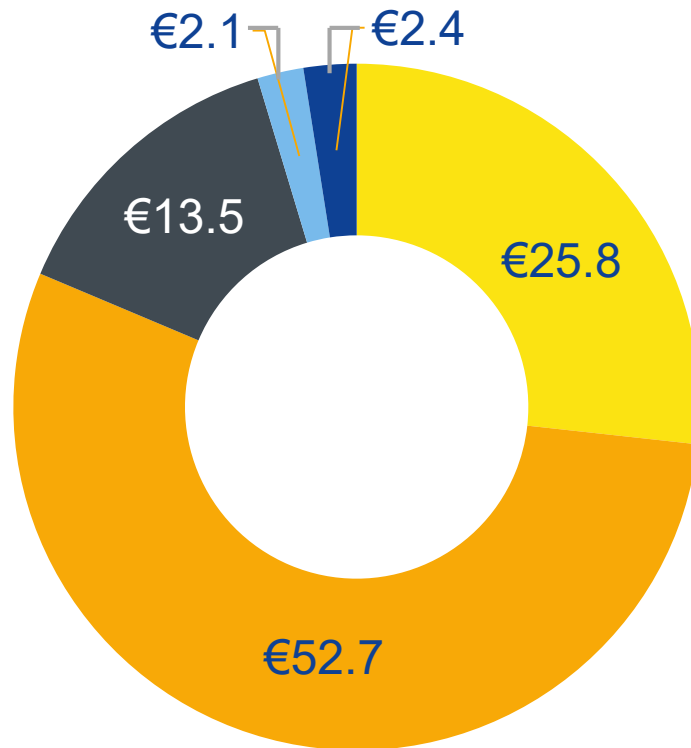


# Horizon Europe: Preliminary structure





# Budget: €100 billion\*



€ billion  
In current prices

- Open Science
- Global Challenges & Ind. Competitiveness
- Open Innovation
- Strengthening ERA
- Euratom

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

# Horizon Europe – What's new?



# European Innovation Council

The EIC will support innovations with breakthrough and disruptive nature and scale up potential that are too risky for private investors.

**European  
Innovation  
Council**

**Helping innovators create markets of the future,  
leverage private finance, scale up their  
companies,  
Innovation centric, risk taking & agile, pro-  
active 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 & blended finance**  
(from pre-commercial  
to market & scale-up)



# R&I Missions

## R&I Missions

**Connecting to citizens:** Missions will relate EU's research and innovation to society and citizens' needs, with strong visibility and impact

A mission will consist of a portfolio of actions intended to achieve **a bold and inspirational as well as measurable goal** within a set timeframe, with impact for science and technology, society and citizens that goes beyond individual actions

Horizon Europe proposal defines mission characteristics and criteria

Specific missions will be **co-designed with Member States, stakeholders and citizens** and programmed within the Global Challenges and Industrial Competitiveness pillar (drawing on inputs from other pillars)

# R&I Missions

- ✓ 5 mission areas proposed:
  - **Adaptation to Climate Change including Societal Transformation**
  - **Cancer**
  - **Healthy Oceans, Seas, Coastal and Inland Waters**
  - **Climate-Neutral and Smart Cities**
  - **Soil Health and Food**
- ✓ For each mission area, a mission board composed of a maximum of 15 independent high level individuals has been established
- ✓ Mission board chairs:
  - **Ms Connie Hedegaard**, former European Commissioner for Climate Action, for the mission on 'Adaptation to Climate Change including Societal Transformation'
  - **Professor Harald zur Hausen**, Nobel Prize Laureate in Physiology or Medicine, for the mission on 'Cancer'
  - **Mr Pascal Lamy**, former Trade Commissioner and Director-General of the World Trade Organisation, for the mission on 'Healthy Oceans, Seas, Coastal and Inland Waters'
  - **Professor Hanna Gronkiewicz-Waltz**, former Mayor of Warsaw, for the mission on 'Climate-Neutral and Smart Cities'
  - **Mr Cees Veerman**, former Dutch Agriculture Minister, for the mission on '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 by partners; commitment of partners for financial and in-kind contributions & financial contribution by Horizon Europe

