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HORIZON 2020
WORK PROGRAMME 2014 – 2015

*12. Climate action, environment, resource efficiency and
raw materials*

Revised

This Work Programme was adopted on 10 December 2013. The parts that relate to 2015 (topics, dates, budget) have, with this revised version, been updated. The changes relating to this revised part are explained on the Participant Portal.

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Introduction

The objective of the Societal Challenge 'Climate action, environment, resource efficiency and raw materials' is to achieve a resource – and water – efficient and climate change resilient economy and society, the protection and sustainable management of natural resources and ecosystems, and a sustainable supply and use of raw materials, in order to meet the needs of a growing global population within the sustainable limits of the planet's natural resources and eco-systems.

The era of seemingly plentiful and cheap resources is coming to an end: raw materials, water, air, biodiversity and terrestrial, aquatic and marine ecosystems are all under pressure. The combined impacts of climate change and current production and consumption patterns are undermining our planetary habitat. Based on current trends, the equivalent of more than two planet Earths will be needed by 2050 to support the growing global population. There needs to be a decoupling of economic growth from resource use.

Helping to build a green economy – a circular economy in sync with the natural environment – is part of the answer. This Work Programme will focus on investing in innovation for a green economy. This will require great progress in social and public sector innovation.

Actions under this Work Programme will therefore address gaps in the knowledge base needed to understand changes in the environment, identify the policies, methods and tools that would most effectively tackle the above mentioned challenges, and support innovators and businesses to bring green solutions to the market. Waste and water have been selected as particular priorities, on the grounds of their substantial potential for business opportunities and job creation while tackling important resource efficiency challenges.

Efforts have been made to encourage SME participation, notably through the SME Instrument and bottom-up approaches, together with innovation actions, where SMEs can follow up research projects with work linked to closer to market activities.

In addition to the calls below, activities relating to climate action, environment, resource efficiency and raw materials are also found in the calls relating to 'Blue growth: unlocking the potential of the oceans', 'Energy-efficiency' and 'Disaster-resilience: safeguarding and securing society, including adapting to climate change'.

Call – Waste: A Resource to Recycle, Reuse and Recover Raw Materials

Towards a near-zero waste society

H2020-WASTE-2014/2015

A smart economy minimises the production of waste and reuses waste as a resource. Resource constraints and environmental pressures will accelerate the transformation from a linear extraction-use-throw away model of production and consumption to a circular one. Moving towards a near-zero waste society not only has an environmental rationale, it increasingly becomes a factor of competitiveness. Europe has proven expertise in efficiently handling and treating waste and is at the forefront of innovation in this sector. Capitalising on these strengths, this call intends to further boost innovative, environmentally-friendly and cross-sectoral waste prevention and management solutions in order to reduce environmental depletion, impacts on health and Europe's dependency on the import of raw materials, and to reinforce its position as world market leader and look for opportunities to benefit the environment. The global waste market, from collection to recycling, is estimated at EUR 400 billion per annum and holds significant potential for job creation.

This call addresses the whole production and consumption cycle, from waste prevention and the design of processes and products for recyclability to reuse and waste management. This will involve economic actors from different sectors working together in new ways. A better organisation at EU level of the different actors involved will contribute to this end. A systemic approach to innovative waste prevention and management will benefit from a better understanding of the environmental impact of human behaviour and the participation of citizens in co-developing and co-testing new solutions, particularly in urban areas, a field with great potential for public sector innovation.

This call addresses EU research priorities for 'Urban Waste and Innovation' identified by citizens through a wide consultation process in the context of the Seventh Framework Programme project VOICES¹. Through a participatory approach involving science, technology, civil society organisations and policy experts, the priorities identified by citizens were subsequently clustered into six thematic areas: 'economic instruments'; 'education and communication'; 'modelling business and consumer behaviour'; 'policy'; 'product /production design'; and 'waste treatment /management'. The activities of this call respond to each of these thematic areas, as indicated in the text.

In addition to supporting cross-sectoral approaches, this call will address specific challenges in the areas of food, agricultural and construction waste. The Public-Private Partnerships on Sustainable Process Industries (SPIRE PPP) and on Bio-Based Industries will contribute to the objectives of this call.

The innovation actions in this call are expected to offer particular opportunities to SMEs.

Activities are expected to contribute to the objectives set out in the resource efficiency road map, with waste being managed as a resource by 2020, waste generated per capita in absolute decline and recycling and re-use of waste being economically attractive options

¹ <http://www.voicesforinnovation.eu/>

for public and private actors. Prevention and better management of waste, which represents an estimated 2% of the EU's total greenhouse gas output, should also significantly contribute to climate objectives.

Within the projects funded, additional, complementary or follow-up funding should be sought, be it private or public, including from relevant regional/national schemes under the European Structural and Investment Funds (ESIF), in particular under the European Regional Development Fund (ERDF). To achieve this, projects could seek contact with ERDF managing authorities and with the authorities who developed the Research and Innovation Smart Specialisation Strategies (RIS3). The responsible regional/national authorities could then take an interest in the projects and their expected results. They could engage in the use and deployment of the novel solutions resulting from projects e.g. through pre-commercial public procurement or public procurement for innovative solutions. The project proposals could already indicate which interested regions/countries or other partners have been pre-identified for contact during the project.

All activities under Societal Challenge 'Climate action, environment, resource efficiency and raw materials' should as far as possible use data resulting from or made available through different initiatives of the European Commission. In particular, the utilisation of GEOSS (Global Earth Observation System of Systems)² and Copernicus (the European Earth Observation Programme)³ data, products and information should be privileged⁴. Likewise, in line with EU cooperation with the European Space Agency (ESA), activities should use ESA Earth Science data, as far as possible. The data, both from ESA missions or third party missions, are for the vast majority of cases available for free web download (further details for ESA missions and Third Party Missions are available at <http://eopi.esa.int>).

The projects funded under Societal Challenge 'Climate action, environment, resource efficiency and raw materials', call 'Waste: A Resource to Recycle, Reuse and Recover Raw Materials', of the Work Programme 2014-15 will participate in the Pilot on Open Research Data in Horizon 2020 in line with the Commission's Open Access to research data policy for facilitating access, re-use and preservation of research data (i.e. projects funded under topics WASTE-1-2014, WASTE-4a-2014, WASTE-4b-2014, WASTE-5-2014 and WASTE-6-2015). Projects have the possibility to opt out of the pilot. A related new element in Horizon 2020 is the use of Data Management Plans (DMPs), detailing what data the project will generate, whether and how it will be exploited or made

² www.geoportal.org

³ www.copernicus.eu

⁴ The Copernicus data and products, where available, should be used by the research and innovation community following the free, full and open access approach approved in the Commission Delegated Regulation (EU) No 1159/2013 of 12 July 2013 supplementing Regulation (EU) No 911/2010 of the European Parliament and of the Council on the European Earth monitoring programme (GMES), by establishing registration and licensing conditions for GMES users and defining criteria for restricting access to GMES dedicated data and GMES service information. This would include the data from the Copernicus space infrastructure (Sentinels missions). It includes as well, where affordable, additional space data purchased by the Copernicus programme necessary for the delivery of Copernicus Services, called Copernicus Contribution mission data, when the later can be of use for Horizon projects developing new Copernicus Services.

accessible for verification and re-use, and how it will be curated and preserved. The use of a Data Management Plan is required for projects participating in the Open Research Data Pilot. Other projects are invited to submit a Data Management Plan if relevant for their planned research. Further guidance on the Open Research Data Pilot is made available on the Participant Portal. The projects funded under the other topics of this call may participate in the Pilot on Open Research Data in Horizon 2020 on a voluntary basis.

Beneficiaries in projects participating in the Pilot on Open Research Data shall adhere to the GEOSS Data Sharing Principles and undertake to register in GEOSS all geospatial data, metadata and information generated as foreground of the project. Further information on the GEOSS Data Sharing Principles and GEOSS Register can be found here: <http://geossregistries.info/index.html>

Topics contributing to the objectives of this call in other parts of this Horizon 2020 Work Programme include:

- FoF 13 – 2015: Reuse and re-manufacturing technologies and equipment for sustainable product life cycle management
- SPIRE 7 – 2015: Recovery technologies for metals and other minerals.

Proposals are invited against the following topics:

WASTE-1-2014: Moving towards a circular economy through industrial symbiosis⁵

Specific challenge: Growing prosperity leads to the extraction and use of more resources and to the production of more waste. The EU is committed to implement the principles of the waste hierarchy, which implies the prevention of waste, its reuse and recycling where it is not prevented, and its energy recovery as sub-optimal option. This calls for eco-innovative solutions and resource-efficient products, processes and services, and their uptake which will be facilitated by new sustainable lifestyles and consumption behaviour.

