

# Horizon 2020 Societal Challenge 5

## Innovate UK

# Horizon 2020

- €70.2 billion research and innovation funding programme (2014-2020)
- A core part of a wider strategy to invest in jobs and growth, address environmental and safety concerns, and strengthen EU global position in R&I
- Funding for a range of activities – from research to retail
- Focus on societal challenges facing EU society, e.g. agriculture, climate change, energy, transport etc
- Collaboration opportunities for academia, businesses, public authorities and internationally

# Societal Challenges



1. Health, demographic change and wellbeing
2. Food, agriculture, forestry and water research, bioeconomy
3. Secure, clean and efficient energy
4. Transport
5. **Climate action, environment, resource efficiency and raw materials (SC5)**
6. Inclusive, innovative and reflective societies
7. Secure societies

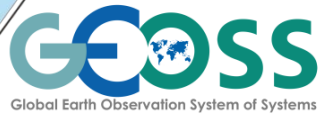
# Main Principles of SC5

- Increased investment in R&I for sustainable development and climate (SDGs!!!)
- Integration of digital solutions
- Systemic approaches, incl. economic, social and environmental aspects (multidisciplinary, technology, business models, finance, governance, skills)
- Social sciences and humanities aspects incl. behavioural sciences, health, end-user engagement – for societal resilience
- Strengthening international co-operation, in particular CELAC, India and China
- Market-creating innovation

# SC5 policy context

- **Global**

- **European**



**United Nations**  
Framework Convention on  
Climate Change



#DigitalSingleMarket



**EIP Water**

Boosting opportunities – Innovating water





## Societal Challenge 5: Climate action, environment, resource efficiency and raw materials - Work Programme 2018-2020

### Focus:

- ✓ moving to a greener, more resource efficient and climate-resilient economy in sync with the natural environment
- ✓ demonstrating a strong commitment to supporting the UN's Sustainable Development Goals (SDGs) and the targets of the COP21 Paris Agreement

### 2 multiannual calls:



"Building a low-carbon, climate resilient future: climate action in support of the Paris Agreement"

"Greening the economy in line with the Sustainable Development Goals (SDGs)"

**Total indicative budget 2018-2020 €11bn**

**2018 topics opened on 7<sup>th</sup> November 2017**

**First call deadlines: 27<sup>th</sup> February 2018**

# Greening the economy in line with SDGs

- **Connecting economic and environmental gains - the circular economy**
- **Raw materials**
- **Water for our environment, economy and society**
- **Innovating cities for sustainability and resilience**
- **Protecting and leveraging the value of our natural and cultural assets: Earth observation ; nature - based solutions, disaster risk reduction and natural capital accounting; heritage alive**

# How to read the calls

## Call Title

- This is the **problem** to be addressed

## Specific challenge

- This explains the reason for the challenge

## Scope

- This provides some insights to possible approaches / solutions
- It is not very prescriptive
- Look for acronyms, legislation, specific countries, EC initiatives
- It will indicate the expected size of the project e.g. €3 million

## Expected impact

- This is what the project **must deliver**
- Justify how your approach is the best way to achieve these impacts





# Social sciences and humanities (SSH)

**Social and behavioural sciences:** economics, economic history, political science, sociology, demography, anthropology (except physical anthropology), ethnology, futurology, psychology, geography (except physical geography), peace and conflict studies, human rights.

- **Excellence:** evaluators must examine the appropriate consideration of interdisciplinary approach. It is important that the SSH contributions represent an integral part of the proposal and not just an add-on.
- **Impact:** evaluators must check the extent to which project outputs contribute to each of the expected impacts. The SSH contributions should include the impact on society, economy, and the uptake by society/industry/public policy of the proposed actions to address the problem/challenge at stake.
- **Implementation:** evaluators must assess the complementarity of the participants (i.e. involvement of SSH partners) and the quality of envisaged collaboration between various SSH disciplines and/or between SSH and non-SSH disciplines.

# CE-SC5-01-2018 Methods to remove hazardous substances and contaminants from secondary raw materials

## Challenge:

- low reuse and recycling of many secondary raw materials (further hampered by the presence of contaminants and additives), and high rates of landfill and incineration
- Health and environmental concerns

## Impact:

- Increased purity and/or quality of secondary raw materials
- Increased recycling rate, and reduced landfill and incineration rates
- Reduced risk of retaining hazardous substances in recycled materials
- Recommendations on design and manufacturing of materials for recyclability and for standardisation

RIA €3-5m (€34m)

TRL 5-6 at the end of the project

SSH (health concerns, public acceptance, business case)

# CE-SC5-02-2018 Independent testing programme on premature obsolescence

## Challenge:

- Lengthening the lifetime of products can have a major impact on CE
- Product design often limits its lifetime or prevents upgradability
- Need for an independent and consistent testing programme to identify issues related to premature obsolescence

