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'Smart green and  
integrated transport'  
& 'Climate action,  
environment,  
resource efficiency  
and raw materials'

# HORIZON 2020

in brief

L'Aquila 31 Maggio 2017  
Aula Magna DSU  
Università degli Studi  
dell'Aquila





# Agenda

1. Intro to Horizon 2020
2. Societal Challenge 5 'Climate action, environment, resource efficiency and raw materials' in 2018/20



# What is Horizon 2020

## The new EU Framework Programme for Research and Innovation, 2014-2020

 A budget of €78 billion for 7 years

## What's new?

- **Coupling research to innovation – from research to deployment**
- **Focus on the challenges that the EU society is facing, e.g. health, clean energy, transport,...**
- **Simplified access for participants**
- **A single programme bringing together three previously separate programmes/activities\***

\*the 7<sup>th</sup> Research Framework Programme (FP7), innovation aspects of Competitiveness and Innovation Framework Programme (CIP), EU contribution to the European Institute of Innovation and Technology (EIT)

# H2020 ARCHITECTURE





## Excellent Science

- **European Research Council**
  - Frontier research by the best individual teams
- **Future and Emerging Technologies**
  - Collaborative research to open new fields of innovation
- **Marie Skłodowska Curie actions**
  - Opportunities for training and career development
- **Research infrastructures (including e-infrastructure)**
  - Ensuring access to world-class facilities

## Industrial Leadership

- **Leadership in enabling and industrial technologies**
  - Nanotechnologies, Advanced Materials, Advanced Manufacturing and Processing, and Biotechnology;
  - Information and Communication Technologies (ICT);
  - Space
- **Access to risk finance**
  - Leveraging private finance and venture capital for research and innovation
- **Innovation in SMEs**
  - Fostering all forms of innovation in all types of SMEs

## Societal Challenges

1. Health, demographic change and wellbeing
2. Food Security, Sustainable Agriculture and Forestry, Marine, Maritime and Inland Water Research and the Bioeconomy
3. Secure, clean and efficient energy
4. Smart, green and integrated transport
5. Climate action, environment, resource efficiency and raw materials
6. Inclusive, innovative and reflective societies
7. Secure society

European Institute of Innovation and Technology (EIT)

Spreading Excellence and Widening Participation

Science with and for society

Joint Research Center (JRC)



# RULES FOR PARTICIPATION

## Legal entities that may participate in actions (art.6, RfP\*)/ Eligibility for funding (art.9, RfP)

This information is included in the **General Annex to the main Work Programmes**, downloadable [here](#)

### WHO CAN PARTICIPATE?

**Any legal entity, regardless of its place of establishment, or international organization:**

- Any legal entity established in an EU Member State or Associated Country to H2020 (listed [here](#))
- Joint Research Centre (JRC)
- Any international organization.
- Any legal entity established in a Third Country

### WHO CAN BE FUNDED?

- Any legal entity established in a Member State and Associated Country.
- JRC
- Among Third Countries: Low-income countries (Former ICPC countries) (in the General Annex)
- Any international European interest organization.

International organizations or legal entities established in a HIGH INCOME third country, in a BRIC (Brazil, Russia, India, China) country or in Mexico DO NOT RECEIVE AUTOMATIC FUNDING. They get funding:

- only if the participation is deemed essential for carrying out the action
- if it is foreseen by the Work Programme
- if funding is provided for under a bilateral scientific and technological agreement
- Joint Calls with third countries or international organizations

\*Horizon 2020 Rules for Participation, downloadable [here](#)



# DEFINITIONS (art.2, RfP)

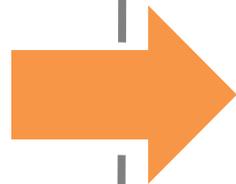


## 'LEGAL ENTITY'

Any legal person created under the national law of its place of establishment, or under Community law or international law, which has legal personality.

The participation of **entities without legal personality** is allowed as far as **they may, acting in their own name, exercise rights and be subject to obligations.**

N.A.



## 'NON-PROFIT LEGAL ENTITY'

**NEW**  
A legal entity which by its legal form non-profit-making or which has a legal or statutory obligation not to distribute profits to its shareholders or individual members (Article 2 of the Rules for Participation and Dissemination)





## Minimum Conditions for participation (art.9, RfP)

**3 LEGAL ENTITIES** independent of each other and established in different Member States or associated countries.

### **1 LEGAL ENTITY**

ERC, SME Instrument, Co-fund actions, CSA and Marie S. Curie Actions.