Industrial symbiosis, whereby different actors derive mutual benefit from sharing utilities and waste materials, requires large-scale systemic innovation with the aim of turning waste from one industry into useful feedstock for another one. The management of waste material flows coming from different sectors calls for reliable and harmonised data for the estimation of composition, patterns of supply and quantity of wastes generated over the year(s), in order to achieve reliable and predictable feed-stocks of secondary raw

⁵ This topic responds to EU research priorities identified in the Seventh Framework Programme project VOICES under the thematic areas 'model business and consumer behaviour', 'product /production design', and 'policy' including: sustainable lifestyles and consumption behaviour, sharing utilities and waste materials, producer responsibility for waste production, increased product life-spans, enabling material reuse, recycling, recovery, industrial symbiosis leading to closed-loop processes, and consumption behaviour and lifestyle change.

materials for industrial plants. Industrial symbiosis needs ample coordination between a variety of stakeholders, such as industry, research, civil society organisations, public authorities and policy makers, and an increased awareness of producer responsibility for waste production, which is essential in consideration of the central role of businesses in the economic and societal transformation.

Industrial symbiosis has been identified by the SPIRE PPP as one of the solutions to be addressed to achieve more efficient processing, resource and energy efficient systems for the process industry.

Scope: Proposals should aim to demonstrate and analyse, with a life cycle perspective, innovative processes and services, including organisational and management systems and business models, or a combination thereof, that increase product life-spans, enable product and material reuse, recycling, recovery, with an upgrading cascading approach for recovered materials and products, and reduce generation of waste along product chains in different production processes as well as reduce the utilisation of feedstock materials and the emission of harmful substances. Proposals may also address design for reparability and recyclability, and should either focus on a specific production value chain, or have a cross-sectoral approach establishing industrial symbiosis leading to closed-loop processes, or combine both.

Proposals should give a significant role to SMEs, as far as possible. Opportunities for social innovation, encouraging more sustainable consumption behaviour and lifestyle change, and involving civil society, should be considered, with appropriate attention to the gender dimension and to the barriers to raising awareness of eco-innovative solutions and their market, household and community penetration.

Systemic and cost-effective solutions will benefit from innovative ICT solutions for waste traceability, waste material flow management, and the estimation of the availability, composition and quality of waste.

The Commission considers that proposals requesting a contribution from the EU of between EUR 8 and 10 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected impact: Measurable reduction of waste generation and resource use in the medium term. Significant gains in productivity against the state of the art for waste treatment plants and in material and energy efficiency, with reduction of greenhouse gas and other pollutants emissions in the short term. Contribution to standards validated by industrial players and identification of best available techniques and emerging techniques under the Industrial Emissions Directive. Significant increase in European and global market up-take and replicability of eco-innovation solutions, measured by qualitative and quantitative indicators, contributing to an important reinforcement of the eco-industry landscape in Europe in the short term, and to the adoption of more sustainable consumption behaviour and lifestyle in the medium term. Support, where appropriate, to the implementation and evaluation of technology verification schemes, also from a

gender perspective, including the EU Environmental Technology Verification (ETV) Pilot programme⁶. Support to the implementation of the roadmap of the SPIRE PPP.

Type of action: Innovation actions

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

WASTE-2-2014: A systems approach for the reduction, recycling and reuse of food waste⁷

Specific challenge: Food waste has taken on disquieting proportions worldwide in all steps of the food production and supply chain but especially at consumer level. Before defining measures to reduce such waste at all stages it is necessary to develop a better understanding of business and consumer behaviour in relation to waste generation, handling, reuse and by-product valorisation. Technologies for the collection, sorting/grading, stabilisation and valorisation of food waste, by-products and packaging material need improvement or development. The aim is to optimise the performance of the whole food system, including packaging, catering and consumers, and achieve a secure and sustainable food supply, also for the poor.

Scope: Proposals should both address approaches to reducing food waste and packaging materials generated at relevant stages of the food system and investigate ways of converting food waste into value-added by-products. A comprehensive methodology for evaluating food waste in all its components should be developed addressing quality, safety, sustainability, legislation and costs. Inter-disciplinary research methods include practical, close-to-market approaches for characterising possible new foods and feeds and identifying the risks and benefits related to the new production processes. A database/inventory should be developed of recyclable materials, valuable molecules, substances and materials originating from waste and by-products, also in view of future life cycle assessments (LCAs). Solid involvement of social sciences and humanities and civil society is a prerequisite to better understanding the socio-economic, cultural and environmental dimension of food waste and promoting change in the business and consumer environment for social innovation, while the use of ICT tools is expected to accelerate this. In line with the objectives of the EU's strategy⁸ for international cooperation in research and innovation and in particular with the implementation of the EU-China dialogue, proposals are encouraged to include third country participants, especially those established in China⁹.

The Commission considers that proposals requesting a contribution from the EU in the range of EUR 9 million would allow this specific challenge to be addressed

⁶ <http://iet.jrc.ec.europa.eu/etv/>

⁷ This topic responds to EU research priorities identified in the Seventh Framework Programme project VOICES under the thematic areas 'policy', 'model business and consumer behaviour', and 'waste treatment /management', including: food waste, business and consumer behavior, technologies for waste collection, packaging materials and food waste legislation.

⁸ COM(2012)497

⁹ This is without prejudice to the general rules on the funding of legal entities from third-countries, as set in part A of the General Annex.

appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected impact:

- A significant contribution to achieving the European policy target of reducing food waste by 50% by 2030, including at the consumer level.
- A reduction in waste management costs, and in environmental impacts, including emission of greenhouse gases.
- Supporting a harmonised approach to EU food waste legislation and improved national implementation, and contribution to new standards.
- An increase in the competitiveness of the European food and drink and chemical industry, in particular SMEs, as measured in terms of market share, turnover, cost effectiveness, employment and intellectual property, through the development of innovative applications of food waste.
- Progress towards sustainable food consumption patterns leading to healthier consumers and as a result reduced national health costs.

Type of action: Research and innovation actions

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

WASTE-3-2014: Recycling of raw materials from products and buildings¹⁰

Specific challenge: Advances in many complex products and buildings, such as energy efficient buildings, electrical and electronic equipment (EEE), (electric) vehicles, airplanes, multi-material packaging solutions, bring to the society benefits in the form of a better performance, reduced transport weight, decreased energy consumption etc. Complex products contain many different raw materials and their reuse, recycling and recovery schemes are also complex and imply different steps, ranging from collection and logistics to refining and purification of materials.

New solutions are needed for the extraction of the raw materials from more complex products and buildings containing a multitude of minerals and metals (including Critical Raw Materials and other technology metals), wood-fibre based materials, polymers and plastics etc.

This specific challenge is identified in the Action area on Recycling of raw materials from products and buildings of the European Innovation Partnership (EIP) on Raw Materials.

Scope: All proposals should facilitate the market uptake of solutions developed through industrially-driven multidisciplinary consortia. Proposals shall address only one of the following issues of sustainable recycling and recovery of raw materials:

¹⁰ This topic responds to EU research priorities identified in the Seventh Framework Programme project VOICES under the thematic areas 'waste treatment/management', including the extraction of raw materials from construction waste.

- developing innovative technological solutions, including pre-processing technologies, comprehensive metallurgical recovery and advanced information and communication technologies, for the recovery of minerals and metals (including Critical Raw Materials), polymers and plastics, and wood-fibre based materials from complex end-of-life products;
- developing solutions for a better recovery of raw materials (metals, aggregates, concrete, bricks, plasterboard, glass, polymers and plastics, and wood) from construction and demolition (C&D) waste, particularly from the most promising objects, such as deconstruction of non-residential buildings.

The proposals should develop the solutions proving the concept and feasibility at the level of Technology Readiness Levels (TRL) 5-6; please see part G of the General Annexes.

The Commission considers that proposals requesting a contribution from the EU of between EUR 6 and 8 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected impact: In the medium to longer term unlocking a significant volume of various raw materials within EU28 through conversion of wastes or raw materials not currently exploited into valuable resources. In the shorter term measurable increase in the efficiency of exploitation of secondary raw materials' deposits ('urban mines') against the state of the art. Increased range and yields of recovered materials and energy efficiency, reduced environmental footprint measured by qualitative and quantitative indicators. Contribution to achieving the objectives of the EIP on Raw Materials.

Type of action: Research and innovation actions

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

WASTE-4-2014/2015: Towards near-zero waste at European and global level¹¹

Specific Challenge: The complexity and heterogeneity of waste streams require coordination and networking between researchers, entrepreneurs and public authorities to harmonise technologies, processes and services, to profit from benchmarking, sharing best practices, and gender mainstreaming, and to use or develop standards. Insufficient cooperation between different value chain players in several raw materials sectors results in lower recycling rates or suboptimal use of raw materials from an environmental and socio-economic point of view. Improved cooperation within or along different value chains and among stakeholders, including a participatory role of citizens, representing the wider society, and civil society organisations, can lead to more efficient use of raw materials and to waste reduction.

¹¹ This topic responds to EU research priorities identified in the Seventh Framework Programme project VOICES under the thematic areas 'education and communication', 'model business and consumer behaviour', 'product /production design', and 'policy', including European waste management best practices, benchmarks and standards, and proactive social engagement of citizens and education.

The global nature of the waste management challenge requires coordination, pooling of resources and support to the definition of global objectives and strategies, and holds a potential for export of eco-innovative solutions and seizing new markets. Dissemination at international level of knowledge on waste management, including environmental regulations and standards, can contribute to turning waste into a resource at global level and to setting up resource efficient waste management systems and technologies and services, particularly in developing countries and emerging economies. To this end, enhanced forms of participatory processes for all stakeholders are needed.