**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

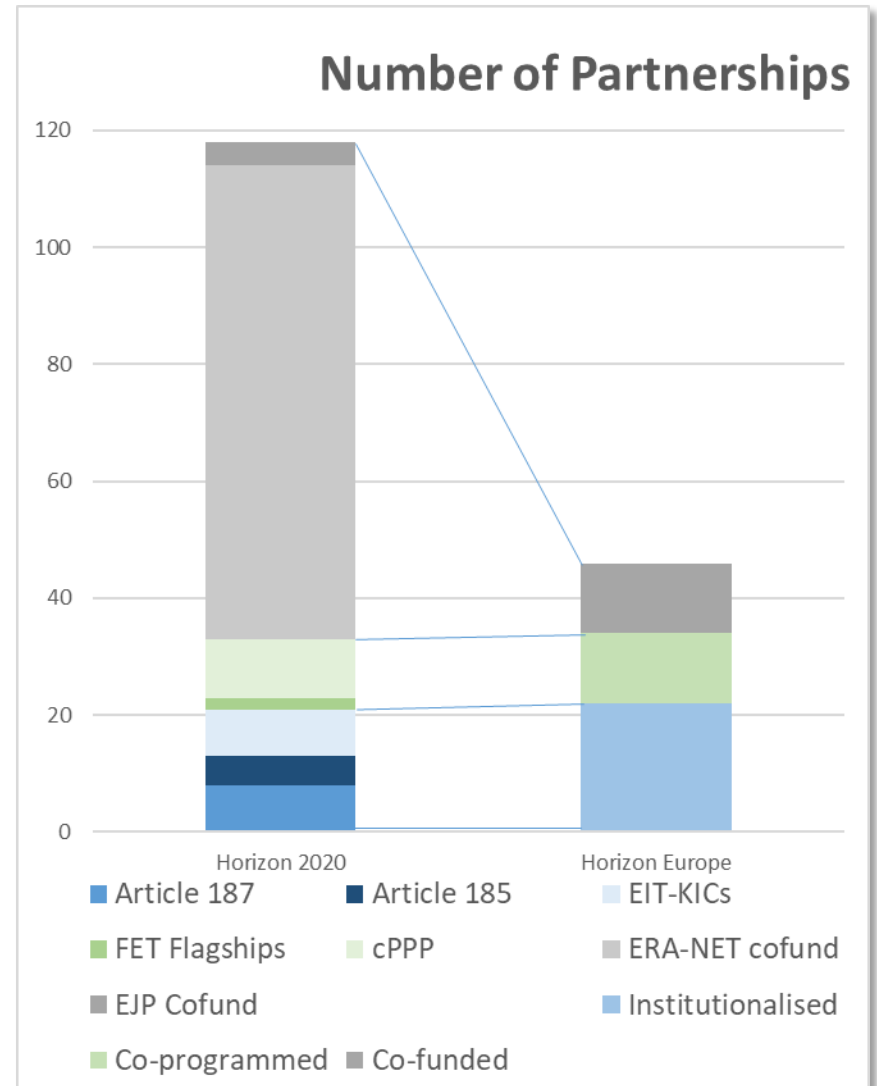
# Emerging Partnership portfolio Horizon Europe

## Rationalisation and reform achieved so far:

- Reduction from >120 (of all types) to currently 45;
- 6 new topics;
- 28 reformed continuations;
- 11 mergers and reforms;
- 35 partnerships candidates in Pillar II;
- 11 partnership candidates outside pillar II (9 EIT-KICs, SMEs, Open Science Cloud).

## EU contributions/budgets:

- To be decided at a later stage following the overall MFF and Horizon Europe budgetary envelopes;
- To be determined once there are agreed objectives, and clear commitments from partners.