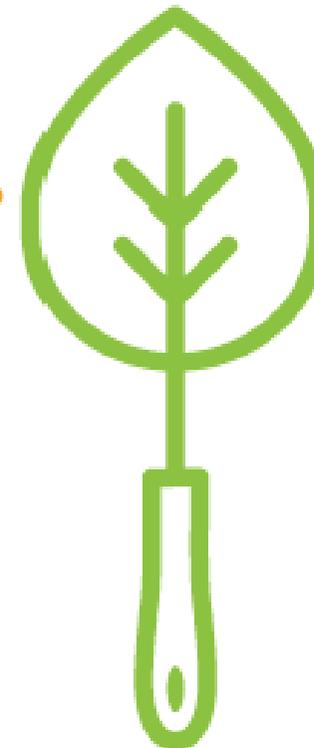
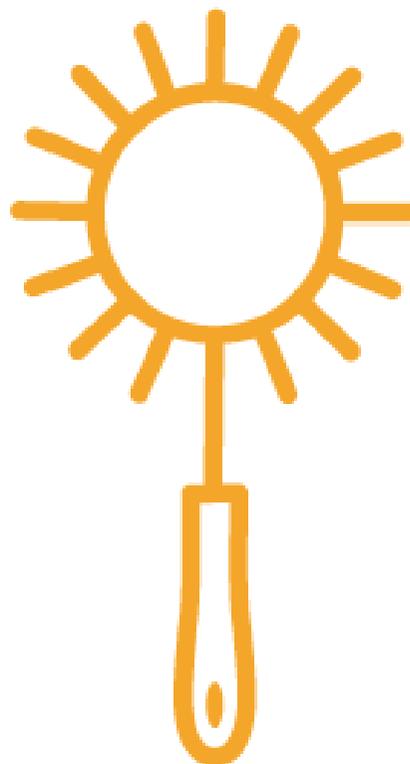
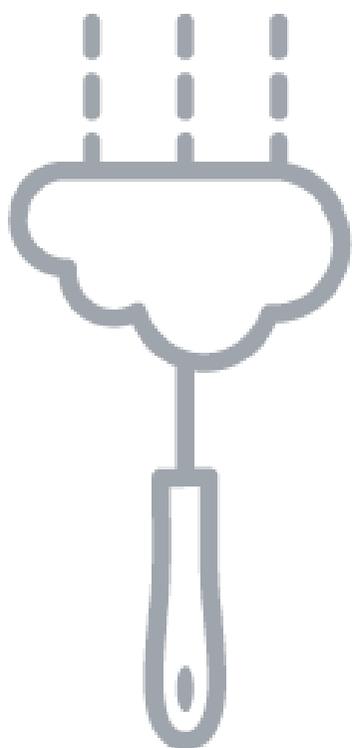
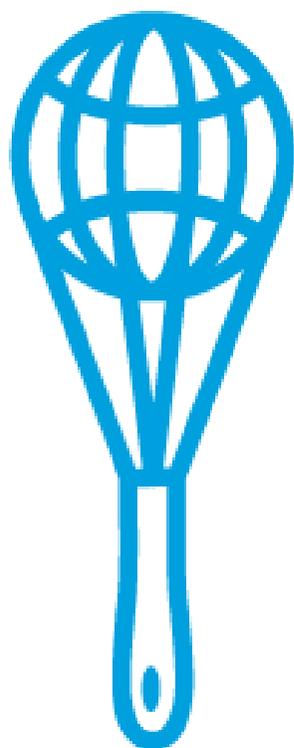


**ADDITIONAL/SPECIAL CONDITIONS** might be identified in the work programme or work plan (n. of participants, type of entities, etc...)