Scope: Proposals shall address only one of the following issues:

a) [2014] An EU near-zero waste stakeholder platform¹²: Creation of a stakeholder platform for defining an integrated strategic research and innovation agenda, including systemic eco-innovation and business models, for waste prevention and management in the EU, defining areas of waste technologies to be clustered, and proposing actions for strengthening links between research funding programmes across the EU. Synergies with relevant EU Initiatives on waste should be considered. Roadmaps addressing specific waste streams, including the electronic waste coming from the ICT sector, should be developed. Proposals should help foster synergies between relevant stakeholders and value chains while identifying new market opportunities. They should provide for participatory and proactive social engagement of citizens and education as well as gender balance and sensitivity specific issues.

b) [2014] Global waste dimension¹³: Development of a strategy for global dissemination and uptake of European waste management best practices, benchmarks and standards, thereby raising awareness on behavioural, social, political, cultural and institutional aspects in solid waste management, and paving the way to new market opportunities. In line with the EU's strategy for international cooperation in research and innovation¹⁴ actions will contribute to the commitments of Rio+20 and UNEP's Global Partnership on Waste Management and will follow up on the on-going international activities such as the EU-Africa pilot project on waste, aiming at developing a roadmap of potential joint European-African research and innovation actions, including knowledge transfer in the field of waste management'.

c) [2014] Secondary raw materials inventory: Establishment of an EU network of relevant institutions (such as environmental agencies, research organisations, etc.) for enhancing knowledge in order to improve the sustainable supply of raw materials through an inventory component of an EU knowledge base with data and information on secondary raw materials, in particular critical raw materials, and their flows, maps and evaluation of European stocks. It should improve data collection on secondary raw materials from different types of waste (such as mining waste, wood-based, industrial, municipal waste, waste electrical and electronic equipment (WEEE) and others) at national and regional level in the EU and Associated Countries and subsequent access to

¹² This activity directly aimed at supporting the development and implementation of evidence base for R&I policies and supporting various groups of stakeholders is excluded from the delegation to EASME and will be implemented by the Commission services.

¹³ This activity directly aimed at supporting the promotion of coherent and effective cooperation with third countries is excluded from the delegation to EASME and will be implemented by the Commission services.

¹⁴ COM(2012)497

data, and help identify the need for additional EU-wide waste statistics. Compatibility with relevant EU or global standards and interoperability with national databases and other relevant databases (e.g. from Seventh Framework Programme projects) should be ensured. Close cooperation with other on-going activities related to the EU knowledge base should be provided. If appropriate, the development of new standards should be examined. The action shall support implementation of the European Innovation Partnership (EIP) on Raw Materials.

For sub-topic c, the Commission considers that proposals requesting a contribution from the EU of up to EUR 2.5 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

d) [2015] Raw materials partnerships: Creation of a common multi-stakeholder platform focused on a limited number of key raw materials across their whole value chain. This should involve partners from across the value chain, including mining, processing, recycling, application, public sectors (national/regional/local) and civil society, while respecting the conditions of each value chain. The action shall support implementation of the EIP on Raw Materials.

For sub-topic d), the Commission considers that proposals requesting a contribution from the EU of up to EUR 1.5 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected impact:

a) and b) Improved knowledge and metrics of specific waste streams and waste management methods and technologies in Europe, and a coordinated and integrated strategic research and innovation agenda, contributing to harmonised and optimised innovative waste management systems, best practices and standards and increased recycling rates in the medium term. Significant improvement in the knowledge of costs and performances along value chains, informing a pricing policy for waste management in line with the waste hierarchy. Support to the implementation of the Waste Framework Directive (Dir. 2008/98/EC) and achievement of Europe 2020 strategy reduction targets for greenhouse gas emissions. Support to the implementation of the outcome of Rio+20 and the UNEP's Global Partnership on Waste Management and to the implementation of environmentally sound waste management systems, in line with the Basel Convention. New market opportunities for European businesses.

c) and d) In the medium term, better-informed decision-making at EU and national level as well as by industry. Increased EU raw materials knowledge and transparency of EU raw materials information, for the benefit of various stakeholders. Boosting the raw material sector through an interdisciplinary and transnational cooperation allowing matching the supply and demand from the EU downstream industries. In the longer term, improving availability of key raw materials, while creating greater added value to the economy and more jobs. Facilitation of exchange of information and increased knowledge and use of the most advanced, economically effective and innovative technologies in the whole value chain of raw materials. Contribution to the implementation of the EIP on Raw Materials.

Type of action: Coordination and support actions

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

WASTE-5-2014: Preparing and promoting innovation procurement for resource efficiency

Specific Challenge: Through innovation-oriented public procurement, the public sector can foster lead markets and generate critical mass of demand for eco-innovative solutions, thus providing an important boost to resource efficiency and to waste prevention, reuse and recycling. Public purchasing of innovative solutions for resource efficiency and waste management and prevention has not yet been deployed on a large scale. It can lead to a sharing of the additional risks and costs involved in buying and using eco-innovative solutions and to a more rapid market uptake of such solutions. Barriers to public procurement of innovative solutions include the absence of cross-border coordination and lack of access to best practices and to knowledge of close-to-market innovative solutions.

Scope: Proposals should lead to the establishment of a buyers' group of public procurers to overcome the fragmentation of demand for eco-innovative solutions for resource efficiency and waste management and prevention in the EU and to reinforce their early deployment. The buyers' group will be responsible for drawing common specifications (including needs assessment, financial modelling of different approaches market consultation involving the supply chain, drafting of specifications, risk management plan), and should prepare for a joint or coordinated procurement. The feasibility of launching a joint or coordinated public procurement of innovation (PPI) should be assessed and tested. Preparation activities for the joint or coordinated PPI will be supported, not the costs of the procurement resulting from any PPI procedures.

Expected impact: Creation of a critical mass of procurers of eco-innovative solutions that would not otherwise be able to penetrate the market. Leverage of additional investment in research and innovation. Demonstrable contribution of public sector innovation and increased mobilisation of SMEs and industrial partners to promoting resource efficient products and services. Creation of new markets in the area of resource efficiency in the short and medium term. Movement from product purchase to service delivery.

Type of action: Coordination and support actions

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

WASTE-6-2015: Promoting eco-innovative waste management and prevention as part of sustainable urban development¹⁵

Specific challenge: The growing waste produced in Europe, particularly in urban areas, where the vast majority of the world population are expected to live by 2050, represents a cost for society and a burden on the environment and, at the same time, a valuable stock of resources that can be exploited.

Boosting eco-innovative solutions to prevent waste generation and promote the use of waste as a resource, in line with the objectives of the EU Resource Efficiency Roadmap¹⁶ and the Waste Framework Directive¹⁷, can enhance the natural and living environment in urban and peri-urban areas. Developing and demonstrating such solutions in real-life environments will enhance their market uptake and contribute to sustainable urbanisation worldwide.

Cities are more than spatially extended material artefacts; they are complex systems similar to living organisms that use energy, air, water and nutrients and need to dispose waste in a sustainable way. Adopting an urban metabolism perspective opens the way for innovative, systemic approaches, involving the analysis of resource flows within cities. Integrating in this way economic, social and environmental dynamics, it is possible to understand the socio-economically and gender nuanced patterns of resource use and consumption, and pinpoint drivers of waste-avoiding behaviour, manufacturing and business and public governance models.

Scope: Proposals should adopt an integrated urban metabolism approach and interdisciplinary research and innovation and take into account the gender dimension where relevant. Proposals should involve active engagement of local authorities, citizens and other relevant stakeholders, using innovative concepts such as mobilisation and mutual learning¹⁸.

Proposals shall address only one of the following issues:

a) Eco-innovative solutions: Demonstration, at an appropriate pilot scale, and market replication, of integrated eco-innovative cost- and energy-efficient technologies, processes and/or services for waste prevention, treatment, enhanced collection, recycling and recovery of high-grade valuable materials from waste. Approaches should integrate technological and non-technological solutions, including, where appropriate, the use of economic instruments, such as incentives for more sustainable production and consumption patterns, and awareness raising initiatives. Proposals should include the participation of industry, including SMEs as far as possible.

The Commission considers that proposals requesting a contribution from the EU of between EUR 8 and 10 million would allow this specific challenge to be addressed

¹⁵ This topic responds to EU research priorities identified in the Seventh Framework Programme project VOICES under the thematic areas 'waste treatment /management', 'model business and consumer behaviour', 'policy' and 'economic instruments', including the use of waste as a resource, addressing patterns of resource use and consumption including incentives for more sustainable ones, active engagement of local authorities, and enhanced waste collection, recycling and recovery.

¹⁶ COM(2011) 571

¹⁷ Directive 2008/98/EC

¹⁸ <http://ec.europa.eu/research/science-society/index.cfm?fuseaction=public.topic&id=1226>

appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

b) Eco-innovative strategies: Development of innovative and sustainable strategies for waste prevention and management in urban and peri-urban areas. Proposals should highlight how urban patterns, drivers, consumer behaviour, lifestyles, culture, architecture and socio-economic issues can influence the metabolism of cities. Proposals should highlight the possible benefits to be derived from ecosystems services and green infrastructure, and their gender sensitive application.