# Cluster 6: Food, Bioeconomy, Natural Resources, Agriculture and Environment

## Rationalisation and reform:

Overall number reduced from 24 to 8, of which

- 2 are reformed continuations;
- 5 build on existing actions or merge existing partnerships;
- 1 completely new partnership topics;
- Discontinuation: possibly some partnerships with Member States.

*CF: Co-funded*

*CP: Co-programmed*

Current candidates	Type
▪ Accelerating farming systems transition: agro-ecology living labs and research infrastructures	CF
▪ Animal health: Fighting infectious diseases	CP, CF
▪ Environmental Observations for a sustainable EU agriculture	CF
▪ Rescuing biodiversity to safeguard life on Earth	CF
▪ A climate neutral, sustainable and productive Blue Economy	CP, CF
▪ Safe and Sustainable Food System for People, Planet & Climate	CP, CF
▪ Circular bio-based Europe: sustainable innovation for new local value from waste and biomass	A187, CP
▪ Water4All: Water security for the planet	CP, CF
In addition: EIT Food	KIC



# Horizon Europe – How?

# Strategic planning to define multiannual work programmes and calls for proposals

- Transparency and stakeholder involvement
- Prioritisation and flexibility to align to political priorities
- Internal programme coherence & synergies with other programmes

## Multiannual Strategic R&I Plan

- \* Multiannual orientations and priorities in one document
- \* Areas for partnerships and missions

Strategic discussions with Member States and European Parliament

Consultation with stakeholders

**Work Programmes**

# Horizon Europe – Water Research in the 1<sup>st</sup> Strategic Plan

# Cluster 1

## Strategic Planning - Draft orientations – Targeted Impacts

- Staying healthy in a rapidly changing society
- **Living and working in a health-promoting environment**
- **Tackling diseases and reducing disease burden**
- Ensuring access to innovative, sustainable and high-quality health care in the EU
- Unlocking the full potential of new tools, technologies and digital solutions for a healthy society
- Maintaining an innovative, sustainable and globally competitive health industry

# Cluster 3

## Strategic Planning - Draft orientations – Targeted Impacts

- **Improved disaster risk management and societal resilience;**
- Improved management of air, land and sea EU external borders;
- Better protection of citizens from violent attacks in public spaces;
- **Improved security and resilience of infrastructure** and vital societal functions, such as healthcare, law enforcement, energy, mobility, public services, financial services, communication and logistics infrastructures/networks;
- Improved maritime security, including from man-made and natural disasters and from security challenges such as trafficking, piracy and potential terrorist attacks, cyber and hybrid threats;
- Fighting crime and terrorism more effectively;
- Cybersecurity and a secure online environment, with citizens, public bodies and companies empowered to protect their data and online activities

# Cluster 4

## Strategic Planning - Draft orientations

- Manufacturing Technologies
- Key Digital Technologies
- Advanced Materials
- Emerging Enabling Technologies
- Artificial Intelligence and Robotics
- Next Generation Internet
- Advanced Computing and Big Data
- A globally competitive space sector reinforcing EU autonomy
- **Circular Industries**
- Low-carbon and Clean Industries
- New services from Space for the EU society and economy

# Cluster 5

## Strategic Planning - Draft orientations – Targeted Impacts

- **Achieving an advanced knowledge base in climate science that can guide the development of required policy measures and low-and zero-carbon technologies essential to catalyse the transition to a climate-neutral emissions economy and society.**
- New cross-sectoral energy/transport solutions
- **Achieve cleaner, more secure and competitive energy supply**
- Support decarbonisation, create inclusive growth and employment in Europe, bring down costs for consumers and reduce our energy import dependency by developing energy efficient demand side solutions.
- Significantly contribute to net-zero greenhouse gas emissions and reduced air pollutants in and across all transport modes.
- New, affordable smart, inclusive and sustainable mobility services.