# TOOLS FOR PARTICIPATION



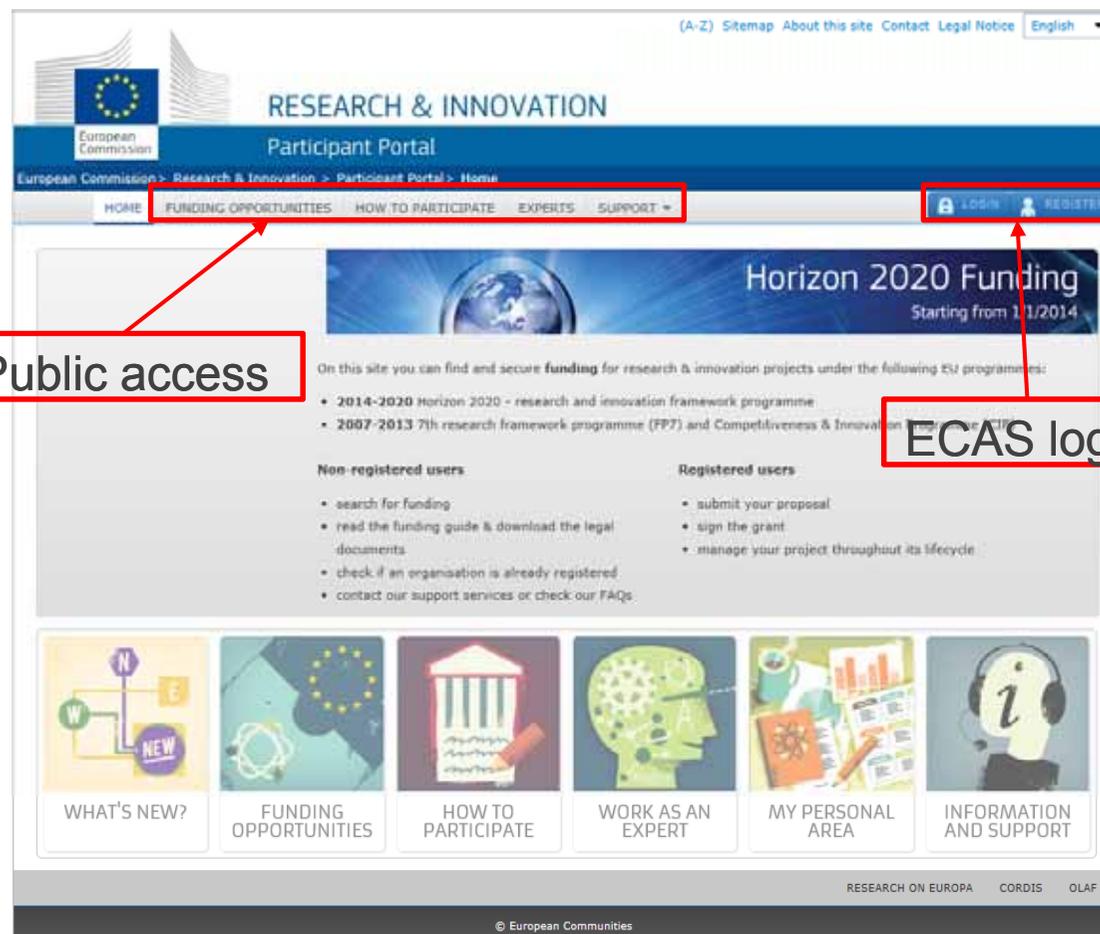


## PARTICIPANT PORTAL

The Participant Portal is the single entry point for **electronic administration of EU-funded research and innovation projects**, and hosts the services for managing your proposals and projects throughout their lifecycle

Public access

ECAS login



<http://ec.europa.eu/research/participants/portal/desktop/en/home.html>





# RESEARCH & INNOVATION

## Participant Portal



European Commission > Research & Innovation > Participant Portal > Home

HOME

FUNDING OPPORTUNITIES

HOW TO PARTICIPATE

EXPERTS

SUPPORT

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LOGIN

REGISTER



## Horizon 2020 Funding

Starting from 1/1/2014

On this site you can find and secure **funding** for projects under the following EU programmes:

- **2014-2020** Horizon 2020 - research and innovation framework programme
- **2007-2013** 7th research framework programme (FP7) and Competitiveness & Innovation Programme (CIP)
- Research Fund for Coal & Steel, COSME, 3rd Health Programme, Consumer Programme

### Non-registered users

- search for funding
- read the H2020 Online Manual & download the legal documents
- check if an organisation is already registered
- contact our support services or check our FAQs

### Registered users

- submit your proposal
- sign the grant
- manage your project throughout its lifecycle
- register as expert advising the Commission



WHAT'S NEW?



