



EPSO online submission to the EC consultation on Horizon 2020 Societal Challenge 2, Work Programmes 2018-20

Brussels, 25.7.2016

Submitted at http://ec.europa.eu/research/consultations/sc2-wp2018-2020/consultation_en.htm

Information about the respondent

EPSO, the European Plant Science Organisation, responds to this questionnaire as a network of organisations. EPSO is an independent academic non-profit organisation of public research institutes and universities, registered in the Transparency Register as ID: 38511867304-09 and based in Belgium.

EPSO applied for funding under FP6; FP7-KBBE and H20-SC2. EPSO members applied to most programmes of FP6, FP7, H20.

The EPSO contribution can be published under EPSO.

Open (text) questions

What are the **challenges** in the areas covered by Societal Challenge 2 that require urgent action under the Work Programme 2018-2020?

- Food and nutritional security
- European climate change effects on crop production, including shifting abiotic and biotic stresses
- Biotechnology development and application of existing and new approaches

The challenges of productivity and sustainability that the world is facing translate to a myriad of opportunities for innovation across the complete value chain - from crop improvement, inputs and crop production - to transport, processing, distribution, storage, and waste disposal. Integration at various levels of research and innovation will maximise the impact. The information flow throughout the value chain should be bidirectional. This includes looking from the science base to crop production, processing and retailing, as well as from a consumer perspective to crop production and biological research and notice the potential benefits of food for consumers in terms of nutrition and health.

What are the **desired output and long term-impacts** that could be foreseen for Societal Challenge 2? Which innovation aspects would be needed to respond to our societal needs and market development within the next 5-7 years?

- More efficient and sustainable agriculture
- Fully integrated, multi-disciplinary approaches leading to true cross-sectoral collaborations
- Full assessment of the potential of CrispR Cas and other innovative approaches for biotechnological application
- Further assessment, exploitation and preservation of natural biodiversity

Closer integration of the various agri-food value chains from the perspective of crop sectors is a crucial element to tackle the challenges:

- ↑ Yield and yield stability for ↑ resilience of crops in dynamic and adverse environments
- ↑ Resource use efficiency and resource stewardship
- ↑ Plant health for resilient production
- Enriched/enhanced plants for
 - human nutrition and health (Biofortification; Improve underutilised diverse crops for diverse diets)
 - non-food products (Secondary metabolites; Green proteins)
- Novel agronomical strategies
- Developing and implementing horizontal actions e.g. regulatory issues, big data, outreach

In the areas covered by Societal Challenge 2, which **gaps** (scientific and technological, innovation, markets, policy, societal) and **potential game-changers**, including the role of the public and private sectors in accelerating changes, need to be taken into account?

- Open innovation through generic technology development and implementation for crop sustainability
- Crop improvement through multidisciplinary approaches across the value chain
- EU initiating integrated global partnerships to tackle global / developing country challenges in food security
- A multi-faceted EU strategy tackling crop production issues resulting from climate change including abiotic and biotic stresses
- ↓ calorie crops / promote low calorie European diet

We lack an industry driven **European framework to thrive and achieve higher impact and to fill the existing gap in integrated crop production**. The future success of the European bio-economy depends on secure, high quality, tailor-made food, feed, smart molecule and biomass supply in a sustainable and competitive way. To close the research and innovation cycle (basic research, applied research, farmers' advice, innovation) **collaborative basic research and translational research has to be strengthened in this system**.

Which of the areas covered by Societal Challenge 2 could **benefit from** integration of **horizontal aspects** such as the social sciences and humanities, responsible research and innovation, gender aspects, and climate and sustainable development?

- Mainly food production issues and technology development acceptability issues.