The Commission considers that proposals requesting a contribution from the EU of between EUR 4 and 5 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected impact: Significant measurable improvements in the state of the art in waste management in urban and peri-urban areas, and in the operationalisation of the urban metabolism approach for sustainable urban development and reduction of negative environmental impacts (e.g. health) in cities. Contribution, over the long term, to the establishment of European research and innovation leadership in urban waste management and prevention.

In addition, the following specific impacts are expected:

a) Significant improvement in cost, material and, where appropriate, energy recovery efficiency in waste recycling and prevention in the short term. Identification of potential markets for the proposed waste collection strategies, treatment technologies and recycled products, as well as potential for replicability of solutions, based on a return-on-investment study on the short term. Creation, in the short/medium term, of green jobs and/or new SMEs due to effective market uptake of innovative technologies, processes and services, ensuring equality of access to women and men, and social inclusion. Contribution to development of standards, validated by key industrial players, and identifying best available and emerging techniques under the Industrial Emissions Directive.

b) Demonstrable improvement in the short/medium term in the participatory and science-based decision-making and planning for waste management, risk prevention and land-use as an integral part of urban development. Collectively-built, gender-sensitive solutions to promote eco-innovative urban management and re-naturing cities, measurable by qualitative and quantitative indicators. Significant increased competitiveness of soil-ecology-construction-waste treatment-related industries. In the long term, enhanced environmental resilience in urban areas and quality of life both in Europe and internationally.

Type of action: a) Innovation actions

and b) Research and innovation actions

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

WASTE-7-2015: Ensuring sustainable use of agricultural waste, co-products and by-products

Specific challenge: Agriculture generates co-products, by-products and waste streams that are currently not properly taken care of both in environmental and economic terms.

In plant production (e.g. from arable, horticulture, fruit, wine, grassland sectors and agro-forestry systems), losses take place at the farm and post-harvest levels and also down the chain at the level of the retail sector. Co-products or by-products are generated, for instance in the wine sector, which require sustainable use. Straw has been given significant attention in the last years as biomass feedstock and potential trade-offs with its relevance for soil improvement need to be considered.

In livestock production, manure, litter and other effluents management are a challenge, in particular in industrial production systems. While these effluents can be used as fertiliser, they can also be sources of bio-energy or valuable bio-products. The impacts on the environment, with emissions to the air, soil and water need to be evaluated. It is important to consider the whole effluent chain to avoid pollution swapping and health issues, due to possible transmission of pathogens.

Beyond reduction and recycling of agricultural waste, co-products and by-products, there may be opportunities for new processes enabling innovative uses of these materials, also outside the agricultural sector.

Scope: Proposals should evaluate existing techniques and develop new and innovative approaches for efficient use of agricultural waste, co-products and by-products, thereby contributing to the creation of sustainable value chains in the farming and processing sectors (including the organic sector). A range of sector-specific case studies (in terms of sources of waste and uses as well as geographic coverage) should serve to test and take up proposed approaches and technologies. Research and innovation efforts should address crop co-products/by-products/waste as well as manure/effluents.

On straw and other crop residues (including in mixture with manure), proposals should develop environmental safeguards such as sustainable extraction rates as well as guidance on optimal use of crop residues (in particular straw) for soil improvement, taking into account the need to maintain soil organic matter levels, and on farming practices to harvest and handle crop residues for alternative purposes.

As regards manure and effluents, proposals should address some or all of the following areas:

- nutrient, energy and biochemical recovery from manure and other effluents;
- improved knowledge on the environmental impact of manure and other effluents, further developing measurements and good manufacturing practices, minimising impacts on water and air quality (emissions and odours);
- sanitary implications of pathogens that can be transmitted from manure and possible control options;
- management chains, from processing to transport and application.

Involvement of industry (including strong participation from SMEs) should be ensured and pilot and/or demonstration activities should be performed. Knowledge platforms should be established. In line with the objectives of the EU's strategy for international

cooperation in research and innovation and in particular with the implementation of the EU-China dialogue, proposals are encouraged to include third country participants, especially those established in China¹⁹. Proposals should fall under the concept of 'multi-actor approach'²⁰. This action allows for the provision of financial support to third parties in line with conditions set out in Part K of the General Annexes.

The Commission considers that proposals requesting a contribution from the EU in the range of EUR 7 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Proposals are requested to foresee close interaction with the other proposals selected for funding through creation of a joint stakeholder platform and other joint structures.

Expected impact:

- Increased awareness and dialogue across sectors on availability, needs and options for smart use of agricultural waste, by-and co-products through creation of joint stakeholders platform and other joint structures.
- Improved resource efficiency through reduction of waste and improved waste management in primary production.
- Increased opportunities for valorisation of waste, by-and co-products resulting in environmental and economic benefits for the farming sector (e.g. development of new products and processes).
- Enhanced competitiveness through more varied and/or new types of sources for bio-products and bio-energy in the agro-food (conventional and organic) and bioeconomy sectors.
- Improved soil quality and crop productivity – through an optimal use of crop waste (taking into account the need to maintain soil organic matter levels) and nutrient recovery.
- Improved water quality – reducing pollution and eutrophication of ground waters, and thus indirectly marine waters.

¹⁹ This is without prejudice to the general rules on the funding of legal entities from third-countries, as set in part A of the General Annex.

²⁰ The multi-actor approach aims at more demand-driven innovation through the genuine and sufficient involvement of various actors (end-users such as farmers/farmers' groups, advisors, enterprises, etc.) all along the project from participation in the planning of work and experiments, their execution up until the dissemination of results and the possible demonstration phase. The adequate choice of key actors with complementary types of knowledge (scientific and practical) should be reflected in the description of the project proposals and result in a broad implementation of project results. The multi-actor approach is more than a strong dissemination requirement or what a broad range of stakeholders can deliver: it should be illustrated with a sufficient quantity and quality of knowledge exchange activities and a clear role for the different actors in the work. This should generate innovative solutions that are more likely to be applied thanks to the cross-fertilisation of ideas between actors, the co-creation and the generation of co-ownership for eventual results. A multi-actor project needs to take into account how the objectives and planning of the project proposal are targeted to needs/problems and opportunities of end-users, as well as complementarity with existing research. Facilitation between actors and openness to involving additional players/groups of players during the project, for instance relevant EIP operational groups, is strongly recommended.

- Improved air quality – by reducing livestock emissions.
- Progress towards regulatory and standard development, in particular with respect to environmental protection and food safety.

Type of action: Research and innovation actions

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

CONDITIONS FOR THIS CALL

Opening date(s)²¹: 11/12/2013 for 2014 topics
 10/12/2014 for 2015 topics

Deadline(s)²²:

WASTE-3-2014, WASTE-4a-2014, WASTE-4b-2014, WASTE-4c-2014, WASTE-5-2014	08/04/2014 at 17.00.00 Brussels time	
WASTE-1-2014, WASTE-2-2014	First stage 08/04/2014 at 17.00.00 Brussels time	Second stage 16/09/2014 at 17.00.00 Brussels time
WASTE-4d-2015	21/04/2015 at 17.00.00 Brussels time	
WASTE-6-2015, WASTE-7-2015	First stage 21/04/2015 at 17.00.00 Brussels time	Second stage 08/09/2015 at 17.00.00 Brussels time

Overall indicative budget: EUR 73.00 million from the 2014 budget²³, and EUR 58.00 million from the 2015 budget^{24 25}

²¹ The Director-General responsible may decide to open the call up to one month prior to or after the envisaged date of opening.

²² The Director-General responsible may delay this deadline by up to two months.

²³ of which EUR 59.00 million from the societal challenge ‘Climate action, environment, resource efficiency and raw materials’, EUR 9.00 million from the societal challenge ‘Food security, sustainable agriculture and forestry, marine and maritime and inland water research and the bioeconomy’ and EUR 5.00 million from Leadership in ‘Nanotechnologies, advanced materials, biotechnology and advanced manufacturing and processing’.

²⁴ Subject to the availability of the appropriations provided for in the draft budget for 2015 after the adoption of the budget for 2015 by the budgetary authority or if the budget is not adopted as provided for in the system of provisional twelfths.

²⁵ of which EUR 44.00 million from the societal challenge ‘Climate action, environment, resource efficiency and raw materials’, and EUR 14.00 million from the societal challenge ‘Food security, sustainable agriculture and forestry, marine and maritime and inland water research and the bioeconomy’

HORIZON 2020 – WORK PROGRAMME 2014-2015
Climate action, environment, resource efficiency and raw materials

Topics	2014 EUR million	2015 EUR million
WASTE-2-2014, WASTE-7-2015	9.00	14.00
WASTE-3-2014	14.50	
WASTE-4-2014/2015	4.50	4.00
WASTE-5-2014	1.00	
WASTE-1-2014, WASTE-6a-2015	44.00	30.00
WASTE-6b-2015		10.00

Eligibility and admissibility conditions: The conditions are described in parts B and C of the General Annexes to the work programme, with the following exceptions:

WASTE-4a-2014, WASTE-4b-2014	Up to <u>one</u> project per sub-topic shall be funded.
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Evaluation criteria, scoring and threshold: The criteria, scoring and threshold are described in part H of the General Annexes to the work programme.