FUNDING OPPORTUNITIES



HOW TO PARTICIPATE



WORK AS AN EXPERT



MY PERSONAL AREA



INFORMATION AND SUPPORT



# RESEARCH & INNOVATION

## Participant Portal

European Commission > Research & Innovation > Participant Portal > Funding

HOME

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LOGIN



H2020 Online Manual

Reference Documents

Beneficiary Register

Financial Viability Self-Check

SME Participation



### How to participate

H2020 ONLINE MAN

The first steps to prepare your proposal and apply for EU research funding. Learn how to find a suitable Call for proposals or project partners and how to submit a proposal.

The following guidance services facilitate your participation:

- **H2020 Online Manual:** step-by-step online guide through the Portal process from proposal preparation and submission to reporting on your on-going project
- **Reference documents:** library of legal documents, guidance notes, and a reference material for H2020 and FP7
- search for already registered organisations and their PICs
- **Financial viability self-check tool** allows you simulating the financial viability check of your organisation
- **SME participation:** dedicated H2020 guidance page for SME

FIND a call

FIND partners

CREATE your account

REGISTER your organisation

SUE a prop

1

2

3

4

Step 1 - Find a suitable Call for Proposals

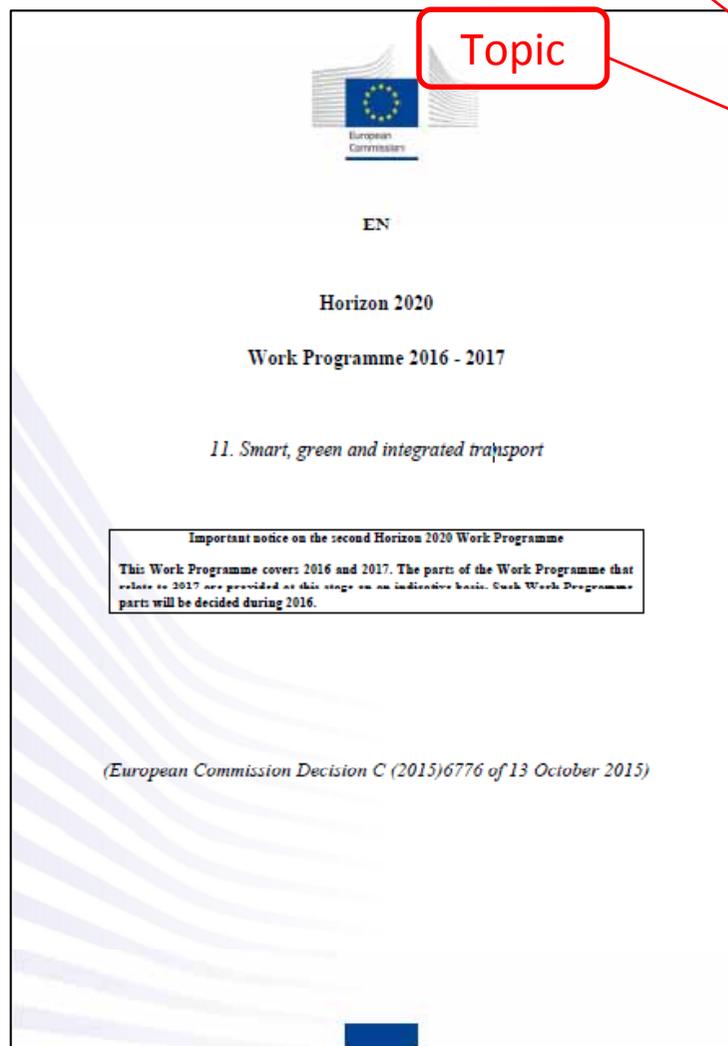
H2020 ONLINE MANUAL

- Work Programmes
  - 2014-15
  - 2016-17
  - Main WP
    - 1. Introduction 2016-17 >
    - 2. Future and Emerging Technologies (FETs) 2016-17 >
    - 3. Marie Skłodowska-Curie actions (MSCA) 2016-17 >
    - 4. Research infrastructures (including e-Infrastructures) 2016-17 >
    - 5. Introduction to Leadership in enabling and industrial technologies (LEITs) 2016-17 >
    - 5i. Information and communication technologies (ICT) 2016-17 >
    - 5ii. Nanotechnologies, advanced materials, advanced manufacturing and processing, biotechnology 2016-17 >
    - 5iii. Space 2016-17 >
    - 6. Access to risk finance 2016-17 >
    - 7. Innovation in SMEs 2016-17 >
    - 8. Health, demographic change and wellbeing 2016-17 >
    - 9. Food security, sustainable agriculture and forestry, marine and maritime and inland water research and the bioeconomy 2016-17 >
    - 10. Secure, clean and efficient energy 2016-17 >
    - 11. Smart, green and integrated transport 2016-17 >
    - 12. Climate action, environment, resource efficiency and raw materials 2016-17 >
    - 13. Europe in a changing world - inclusive, innovative and reflective societies 2016-17 >
    - 14. Secure societies - protecting freedom and security of Europe and its citizens 2016-17 >
    - 15. Spreading excellence and widening participation 2016-17 >
    - 16. Science with and for society 2016-17 >
    - 17. Cross-cutting activities (Focus Areas) 2016-17 (NEW) >
    - 18. Fast Track to Innovation Pilot 2016-17 >
    - 19. Dissemination, Exploitation and Evaluation 2016-17 >
    - General Annexes to the Main WP
    - European Research Council
    - Euratom
- Templates & forms
  - Proposal templates
  - Proposal evaluation forms

# Work programme

Call

Topic



*HORIZON 2020 - Work Programme 2016 - 2017  
Smart, green and integrated transport*

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**MG-3.5-2016: Behavioural aspects for safer transport**