Challenges for Europe and globally such as food- and nutritional security, climate change, human health and sustainable agriculture can be addressed by an integrated approach towards increasing crop productivity, quality and sustainability by a joint effort of the sectors Plant Breeding, Crop Protection, Fertilizers, Agricultural Engineering, Precision Farming, Big Data, Non-food (like plant-based Fibre/Textile, Bio-Fuel, Bio-chemistry) and plant-based Primary Plant Food Production and - Processing.

Closed (ranking) questions:

Agriculture is a crucial sector when it comes to tackling major challenges such as food security, safeguarding natural resources, protecting climate as well as the development of food/non-food industries and rural areas. A number of **cross-cutting issues** are suggested to implement a broad research agenda which takes into account the numerous challenges as well as the diversity and different needs of the agricultural sector. Please categorise the following list of issues according to their **relevance for delivering innovations in agriculture and rural areas**:

Relevance – tick 3	1 lowest	2	3 highest
Focus on " <u>systems approaches</u> ", i.e. taking into account dynamic interactions of the different components of systems and value chains (e.g. agro-ecosystems, food value chain) at various temporal and spatial scales.			x
Focus on " <u>smart</u> " innovations, i.e. delivering tailor-made solutions and capitalising on specificities of local conditions (e.g. taking advantage of novel ICT driven tools)			
Promote <u>co-creation of knowledge</u> as well as new mechanisms and models of <u>knowledge exchange</u> (i.e. partnerships between science,		x	

farming, other businesses, consumers)			
Promote <u>Open data</u> to drive knowledge creation, management and sharing taken into account?			
Foster <u>science-policy</u> and <u>science-societal interfaces</u> at all stages of the research and innovation cycle (agenda setting, activity implementation, outreach activities)			
Foster <u>international cooperation</u>	x		

What is the **most pressing marine challenge** to be addressed through research and innovation in the next Work Programme:

	Tick 1
<u>Upscaling and commercialising innovations</u> from marine products and services?	
<u>Preventing and reducing marine litter</u> ?	
<u>Investigating and managing land-sea interactions</u> ?	
<u>Studying the carbon cycle</u> in coastal regions?	
<u>Analysing ocean circulation changes</u> and other changes such as caused by acidification on fisheries and aquaculture?	
<u>Providing food security</u> – fisheries/aquaculture aspects?	x

Food and nutrition security is about building sustainable '**Food systems**', which include the entire 'value chain' from inputs (land, soil, water), to primary production (agriculture, aquaculture & fisheries), harvesting, storage, processing, packaging, distribution, waste streams, to consumer intake – and back. Food and nutrition security goes beyond the production of sufficient food for all, but also respond to the need to provide safe and nutritious food for healthy and sustainable diets. Please rank each of these **food and nutrition security priorities** in order of **importance** with respect to **future research and innovation needs**:

Rank	1 highest	2	3	4 lowest
Reducing hunger and malnutrition, addressing food safety and diet-related illnesses, and helping citizens adopt sustainable diets and healthy lives	x			
Building a climate and global change-resilient primary production system		x		
Implementing sustainability and circular economy principles across the whole food system				x
Boosting innovation and investment, while empowering communities			x	

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Useful links

EPSO: [Input towards the European Commission Horizon 2020, Societal Challenge 2 strategy 2018-20](#), 25.7.2016

EPSO breaking news: www.epsoweb.org

EPSO publications: www.epsoweb.org/archive-epsoweb-publications-and-statements?981448774=1

EPSO member institutes and universities: www.epsoweb.org/membership/members

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About EPSO

EPSO, the European Plant Science Organisation, is an independent academic organisation that represents more than 220 research institutes, departments and universities from 28 European countries, Australia, Japan and New Zealand, and 3.300 individuals Personal Members, representing over 28 000 people working in plant science. EPSO's mission is to improve the impact and visibility of plant science in Europe, to provide authoritative source of independent information on plant science including science advice to policy, and to promote training of plant scientists to meet the 21st century challenges in breeding, agriculture, horticulture, forestry, plant ecology and sectors related to plant science. www.epsoweb.org