Evaluation procedure: The procedure for setting a priority order for proposals with the same score is given in part H of the General Annexes.

The full evaluation procedure is described in the relevant guide²⁶ published on the Participant Portal.

Indicative timetable for evaluation and grant agreement:

	Information on the outcome of the evaluation (<i>single or first stage</i>)	Information on the outcome of the evaluation (<i>second stage</i>)	Indicative date for the signing of grant agreements	
WASTE-3-2014, WASTE-4-2014/2015,	Maximum 5 months from the final date for		Maximum 3 months from the date of informing	

²⁶ See: http://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/pse/h2020-guide-pse_en.pdf

HORIZON 2020 – WORK PROGRAMME 2014-2015
Climate action, environment, resource efficiency and raw materials

WASTE-5-2014	submission		applicants	
WASTE-1-2014, WASTE-2-2014, WASTE-6-2015, WASTE-7-2015	Maximum 3 months from the final date for submission	Maximum 5 months from the final date for submission	Maximum 3 months from the date of informing applicants	

Consortium agreements: In line with the Rules for Participation, participants in Research and Innovation Actions or in Innovation Actions are required to conclude a consortium agreement prior to grant agreement.

Call – Water Innovation: Boosting its value for Europe

Treasuring our water

H2020-WATER-2014/2015

Water is an invaluable resource for human health, food security, sustainable development and the environment, and is an economic sector of growing importance for Europe. However, water resources are constantly under pressure from climate change, urbanisation, pollution, overexploitation of freshwater resources and increasing competition between various user groups. Improvement of the state of water resources, both in terms of quantity and quality, will trigger substantial economic benefits. The objective of the Water Framework Directive (WFD) – to achieve good status by 2015 – will be met only in around half of the European waters, making major additional action necessary.

The aim of this challenge is to seize these new and significant market opportunities by positioning Europe as a global market leader in water related innovative solutions.

The world market for drinking and waste water reached EUR 250 billion in 2008, with corresponding investments of more than EUR 33 billion per annum. Pollution of water from run-off alone (predominantly of agricultural origin) was estimated in 2011 to cost the EU EUR 30 billion per annum. The market for technologies to adapt to climate change – such as protecting from floods and droughts – is rapidly growing, considering that the cost of repairing damages is estimated to be about 6 times higher than the cost of adaptation.

There is significant potential to boost the competitiveness and growth of the European water sector, which includes 9.000 active SMEs and provides 600.000 direct jobs in water utilities alone. A 1% increase of the rate of growth of the water industry in Europe may result in 10.000 to 20.000 new jobs, while synergies with other sectors may generate even larger returns (some estimates indicate that the application of ICT in water management and monitoring could produce growth of 30% per year).

Activities in this call address: integrated approaches to water and climate change adaptation and mitigation; bringing innovative water solutions to the market; and harnessing water research and innovation results for the benefit of industry, policy makers and citizens in Europe and globally.

This call is expected to contribute to several policy objectives including those set out in the Europe 2020 Resource-efficient Europe Roadmap for water: impacts of droughts and floods should be minimised; alternative water supply options are only relied upon when all water saving and water efficiency measure are taken and other options exhausted; water extraction should remain below 20% of available renewable water resources. Specific actions respond to relevant needs identified in the European Innovation Partnerships (EIP) 'Water' and its priority areas for action as described in the Strategic Implementation Plan and to research gaps identified through the WFD Common Implementation Strategy/Science-Policy activity (CIS-SPI) as well as through relevant European Technology Platforms.

The innovation actions in this call are expected to offer particular opportunities to SMEs, social enterprises and other organisations.

Within the projects funded, additional, complementary or follow-up funding should be sought, be it private or public, including from relevant regional/national schemes under the European Structural and Investment Funds (ESIF), in particular under the European Regional Development Fund (ERDF). To achieve this, projects could seek contact with ERDF managing authorities and with the authorities who developed the Research and Innovation Smart Specialisation Strategies (RIS3). The responsible regional/national authorities could then take an interest in the projects and their expected results. They could engage in the use and deployment of the novel solutions resulting from projects e.g. through pre-commercial public procurement or public procurement for innovative solutions. The project proposals could already indicate which interested regions/countries or other partners have been pre-identified for contact during the project.

All activities under Societal Challenge 'Climate action, environment, resource efficiency and raw materials' should as far as possible use data resulting from or made available through different initiatives of the European Commission. In particular, the utilisation of GEOSS (Global Earth Observation System of Systems)²⁷ and Copernicus (the European Earth Observation Programme)²⁸ data, products and information should be privileged²⁹. Likewise, in line with EU cooperation with the European Space Agency (ESA), activities should use ESA Earth Science data, as far as possible. The data, both from ESA missions or third party missions, are for the vast majority of cases available for free web download (further details for ESA missions and Third Party Missions are available at <http://eopi.esa.int>).

The projects funded under Societal Challenge 'Climate action, environment, resource efficiency and raw materials', call 'Water Innovation: Boosting its value for Europe', of the Work Programme 2014-15, with the exception of topic WATER-4b-2015, will participate in the Pilot on Open Research Data in Horizon 2020 in line with the Commission's Open Access to research data policy for facilitating access, re-use and preservation of research data. Projects have the possibility to opt out of the Pilot. A related new element in Horizon 2020 is the use of Data Management Plans (DMPs), detailing what data the project will generate, whether and how it will be exploited or made accessible for verification and re-use, and how it will be curated and preserved. The use of a Data Management Plan is required for projects participating in the Open Research Data Pilot. Other projects are invited to submit a Data Management Plan if

²⁷ www.geoportal.org

²⁸ <http://www.copernicus.eu/>

²⁹ The Copernicus data and products, where available, should be used by the research and innovation community following the free, full and open access approach approved in the Commission Delegated Regulation (EU) No 1159/2013 of 12 July 2013 supplementing Regulation (EU) No 911/2010 of the European Parliament and of the Council on the European Earth monitoring programme (GMES), by establishing registration and licensing conditions for GMES users and defining criteria for restricting access to GMES dedicated data and GMES service information. This would include the data from the Copernicus space infrastructure (Sentinels missions). It includes as well, where affordable, additional space data purchased by the Copernicus programme necessary for the delivery of Copernicus Services, called Copernicus Contribution mission data, when the later can be of use for Horizon projects developing new Copernicus Services.

relevant for their planned research. Further guidance on the Open Research Data Pilot is made available on the Participant Portal. The projects funded under topic WATER-4b-2015 of this call may participate in the Pilot on Open Research Data in Horizon 2020 on a voluntary basis.

Beneficiaries in projects participating in the Pilot on Open Research Data shall adhere to the GEOSS Data Sharing Principles and undertake to register in GEOSS all geospatial data, metadata and information generated as foreground of the project. Further information on the GEOSS Data Sharing Principles and GEOSS Register can be found here: <http://geossregistries.info/index.html>

Other topics contributing to the objectives of this call in other parts of the Horizon 2020 Work Programme include:

- NMP 15 - 2015: Materials innovations for the optimisation of cooling in power plants
- NMP 24 - 2015: Low-energy solutions for drinking water production
- INFRAIA 1-2014/2015: Integrating and opening existing national and regional research infrastructures of European interest (research infrastructures for hydrological/hydrobiological research; research infrastructures for long-term ecosystem and socio-ecological research; research infrastructures for environmental hydraulic research)
- SFS 2 - 2014/2015: Sustainable crop production
- SFS 8 - 2014/2015: Resource-efficient eco-innovative food production and processing
- SFS 11 - 2014/2015: Implementation of an Ecosystem-based approach for European aquaculture
- ISIB 4 - 2014/2015: Improved data and management models for sustainable forestry
- ISIB 5 - 2014: Renewable oil crops as a source of bio-based products

Proposals are invited against the following topics:

WATER-1-2014/2015: Bridging the gap: from innovative water solutions to market replication

Specific challenge: One of the main factors hampering the market uptake of innovative solutions in the field of water is the lack of real scale demonstration of their long term viability. In addition, highly promising and sustainable eco-innovative water solutions (technologies, processes, products, services etc.) often do not reach the market due to pre-commercialisation challenges and the residual risk linked to scaling-up.

There is therefore a need to take action to accelerate the commercialisation of eco-innovative water solutions with a view to stimulating sustainable economic growth, business and job creation in the water sector.

The EIP on Water³⁰ has identified 8 priority areas: 5 thematic priorities (water reuse and recycling; water and waste water treatment, including recovery of resources; water and energy integration; flood and drought risk management; and the role of ecosystem services in the provision of water related services) and 3 cross-cutting priorities (water governance; decision support systems and monitoring; and financing for innovation). According to the EIP on Water, these are areas which show high potential for innovation and market uptake.