**Specific Challenge:** To make all transport modes safer (roads, rail, waterborne and aviation), an increased understanding is needed of the behaviour of individual users (in this case drivers, riders, pilots, cyclists, pedestrians and other transport users), and of their interaction with their associated safety-related systems and services (such as on-board technologies, mobile devices and infrastructure).

The challenge is to study those key factors that influence safe transport user behaviour, both individually and collectively, taking into account demographic factors (gender, age, socio-cultural aspects, etc.) and societal framework conditions (changing living conditions etc.). Using the knowledge gained on the interacting parameters that define user behaviour and their combined effects, appropriate measures and systems should be developed and assessed to ensure safe user performance, to pro-actively anticipate user response and reduce the number of errors and potential accidents in the transport system.

**Scope:** Proposals should address the following aspects:

—Distraction and health related factors such as: studying the parameters that influence user condition (fatigue, illness, use of drugs, medicines, alcohol, etc.); distraction caused by using on-board and mobile devices; behaviour causing unsafe conditions (e.g. switching off safety functions, extreme emotions) affecting response in pre-crash situations; assessment of the psychological condition of those in charge of vehicles/vessels; and identification and development of suitable mitigation measures.

—Social and demographic factors such as: variations in safety behaviour, socio-cultural issues, gender, age and disability and their impact on risk assessment and exposure of each individual or group; and identification and development of measures to address these factors and reduce their impact.

—Risk appraisal such as: development of analysis and assessment methods for factors affecting the level of risk users are willing to take, e.g. the ability to judge and manage conditions like weather, infrastructure condition and traffic levels; and development of means to reduce hazardous risk taking.

—Measures to modify transport user behaviour such as: novel enforcement and incentive schemes for high risk groups; focused and coordinated training schemes and tools for transport users based on reliable interaction and behavioural models piloted widely across different types of traffic and geographical regions; analysis of changes in users' behaviour from first use to familiarisation and confidence in new safety assistance systems.

Extensive knowledge on user behaviour has been developed within each transport mode, e.g. mental overload for pilots, the effect of shift rotation on train driver response time. Transfer of knowledge between transport modes and an effective deployment of multi-modal solutions are recommended, as well as the inclusion of non-traditional transport modes, such as personal mobility devices.

Active participation of SMEs is strongly encouraged.

In line with the strategy for EU international cooperation in research and innovation<sup>12</sup>, international cooperation is encouraged, in particular with industrialised countries (i.e. US, Japan, Canada, Australia) and emerging economies (primarily China, India, Brazil). Proposals should foresee twinning with entities participating in projects funded by US DOT<sup>13</sup> to exchange knowledge and experience and exploit synergies.