# Cluster 6

## Strategic Planning - Draft orientations – Targeted Impacts

- *Sustainable management of natural resources; prevention and removal of pollution; attractive jobs, enhanced value creation and competitiveness*
- *Halt of biodiversity decline and restoration of ecosystems*
- *Reduction of greenhouse gas emissions and successful adaptation of production systems as well as rural, coastal, peri-urban and urban areas to climate change*
- *Establishment of primary production and food systems based on sustainability, inclusiveness, health and safety; ensuring food and nutrition security for all*
- *Behavioural, socio-economic and demographic change are well understood and drive sustainability; a balanced development of vibrant rural, coastal, peri-urban and urban areas*
- *Establishment of governance models enabling sustainability*



# Cluster 6

## Strategic Planning - Draft orientations

### – Water relevant research

#### *IA Environmental Observation*

- Models and data assimilation for the development of indicators, scenarios, service capacity, and innovation in various fields, including water availability and use

#### *IA Biodiversity and Natural Capital*

- Better understanding of biodiversity and ecosystem services, including provision of ecosystem services for water quality
- Better understanding of the drivers of biodiversity loss and their interactions - changes in land and sea, including water use overexploitation and water pollution
- Innovative nature-based solutions to reduce pollution, including diffuse water pollution originated from agricultural and urban sources

#### *IA Agriculture, forestry and rural areas*

- Enhance resource use efficiency in agriculture and forestry, in particular water
- Optimise nutrient management and reduce pesticide use on-farms and across landscapes, thereby also decreasing pollution of water
- Foster adaptation of primary production to climate change, including water scarcity

# Cluster 6

## Strategic Planning - Draft orientations

### – Water relevant research

#### *IA Seas, Ocean and Inland Waters*

- Sustainable management, including climate mitigation and adaptation of inland water, coastal and marine resources
- Governance models for more resilient, prosperous, sustainable and dynamic inland water, coastal and maritime economies
- Prevention and removal of pollution (chemical, physical, bacteriological, nutrients) in inland, coastal and marine waters
- Cost-effective solutions for mitigation of morphological alterations of water bodies (e.g. barriers, dams, canalisation) and for restoration and management of heavily modified water bodies
- Innovative solutions, improved analytical tools and monitoring methods to address the negative effects of past chemical stressors and new emerging pollutants (such as micro-pollutants, micro-plastics, pharmaceuticals, endocrine disrupters, antimicrobial resistant bacteria ), improve the chemical status of freshwater and prevent further pollution, both in inland water bodies and coastal waters.

#### *IA Food Systems*

- Better understanding of the interactions between the different components of current food systems, such as the interactions between food, biodiversity and water systems, to maximise co-benefits and accelerate transition

# Cluster 6

## Strategic Planning - Draft orientations

### – Water relevant research

#### *IA Bio-based Innovation Systems*

- Sustainable biomass production systems for high-value biobased products and water use
- Bioremediation for restoring ecosystems, water resources, soil

#### *IA Circular Systems*

- Adaptation of water resources and infrastructure management to increased scarcity and flooding
- Innovative solutions for halting pollution and restoring degraded water bodies
- Advanced circular urban water systems and deployment of alternative waters sources, including water reuse, and transparent water allocation systems to satisfy all needs are essential for sustainable resource use
- New governance solutions that build on better spatial planning, based on environmental observation, better modelling and inclusion of citizen and economic actors

# Strategic Planning – Indicative Timing

- *May 2019:* 1st Shadow Programme Committee meeting
- *June 2019:* 2<sup>nd</sup> Shadow Programme Committee meeting
- *July – August 2019:* Mission Boards established
- *September, 24-26, 2019:* European R&I Days  
([https://ec.europa.eu/info/research-and-innovation/events/upcoming-events/european-research-and-innovation-days\\_en](https://ec.europa.eu/info/research-and-innovation/events/upcoming-events/european-research-and-innovation-days_en))
- *4 October 2019:* Open stakeholders consultation closed
- *December 2019:* Finalisation Strategic Planning

# Thank you!

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<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](http://ec.europa.eu/budget/mff/index_en.cfm)