Scope: Proposals shall address only one of the following:

a) [2014] First application and market replication of near-market water solutions, addressing the thematic priorities identified in the EIP on Water.

The Commission considers that proposals requesting a contribution from the EU of between EUR 2 and 4 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

b) [2015] Demonstration/pilot activities of new or improved innovative water solutions in a real environment, with a focus on the cross cutting priorities identified in the EIP on Water, while addressing the thematic priorities.

The Commission considers that proposals requesting a contribution from the EU of between EUR 6 and 8 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Proposals may also aim to help process industries become less water dependant while ensuring efficient management of other resources (e.g. raw materials and energy), and/or exploiting untapped potential of ICT by developing and deploying advanced ICT solutions for water resources management in agriculture and/or urban areas.

Complex issues should be addressed with innovative, creative solutions with a globally positive environmental impact demonstrated by life cycle analysis. Social, institutional, economic and governance aspects ensuring a more rapid uptake of solutions as well as aspects affecting market deployment and uptake, such as, standardisation and regulatory issues, market assessment and business plan, should be considered where appropriate. Proposals should include the participation of SMEs, as far as possible.

Expected impact: Wide and fast deployment of sustainable innovative solutions in the water management sector. Contribution to the implementation of the EIP 'Water'. Support to the objectives of the Sustainable Process Industries Public-private Partnership (SPIRE PPP), in particular helping process industries and consumers to socially accept water as a highly valuable resource rather than a cheap consumable. Market penetration and demonstration, long-term application and sustained use of successful and sustainable innovative solutions by various end-users. Creation of new market opportunities both inside and outside Europe. Increased resource efficiency and environmental performance of the water sector, inter alia through synergies between public water authorities, water utilities, various economic actors and sectors, major companies and industries, SMEs and research organisations. Significant reduction in water use. More than 50% reduction of

³⁰ <http://ec.europa.eu/environment/water/innovationpartnership/>

energy demand in water supply, treatment and transportation. Development and uptake of water efficiency standards in urban, agricultural and industrial areas, including the promotion of interoperability between water information systems at EU and national levels and their harmonisation with the INSPIRE Directive. Support to the implementation and evaluation of technology verification schemes, including the EU Environmental Technology Verification Pilot (ETV) programme³¹.

Type of action: Innovation actions

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

WATER-2-2014/2015: Integrated approaches to water and climate change

Specific challenge: The rising demands of a growing world population for food, water, materials and energy will put increasing pressures on land use, water resources and ecosystems. Increased energy use leads to increased demands for cooling water for thermal power plants. Climate mitigation options such as biomass production for energy (biofuels) might also lead to increased land and water demands. Increased food and feed demand will put increasing pressures on land (e.g. deforestation leading to more greenhouse gas emission) and water resources. Such pressures will be compounded by the impacts of climate change which are likely to further modify the availability and suitability of these resources as well as affect agricultural productivity.

Tools to help explore options for low-carbon pathways, such as climate-energy models, currently lack a comprehensive integration of land-use and water systems, leading to an incomplete picture of the interactions between competing demands and the future viability and costs of adaptation and mitigation options as well as the environmental protection and agricultural challenges.

Despite considerable progress over the past ten years, the forecasting of natural water cycle variability and extreme weather events in the short and medium term still suffers from severe limitations. Improved understanding of the impacts of climate change on the hydrological cycle is necessary in order to better inform decision makers and ensure sustainable water supply and management of water systems, and quality of water bodies, in the EU.

Scope: Proposals shall address only one of the following issues.

a) [2014] Water cycle under future climate:

Proposals should aim to:

- maximise the reliability of projections of precipitation (average, distribution, frequency, intensity) and couple them with water cycle variability at local/regional scales in Europe, over various timescales;
- improve the short-to-medium term forecasting of related extreme events, integrating, where possible, information from available data sources;

³¹ <http://iet.jrc.ec.europa.eu/etv/>

- assess the impacts of weather extremes as well as the wider impacts of climate change on the different components of the water cycle in terms of quantity and quality;
- develop risk management strategies and adaptation options for extreme weather and other climate change-related threats at the appropriate scale(s) (local, regional and continental), taking into consideration the role and involvement of the relevant stakeholders, and potentially putting emphasis on highly vulnerable water resources of strategic importance.

The Commission considers that proposals requesting a contribution from the EU of between EUR 6 and 8 million (or more) would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

b) [2015] Integrated approaches to food security, low-carbon energy, sustainable water management and climate change mitigation:

Proposals should aim to:

- develop tools and methodologies for integrating agriculture, forestry, climate change impacts and adaptation with climate-energy-economic models and land-use models, using a multi-disciplinary approach;
- consider the potential role, contributions and limitations of low-carbon options with respect to land and water resources;
- develop a better scientific understanding of the land-water-energy-climate nexus;
- develop integrated strategies and approaches, at different spatial scales (regional, national, continental, global), integrating resource efficient land use, agricultural productivity improvements, sustainable water management and low carbon energy transition and analysing interactions with the existing regulatory frameworks in these areas and the potential barriers to implementation.

The Commission considers that proposals requesting a contribution from the EU of between EUR 6 and 8 million (or more) would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected impact:

a) More efficient management of water resources in Europe due to better knowledge of the water cycle under the future climate. Contribution to management planning across the EU in support of the Blueprint to safeguard Europe's water resources, the EU Climate Change Adaptation Strategy and the relevant priority areas of the EIP 'Water'. Contribution in the longer-term to the development of reliable climate services in relation to the water cycle.

b) Increased understanding of how water management, food and biodiversity policies are linked together and to climate and sustainability goals. Reduction of the uncertainties about the opportunities and limitations of low-carbon options, such as bioenergy technologies and resource efficiency measures, in view of relevant near-term policy initiatives. Contribution to future assessments, including those of the IPCC, with multidisciplinary and integrated tools.

Type of action: Research and innovation actions

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

WATER-3-2014/2015: Stepping up EU research and innovation cooperation in the water area

Specific challenge: Water-related research and innovation is fragmented at EU level and dispersed at national level in several ministries, universities, agencies, regional governments and programmes. To be more effective and increase the added value of related investments, the efforts and strategic research agendas of the many funding networks and organisations existing in Europe need to be integrated to establish transnational and trans-disciplinary research and innovation actions.

Scope: Proposals should address only one of the following:

[2014] Proposals should pool the necessary financial resources from the participating national (or regional) research programmes with a view to implementing a joint call for proposals resulting in grants to third parties with EU co-funding to support the priorities identified in the Strategic Research Agenda of the Water Joint Programming Initiative (JPI). Proposers should also consider implementing other joint activities including additional joint calls without EU co-funding. In 2014, this call should support research and innovation developing technological solutions and services to support the implementation of EU water policy, in particular for water distribution and measurement, waste water treatment and reuse, desalination, floods and droughts etc.

[2015] Proposals should pool the necessary financial resources from the participating national (or regional) research programmes with a view to implementing a joint call for proposals resulting in grants to third parties with EU co-funding to support the priorities identified in the Strategic Research Agenda of the Water JPI. In line with the EU's strategy for international cooperation in research and innovation³² international cooperation with international partners is encouraged. Proposers should also consider implementing other joint activities including additional joint calls without EU co-funding. In 2015 the call should support research and innovation to support the implementation of EU water policy, in particular on sustainable water use in agriculture, to increase water use efficiency and reduce soil and water pollution.

Expected impact: Better use of scarce human and financial resources in the area of water R&I. Reduced fragmentation of water research and innovation efforts across Europe. Improved synergy, coordination and coherence between national and EU funding in the relevant research fields through transnational collaboration. Improved implementation of research and innovation programmes in these fields through exchange of good practices. Contribution to the implementation of the JPI on Water.

Type of action: ERA-NET Cofund

³² COM(2012)497

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

WATER-4-2014/2015: Harnessing EU water research and innovation results for industry, agriculture, policy makers and citizens

Specific challenge: Effective use and market exploitation of water research results is often limited by the lack of adequate knowledge exchange practices and mechanisms. The same applies for research that gives answers to policy implementation, like achieving good status under the Water Framework Directive (WFD) or good environmental status under the Marine Strategy Framework Directive and achieving the objectives of other EU water legislation. This is exacerbated by the fact that water research and innovation faces several multidisciplinary challenges and involves a wide variety of policy sectors, decision makers, public and private users and stakeholders at various levels.

Critical mass is needed for knowledge exchange, to ensure wide applicability of research results, facilitate the translation of knowledge into use by various stakeholders, reduce unnecessary duplication of efforts, raise public awareness of water-related issues and promote innovation and business development.

Scope:

a) [2014] Proposals should aim to address only one of the following issues:

- promote the dissemination and exploitation of EU funded activities, including relevant ICT-based tools and platforms and their integration for market leadership in many fragmented areas, develop appropriate policy briefs, and foster knowledge sharing and continuous benchmarking across the EU and Associated Countries to ensure wider application of innovative solutions and further demonstrate their potential to solve water-related challenges, including through river basin networks and River Basin Districts; or
- take stock of existing practical and scientific knowledge in the various sectors and identify research gaps with a view to avoiding overlaps between key regional, national, European and international activities, taking into account the implementation of the WFD; or
- promote water-related innovation and business development, help cluster eco-innovative companies and develop innovative financial instruments; or
- develop a coordinated approach to the integration of the water and waste sectors in the 'Smart Cities and Communities' EIP³³, identifying research and innovation needs which could lead to future actions, promoting exchange of best practice between public authorities and stakeholders involved, and increasing preparedness and planning capacities of all the relevant actors.