The Commission considers that proposals requesting a contribution from the EU of between EUR 4 and 9 million each would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

**Expected Impact:** Solutions will contribute to achieving the objective of the Transport White Paper to ensure that the EU remains a world leader in the safety of all modes of transport.

Research and innovation on this topic will result in: reduction of fatal, serious and minor accidents through measures to mitigate unsafe transport user behaviour patterns; economic savings linked to the reduction of accidents; safer use of vehicles and increased awareness of other users; effective enforcement and training schemes based on reliable behavioural models; safe integration of new types of vehicle and increased usage of 'soft' modes.

**Type of Action:** Research and Innovation action

*The conditions related to this topic are provided at the end of this call and in the General Annexes.*

## TOPICS structure



## TOPICS structure

### SPECIFIC CHALLENGE

- sets the context, the problem to be addressed, why intervention is necessary

### SCOPE

- delineates the problem, specifies the focus and the boundaries of the potential action BUT without describing specific approaches

### EXPECTED IMPACT

- describe the key elements of what is expected to be achieved in relation to the specific challenge

### TYPE OF ACTION

- e.g. Research and Innovation Action (RIA), Innovation Action (IA), SME instrument; exc.



# Societal Challenge 5 ‘Climate action, environment, resource efficiency and raw materials’

in 2018/20



## Preparatory work

- The EC launched a targeted, on-line **stakeholder consultation** for the selection of priorities.
- The 200 responses received indicated substantial adherence to the evolution of the previous two SC5 work programmes.
- The consultation was supplemented by dialogue with the European Innovation Partnerships (EIPs) Water and Raw Materials, Climate-KIC, EIT Raw Materials and relevant ETPs; and by two workshops bringing together SC5-relevant JPIs and ERA-NETs.
- The **SC5 Expert Advisory Group (AG)** submitted its report on 1st June 2016.

# General features of the identified priorities 1/2

The **SC5 strategic priorities** identified for 2018-2020 will:

- continue to pursue SC5's overall objective of helping to realise a green economy, i.e. a **circular, climate-resilient economy**, thereby contributing to achieving smart, sustainable and inclusive growth.
- address the **global targets** set by the COP21 Paris Agreement, the UN's Sustainable Development Goals (SDGs), the global Urban Agenda adopted in Quito and the Sendai framework for Disaster Risk Reduction.
- implement **high-level EU policies** including the 7th Environmental Action Programme to 2020, the Circular Economy, the Energy Union and the Arctic.
- Support open science and open innovation, with attention to ethical and gender issues.

# General features of the identified priorities 2/2

- **Five strategic priorities** were identified for 2018-2020:
  - climate action after COP21;
  - circular economy;
  - innovative and resilient cities and rural areas;
  - the water-food-energy nexus;
  - enabling systemic transformation.
- Plus, additional cross-cutting issues (including raw materials).
- Within all priorities the importance of R&I support to the expansion of the knowledge base, deployment and scale-up of technical, nature-based and socio-economic solutions, is stressed.
- Within all priorities, the call for such solutions require a better understanding of behaviour, socio-cultural dynamics and the systemic potential of sustainable lifestyles. To ensure societal engagement and acceptance, multi-stakeholder actions should be initiated.



# Strategic priorities for 2018-2020

and translation into calls



# 1. Climate action in support of the Paris Agreement

Actions will:

- support the Paris Agreement's goals on global warming and relevant EU policies and objectives: i.e the Energy Union, Arctic policy, EU Adaptation Strategy.
- Give special consideration to **cooperation with strategic partner countries/regions**.
- focus on:
  - research on **decarbonisation** (focus on critical sectors such as land use and agriculture);
  - assessments of impacts, vulnerabilities and risks for **enhancing resilience of human systems and ecosystems**; facilitating market development of climate services;
  - enhancing, understanding and supporting the **development and use of nature-based solutions**, green and blue infrastructure, exc.;
  - **assessment of the impacts of climate change on vulnerable areas** such as oceans and the cryosphere (main focus on the Arctic);
  - address relevant issues with a view to producing policy-relevant information for mitigation and adaptation.