## Impact:

- Development of products designed for durability, interoperability, repair and reuse
- Development of markets based on durability
- Reduced materials consumption and waste generation
- Better understanding and information flow between producers and consumers, increased awareness of design impacts

RIA €3-5m (€5m)

SSH

# CE-SC5-03-2018 Demonstrating systemic urban development for circular and regenerative cities

## Challenge:

- Difficulty to alter **urban consumption patterns, material flows and value chains**, and to implement full CE models at sufficient scale in cities
- There is a need to develop and implement **innovative urban planning approaches and processes**

## Emphasis on:

- Multi-stakeholder consortia (planners, local authorities, fab labs, communities, urban designers, NGOs, businesses etc)
- End user engagement, behavioural sciences, incl. behavioural economics
- Links to cities and city networks to maximise impact (WP on liaison)
- Monitoring and indicators
- Link to SDGs and Habitat III Agenda
- Capacity building (how to enhance capacity of cities to fully embrace CE)

# CE-SC5-03-2018 Demonstrating systemic urban development for circular and regenerative cities

## Impact:

- Demonstrate innovative **solutions for closing the loop of urban material and resource flows within the nexus of water, energy, food, air, ecosystem services, soil, biomass, waste/wastewater, recyclables and materials** and for supporting an increase in the **regenerative capacity of the city** while limiting pollution of the environment, for example by reducing the emissions of air pollutants (i.e. measurable reduction of resource consumption and environmental footprint)
- Measurable increase of CE implementation (material and natural resource creation in cities, increased productivity)
- A set of social behavioural, economic, environmental performance and geospatial indicators to monitor and assess progress)
- Governance innovation

IA €10m (€39m)

Min. 4 cities involved in the implementation and monitoring

SSH

# SC5-11-2018 Digital solutions for water: linking the physical and digital world

## Challenge:

- The need to create a more intelligent means of managing and protecting water as a resource
- Interoperability and standardisation, collection, protection and sharing of data between users, services and infrastructures, intelligent smart metering, integration with other systems, ICT governance and public awareness and acceptance, are hampering the potential of those technologies

## Impact:

- Interoperability of decision support systems (develop or improve ICT/water standards)
- Improved decision making through real-time accuracy of knowledge and data
- Maximising return on investments through reduced operational costs for water utilities, including reduced costs for water monitoring, improved performance of water infrastructures, and enhanced access to and interoperability of data
- Market development for water services

Innovation Action €5m (€14m)

TRL 5-7

# SC5-12-2018 EU-India water cooperation

## Challenge:

- Security and safety of water availability, distribution and provision in the context of India's water challenges

Actions should address one or more of the following challenges:

- drinking water purification with a focus on emerging pollutants (multiple contaminants or specific classes of pollutants incl. pesticides or fertilisers)
- wastewater treatment, with scope for resource/energy recovery, reuse, recycle and rainwater harvesting, including bioremediation technologies (in urban areas). Water, energy and cost efficient processes, monitoring schemes and affordable operation/maintenance is to be included.
- real time monitoring and control systems in distribution and treatment systems

# SC5-12-2018 EU-India water cooperation

Emphasis on:

- Multistakeholder consortia (industry partners, local authorities, water users, research centres, local communities)
  - Social (esp. behavioural) and gender aspects
  - Demonstration component, genuine cooperation, capacity building
  - Governance
  - Use knowledge built in FP7 projects
- 
- Single stage submission (EU and in India)
  - TRL 3-6
  - RIA €3-5m (€12m)
  - Min 3 participants from India
  - EU contribution for partners from India is €0 (funding will be provided by India based on successful dual submissions)



# CE-SC5-04-2019 Building a water-smart economy and society

## a) Symbiosis between industry and water utilities

May include reuse of treated wastewater, the use of substances or energy derived from the treatment process. Governance, business model or stakeholder engagement innovation is also encouraged.

## a) Large scale applications with multiple water users at various relevant scales

Should include multiple water users and different scales (regional, national or international)

- TRL 5-7 to be achieved
- IA €10-15m (€72m)
- SSH

# CE-SFS-24-2019: Innovative and citizen - driven food system approaches in cities

## Challenge:

- providing the inhabitants of European cities with affordable, safe and nutritious food is both urgent and complex
- identify food-related innovative approaches based on citizen science and engagement, to be practised in cities to foster sustainability of the food system
- explore and share the application of these approaches in EU cities using existing research, best practices and existing platforms and programmes
- prototype testing, demonstrating and piloting at scale, with a view to replication and application in other cities

## Impacts

- Job creation in EU cities
- Intensified interactions between all actors in the food chain
- Empowered local communities

Innovation Action €6m single stage (€12m)

Societal Challenge 2, Ian Holmes [ian.holmes@innovateuk.gov.uk](mailto:ian.holmes@innovateuk.gov.uk)