³³ <http://ec.europa.eu/eip/smartcities/>

The Commission considers that proposals requesting a contribution from the EU in the range of EUR 1 million for sub-topic a) would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

b) [2015] Proposals should aim to:

- implement measures to showcase, exchange, test and transfer water management solutions to end-users in the agricultural sector in view of improving water use efficiency and quality in agricultural practices. Activities should benefit various types of agriculture and pedo-climatic zones;
- contribute to a 'thematic network'³⁴ on water in agriculture with broad involvement of practitioners and other stakeholders throughout Europe to compile, disseminate and further develop solutions; and
- support the integration of water relevant issues in the EIP on 'Agricultural Productivity and Sustainability', including linking up with EIP operational groups and related actions of the EIP on 'Water'.

The Commission considers that proposals requesting a contribution from the EU in the range of EUR 3 million for sub-topic b) would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected impact:

a) Enhanced science- and evidence-based decision making in the field of water. Application of best management practices and new developments to address needs and opportunities in the water field. Enhanced interface between water and innovation policies. Rapid market uptake of research results in line with the priority areas of the EIP 'Water'³⁵. A more integrated community of researchers and users extending across disciplines, countries, organisations and sectors. Improved public engagement in research and improved public understanding of the dynamic nature of water systems and the role of innovation in the water sector. Integration of the water and waste sectors into the Smart Cities EIP, reinforcing its ultimate goal of contributing to achieving the 3 bottom line objectives (20-20-20).

b) Enhanced interface between knowledge (practical, scientific) and agricultural user communities in the area of water use efficiency and water quality. Increased application of water-related solutions (at technological, management or organisational levels) by end-users in agriculture resulting in reduced pressure for water from agricultural practices. Support to the implementation of the EIPs on 'Agricultural Productivity and Sustainability' and 'Water'.

Type of action: Coordination and support actions

³⁴ According to the concept of a 'thematic network' under the EIP on Agricultural Productivity and Sustainability, supporting stocktaking of scientific knowledge and best practice, as well as knowledge exchange on specific themes, resulting in end-user output to be shared amongst others via EIP tools: <http://ec.europa.eu/agriculture/eip/>

³⁵ <http://ec.europa.eu/environment/water/innovationpartnership/>

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

WATER-5-2014/2015: Strengthening international R&I cooperation in the field of water

Specific challenge: Sustainable water supply and sanitation is fundamental to the food security, health, survival, societal well-being and economic growth in developing countries, especially in Africa. Developing countries are also particularly vulnerable to water-related problems which are expected to be exacerbated in the future by more frequent and severe floods and droughts due to climate change. A prerequisite for tackling these challenges is a profound analysis of water resources at cross-boundary catchment scales, pressures on water resources and conflicts in water use that require sound approaches to water management, taking into consideration broader socio-economic factors and greater gender balance in decision making. International cooperation can play an important role in mitigating negative effects.

At the same time, the EU should aim to strengthen international cooperation also with emerging economies, especially China and India, through strategic partnerships in the field of water. This will allow for joint development of technological solutions that, capitalising on the mutual knowledge and experience of the water industry in EU Member States and these countries, have a great potential for further replication and market uptake. Building on its leadership in international water-related negotiations, the EU will promote its experience in water policy and river management in order to share best practices.

Scope: Proposals shall address only one of the following issues:

a) [2014] Strategic cooperation partnerships³⁶ for water research and innovation between Europe and the rest of the world, promoting the creation of networks of companies (including SMEs), entrepreneurs, not for profit organisations, policy makers, regulators and funding bodies to create business and social opportunities. In line with the EU's strategy for international cooperation in research and innovation³⁷ proposals contributing to implementing on-going international activities and partnerships where the EU Member States are jointly committed to providing a more coherent approach to research and innovation (e.g. EU/Member States-India research and innovation partnership on water, China-Europe Water Platform) that aim at establishing a shared strategic research and innovation agenda will be given priority.

b) [2015] A coordination platform for scientists, decision makers, practitioners and other key stakeholders representing a number of African countries throughout the duration of Horizon 2020 to identify opportunities and constraints for the sustainable management of water and other natural resources and ecosystems and for the development of cost-effective climate change adaptation and mitigation measures in

³⁶ This activity directly aimed at supporting the promotion of coherent and effective cooperation with third countries is excluded from the delegation to EASME and will be implemented by the Commission services.

³⁷ COM(2012)497

Africa. In line with the EU's strategy for international cooperation in research and innovation³⁸ international cooperation is encouraged, in particular with Africa.

For sub-topic b), the Commission considers that proposals requesting a contribution from the EU in the range of EUR 3 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

c) [2015] Development of water supply and sanitation technology, systems and tools, and/or methodologies to manage risks associated with water supply and sanitation and/or cross-boundary water management issues, or integrated water resources management systems for sustainable agriculture and food security, sustainable environment protection and economic growth, focused on the non-EU Mediterranean countries and/or Africa. Proposals should connect to local knowledge, socio-economic development cultures, policy institutions and implementing bodies, and take into account the gender dimension where relevant. In line with the EU's strategy for international cooperation in research and innovation³⁹ international cooperation is encouraged, in particular with non-EU Mediterranean countries and/or Africa. Proposals should include participation of organisations from the above-mentioned regions.

For sub-topic c), the Commission considers that proposals requesting a contribution from the EU of between EUR 2 and 3 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected impacts:

- a) Creation of market opportunities for European water innovations outside Europe, thus supporting the implementation of the EIP 'Water' and its priority areas. Support to the implementation of the objectives set by the Strategic Forum for International Science and Technology Cooperation⁴⁰.
- b) Better preparedness in Africa to address water and climate change vulnerabilities, with less fragmentation of efforts better monitoring and forecasting tools, and enhanced knowledge sharing and technology transfer.
- c) Application of innovative technological approaches/solutions adapted to local conditions, operational and effective application of integrated water management, better identification of water vulnerability by policy makers, advanced regulatory and economic instruments, improved capacity building of local actors, and increased economic and social well-being at local and regional levels in the non-EU Mediterranean countries and Africa. Support to internationally agreed water-related goals, including in the context of the post-2015 development framework and Rio+20 follow up, by bridging the water and sanitation gaps.

Type of action:

- a) & b) Coordination and support actions
- c) Research and innovation actions

³⁸ COM(2012)497

³⁹ COM(2012)497

⁴⁰ <http://ec.europa.eu/research/iscp/index.cfm?lg=en&pg=sfic-general>

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

CONDITIONS FOR THIS CALL

Opening date(s)⁴¹: 11/12/2013 for 2014 topics
 10/12/2014 for 2015 topics

Deadline(s)⁴²:

WATER-3-2014, WATER-4a-2014, WATER-5a-2014	08/04/2014 at 17.00.00 Brussels time	
WATER-1-2014, WATER-2a-2014	First stage 08/04/2014 at 17.00.00 Brussels time	Second stage 16/09/2014 at 17.00.00 Brussels time
WATER-3-2015 WATER-4b-2015, WATER-5b-2015	21/04/2015 at 17.00.00 Brussels time	
WATER-1-2015, WATER-2b-2015, WATER-5c-2015	First stage 21/04/2015 at 17.00.00 Brussels time	Second stage 08/09/2015 at 17.00.00 Brussels time

Overall indicative budget: EUR 67.00 million from the 2014 budget, and EUR 96.00 million from the 2015 budget^{43 44}

Topics	2014 EUR million	2015 EUR million
WATER-3-2014/2015	10.00	15.00
WATER-4-2014/2015, WATER-5b-2015, WATER-	5.00	6.00

⁴¹ The Director-General responsible may decide to open the call up to one month prior to or after the envisaged date of opening.

⁴² The Director-General responsible may delay this deadline by up to two months.

⁴³ Subject to the availability of the appropriations provided for in the draft budget for 2015 after the adoption of the budget for 2015 by the budgetary authority or if the budget is not adopted as provided for in the system of provisional twelfths.

⁴⁴ of which EUR 93.00 million from the societal challenge ‘Climate action, environment, resource efficiency and raw materials’, and EUR 3.00 million from the societal challenge ‘Food security, sustainable agriculture and forestry, marine and maritime and inland water research and the bioeconomy’

HORIZON 2020 – WORK PROGRAMME 2014-2015
Climate action, environment, resource efficiency and raw materials

5a-2014		
WATER-1-2014/2015	39.00	45.00
WATER-2-2014/2015	13.00	15.00
WATER-5c-2015		15.00

Eligibility and admissibility conditions: The conditions are described in parts B and C of the General Annexes to the work programme, with the following exceptions:

WATER-3-2014/2015, WATER-5b-2015	Up to <u>one</u> project per year and/or per sub-topic shall be funded.
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Evaluation criteria, scoring and threshold: The criteria, scoring and threshold are described in part H of the General Annexes to the work programme.