## 2. Circular economy

Actions (mainly Innovation actions, complemented by R&I actions) will:

- Focus on **transition to a circular economic model**, with products, processes and business models designed to reduce environmental impacts.
- Address the full range of **product lifecycle stages** in order to reduce the quantities of raw materials in production and consumption and facilitate the use of secondary raw materials. (Priority areas include plastics, critical raw materials, construction and demolition, and water use and reuse)
- investigate the consequences of transition to the circular economy, in order to identify policies that can effectively support the transition and mitigate its potential adverse effects.
- Aspects such as public acceptance and collaborative economy models are considered. Greater integration of digital solutions in support of the circular economy is considered as essential.



### 3. Water for our environment, economy and society

Actions will:

- focus on boosting both the EU water market and the global competitiveness of the EU water sector and water-related/-dependent industries and economic sectors,
- address innovative water technologies, services and monitoring tools, digital solutions, living labs and large scale demonstration projects with various water uses (industrial, urban, rural and agricultural) and at various scales (regional/national/international river basins) and integrated approaches,
- (improve risk and impact assessments related to the above- mentioned challenges (R&I actions),
- promote water diplomacy with key international partners and regions (e.g. for the management of trans-boundary river basins)
- support the implementation of the PRIMA initiative (Partnership for Research and Innovation in the Mediterranean Area).



## 4 Innovating cities for sustainability and resilience

- Mainly **large scale demonstration projects**, with cities acting as 'living labs' and engaging stakeholders in open innovation and co-creation to develop, test and replicate in real-world conditions innovative NBS.
- Emphasis will be on NBS for air, noise and water quality, climate adaptation and decarbonisation, human health and well-being, and disaster risk reduction in cities, encompassing all forms of innovation (technological, digital, social, institutional, financial, regulatory and governance).
- **Complementary research actions** are foreseen to better quantify the benefits of NBS in cities.
- Synergies with other relevant parts of H2020 promote integrated approaches to improve urban ecosystem functioning, combining 'hard' (such as energy, transport), 'soft' (such as active mobility, data, ICT, sensors) and environmental systems (habitats, green space and green infrastructure).

## 5. Raw materials

- Actions will cover the entire EU raw materials value chain, from sustainable exploration, extraction, processing (including metallurgy) to recycling, as well as substitution of CRM.
- In an 'open innovation' approach, actors from the whole innovation chain will be involved, including researchers, industry, end-users, public authorities and civil society.
- The main focus will be on supporting the targets of the EIP on Raw Materials, including **large innovative actions** for EU raw materials production.
- Breakthrough research concepts, as the basis of tomorrow's innovations, will also be tackled through smaller, **lower-TRL actions**.

## 6. Protecting and valorizing our natural and cultural assets

### - Earth observation

Actions will target the following priorities:

- delivering EO services by exploiting GEOSS, Copernicus and other available EO data and by addressing the full innovation chain from innovative ideas to pre-commercial deployment, focusing on **developing and demonstrating innovative mass market applications** for businesses and citizens;
- developing a **regional GEOSS strategy** for Europe to enable and improve capacities for the discovery, access, integration and use of EO data of different types and origins (from space to ground), across platforms and for various communities of users;
- contributing to selected GEO flagship activities of high strategic value to the EU and its international commitments (such as the 2030 Agenda for Sustainable Development and the G7).
- **R&I activities** combining with ICT advances such as the Internet of Things, big data analytics and cloud processing, these



## 6. Protecting and valorizing our natural and cultural assets

- **Nature based solutions, disaster risk reduction and natural capital accounting**
- Actions will support **multi-stakeholder demonstration projects** on nature-based solutions to protect and enhance biodiversity and ecosystems, and to increase the resilience of territories to disasters and hazards, and the capacity to restore degraded habitats, ecosystems and biodiversity.
- R&I actions will focus **multi-hazard risk management** and cascading impacts, as well as early-warning systems, forecasting, monitoring and reporting capabilities for geo-hazards (such as earthquakes).

## 6. Protecting and valorizing our natural and cultural assets

### - Heritage alive

- **Large scale 'living labs' demonstration projects** are foreseen to engage relevant stakeholders in **open innovation and co-creation** to design, develop and test solutions, integrating natural and cultural heritage with new innovation paradigms and business, governance and financing models.
- **R&I actions** are foreseen to enhance the capacity to predict, assess and mitigate the direct and indirect impact of global change on cultural heritage.



# Thank you!

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