# CE-SFS-25-2018: Integrated system innovation in valorising urban biowaste

New and emerging processing technologies can enable the recycling and valorisation of urban biowaste into higher-value biobased products (e.g. biobased chemicals and plastics, nutrients, food or feed ingredients and proteins)

- Focus on an integrated system innovation approach in urban biowaste recycling to produce high-value biobased products, including proteins for food and feed
- Validated technical and economic viability of the proposed approaches at target TRL 7;
- New business models for cities ensuring the full integration of the upgraded urban biowaste value chain
- Improved perception of citizens on urban biowaste as a local resource

IA, €10m (€20m)

Single Stage proposal submission [ian.holmes@innovateuk.gov.uk](mailto:ian.holmes@innovateuk.gov.uk)

# RUR-09-2018 Realising the potential of regional and local bio-based economies

## Challenge:

- Lack of awareness and practical knowledge among regional/local authorities and stakeholders, low degree of cooperation and networking at all levels, insufficient involvement of local/regional stakeholders in drawing up bioeconomy strategies, or inadequate technology transfer and exploitation of innovation

## Impact:

- Increased capacity of regional/local policy makers and stakeholders to structure their bioeconomy and to support the emergence of a thriving bio-based sector. Adequate knowledge and best practice exchange and networking within and among regions, across the EU;

CSA, €3m (€3m)

Single Stage proposal submission [ian.holmes@innovateuk.gov.uk](mailto:ian.holmes@innovateuk.gov.uk)

# CE-SC5-06-2018 New technologies for the enhanced recovery of by-products

## Challenge:

- Securing sustainable access to raw materials including metals, industrial minerals and construction raw materials (esp. CRM)

## Impact:

- Newly generated know - how (planned patents, publications in high impact journals and joint public - private publications etc.);
- increased process selectivity, broader range and higher recovery rates of valuable raw materials, particularly critical raw materials, thereby unlocking substantial reserves of new or currently unexploited/underexploited resources within the EU;
- increased economic performance in terms of higher material - , water - , energy - and cost - efficiency and flexibility in minerals processing, metallurgical or recycling processes;

RIA, €3-7m (€15m)

Project finish at TRL 3-5

# CE-SC5-07-2018 Raw materials innovation for the CE: sustainable processing, reuse, recycling and recovery schemes

## Challenge:

- Securing the sustainable access to raw materials, including metals, industrial minerals, wood- and rubber- based, construction and forest-based raw materials, and in particular CRM
- Processing is complex and complicated, requiring different steps
- Scale-up is very difficult therefore projects should develop and demonstrate innovative pilots for the clean and sustainable production of non - energy, non - agricultural raw materials in the EU from primary and/or secondary sources finishing at TRL 6-7

## Emphasis:

- Market uptake of solutions – projects should include outline of business and exploitation plans, IPR management and first exploitation commitment
- Cluster with other projects
- International cooperation

# CE-SC5-07-2018 Raw materials innovation for the CE: sustainable processing, reuse, recycling and recovery schemes

- a) Sustainable processing and refining of primary and/or secondary raw materials (mining or industrial waste)
- b) Recycling of raw materials from end-of-life products (incl. WEEE, paper packaging, tyres)
- c) Recycling of raw materials from buildings
- d) Advanced sorting systems for high-performance recycling of complex end-of-life products (leading to returning materials back in the loop)

## Impact:

- Improve economic viability and market potential
- Unlock significant volumes of primary/secondary materials

IA, €8-13m (€20m)

Project finish at TRL 6-7

# CE-SC5-08-2018 Raw materials policy support actions for the circular economy

## Challenge:

Need to tackle non-technological challenges at local, regional, national, EU and global levels, incl. illegal shipments of waste, poor recycling, unfair competition for operators

- a) Voluntary scheme for certification of treatment facilities for key types of wastes (containing significant amounts of CRM – electronic waste and /or batteries
- b) Resource efficiency in wood processing, recovery and recycling

## Impact:

- Achieving objectives of the Raw Materials Initiative and the EIP on Raw Materials

CSA, €3m (€5m)

single stage



Any questions?



# Thank you for your attention!

Ewa Bloch

*UK National Contact Point - Climate change, resource efficiency, raw materials and sustainable cities*

*Innovation Lead – Urban Living and International*

[ewa.bloch@innovateuk.gov.uk](mailto:ewa.bloch@innovateuk.gov.uk)

LinkedIn: ewabloch

Twitter: ewa\_bloch

Project catalogue

[http://ec.europa.eu/research/environment/pdf/research\\_and\\_innovation\\_sc5\\_projects\\_2014-2017a.pdf](http://ec.europa.eu/research/environment/pdf/research_and_innovation_sc5_projects_2014-2017a.pdf)