Evaluation procedure: The procedure for setting a priority order for proposals with the same score is given in part H of the General Annexes.

The full evaluation procedure is described in the relevant guide⁴⁵ published on the Participant Portal.

Indicative timetable for evaluation and grant agreement:

	Information on the outcome of the evaluation (<i>single or first stage</i>)	Information on the outcome of the evaluation (<i>second stage</i>)	Indicative date for the signing of grant agreements	
WATER-3-2014/2015, WATER-4-2014/2015, WATER-5b-2015, WATER-5a-2014	Maximum 5 months from the final date for submission		Maximum 3 months from the date of informing applicants	
WATER-1-2014/2015, WATER-2-	Maximum 3 months from the final date for	Maximum 5 months from the final date for	Maximum 3 months from the date of	

⁴⁵ See: http://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/pse/h2020-guide-pse_en.pdf

HORIZON 2020 – WORK PROGRAMME 2014-2015
Climate action, environment, resource efficiency and raw materials

2014/2015, WATER-5c- 2015	submission	submission	informing applicants	
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Consortium agreements: In line with the Rules for Participation, participants in Research and Innovation Actions or in Innovation Actions are required to conclude a consortium agreement prior to grant agreement.

Call – Growing a Low Carbon, Resource Efficient Economy with a Sustainable Supply of Raw Materials

H2020-SC5-2014/2015

This call forms part of an overall focus on investing in innovation for a green economy. The multi-disciplinary research and innovation required to effectively tackle this challenge in a sustainable way entails pooling complementary knowledge and resources, including the active involvement of socio-economic disciplines. The dissemination and uptake of research and innovation results by policy-makers, businesses and society at large is encouraged to empower actors at all levels of society to actively participate in this process.

Actions under this call aim to support businesses in developing and bringing to the market eco-innovative solutions and to encourage their take-up by public authorities in their procurement practices. They will also help move towards a new era of climate information systems and services, which can provide accessible, high quality and ultimately useful data for the public sector, business and society.

Actions under this call also aim to improve our understanding of the complex interactions within, across and between ecosystems and the different elements driving changes in the environment, in order to better tackle these challenges and to use the available knowledge e.g. to make ecosystem restoration more effective. Actions will address the need to both usefully harness Earth Observation data and to engage citizens in developing systems for effective transfer of environmental knowledge for the benefit of scientists, policy makers, business and society.

Actions will also focus on sustainable access to and production of raw materials to ensure significant reduction in resource use and a secure and sustainable supply of key raw materials.

Finally, a number of actions under this call aim to bring together and better coordinate research and innovation actions within Europe and beyond, accompanied by timely and open exchange of information and research results, to enhance the impact of research and innovation and ensure a more efficient use of scientific developments for policy, business and citizens.

Given the transnational and global nature of the climate and the environment, their scale and complexity, as well as of the raw materials supply chain, activities are foreseen at both EU level and beyond. In addition to bilateral and regional cooperation, EU level actions will also support relevant international efforts and initiatives.

The innovation actions in this call are expected to offer particular opportunities to SMEs, together with the dedicated SME Instrument topic.

Within the projects funded, additional, complementary or follow-up funding should be sought, be it private or public, including from relevant regional/national schemes under the European Structural and Investment Funds (ESIF), in particular under the European Regional Development Fund (ERDF). To achieve this, projects could seek contact with ERDF managing authorities and with the authorities who developed the Research and Innovation Smart Specialisation Strategies (RIS3). The responsible regional/national authorities could then take an interest in the projects and their expected results. They could engage in the use and deployment of the novel solutions resulting from projects

e.g. through pre-commercial public procurement or public procurement for innovative solutions. The project proposals could already indicate which interested regions/countries or other partners have been pre-identified for contact during the project.

All activities under Societal Challenge 'Climate action, environment, resource efficiency and raw materials' should as far as possible use data resulting from or made available through different initiatives of the European Commission. In particular, the utilisation of GEOSS (Global Earth Observation System of Systems)⁴⁶ and Copernicus (the European Earth Observation Programme)⁴⁷ data, products and information should be privileged⁴⁸. Likewise, in line with EU cooperation with the European Space Agency (ESA), activities should use ESA Earth Science data, as far as possible. The data, both from ESA missions or third party missions, are for the vast majority of cases available for free web download (further details for ESA missions and Third Party Missions are available at <http://eopi.esa.int>).

The projects funded under Societal Challenge 'Climate action, environment, resource efficiency and raw materials', call 'Growing a Low Carbon, Resource Efficient Economy with a Sustainable Supply of Raw Materials', of the Work Programme 2014-15, with the exception of topics SC5-11-2014/2015, SC5-12-2014/2015, and SC5-13/2014/2015, will participate in the Pilot on Open Research Data in Horizon 2020 in line with the Commission's Open Access to research data policy for facilitating access, re-use and preservation of research data. Projects have the possibility to opt out of the Pilot. A further new element in Horizon 2020 is the use of Data Management Plans (DMPs), detailing what data the project will generate, whether and how it will be exploited or made accessible for verification and re-use, and how it will be curated and preserved. The use of a Data Management Plan is required for projects participating in the Open Research Data Pilot. Other projects are invited to submit a Data Management Plan if relevant for their planned research. Further guidance on the Open Research Data Pilot is made available on the Participant Portal. The projects funded under the other topics of this call may participate in the Pilot on Open Research Data in Horizon 2020 on a voluntary basis.

Beneficiaries in projects participating in the Pilot on Open Research Data shall adhere to the GEOSS Data Sharing Principles and undertake to register in GEOSS all geospatial data, metadata and information generated as foreground of the project. Further information on the GEOSS Data Sharing Principles and GEOSS Register can be found here: <http://geossregistries.info/index.html>

⁴⁶ www.geoportal.org

⁴⁷ www.copernicus.eu

⁴⁸ The Copernicus data and products, where available, should be used by the research and innovation community following the free, full and open access approach approved in the Commission Delegated Regulation (EU) No 1159/2013 of 12 July 2013 supplementing Regulation (EU) No 911/2010 of the European Parliament and of the Council on the European Earth monitoring programme (GMES), by establishing registration and licensing conditions for GMES users and defining criteria for restricting access to GMES dedicated data and GMES service information. This would include the data from the Copernicus space infrastructure (Sentinels missions). It includes as well, where affordable, additional space data purchased by the Copernicus programme necessary for the delivery of Copernicus Services, called Copernicus Contribution mission data, when the later can be of use for Horizon projects developing new Copernicus Services.

Proposals are invited against the following topics:

FIGHTING AND ADAPTING TO CLIMATE CHANGE

SC5-1 and SC5-2-2014/2015: Climate Services for Europe and globally

Specific challenge: The provision of trustworthy science-based climate information to government, public and private decision makers is a fundamental prerequisite for both properly managing the risks society is facing and seizing the opportunities this implies. In order to meet societal expectations, a significant improvement in the prediction of the climate system (in a seamless way from seasonal-to-decadal and centennial timescales) is needed.

To address these challenges, the climate science community will need to enter into a new era of climate information systems, which take into account the usefulness, provision, accessibility and quality of data. In order to maintain Europe's leadership in this field and meet the challenges of climate change, significant progress is required in parallel in the development of both climate modelling and science for climate services.

SC5-1-2014: Advanced Earth-system models

Scope: Proposals should develop a new generation of advanced and well-evaluated global climate and Earth-system models as well as sophisticated climate related prediction systems with the aim of providing to governments, business and society in general state-of-the-art trustworthy scientific input to climate risk assessments at decadal to centennial time scales at the highest spatial resolution possible. Relevant physical, chemical and biological Earth-system processes, including anthropogenic drivers as well as socio-economic aspects and their feedback need to be adequately incorporated into climate models predictions and projections at the appropriate scale. New methods for representing uncertainties in Earth-system models should help to assess the reliability of regional responses and their impacts on key economic sectors. Advanced high resolution Earth-system models should also provide the basis for producing novel climate scenarios. Future models should have the capability of better understanding past climatic variability and its causes and impacts (societies, resources and ecosystems) as well as recent climate records.

The Commission considers that proposals requesting a contribution from the EU of between EUR 10 and 15 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected impact: Improved science based foundation to better assess the impacts of climate variability and change at decadal to centennial time scales, to support the development of effective climate change policies and optimize private decision-making. Robust, credible and trustworthy climate predictions and projections to make in the medium- and long-term European business sectors more resilient and competitive at global scale. Project outcome should support the post-AR5 IPCC process and other relevant international scientific assessments, and provide a solid scientific basis for future science cooperation and policy actions at European and international level.

Type of action: Research and innovation actions

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

SC5-2-2015: ERA for Climate Services

Scope: Proposals should pool the necessary financial resources from the participating national (or regional) research programmes with a view to implementing a joint call for proposals with EU co-funding resulting in grants to third parties. The proposal may include, in addition, publicly-funded research performing organisations that will contribute with their own resources (in-kind contributions from their institutional funding). In this case the joint call should include a separate topic for the participating research performing organisations. They will carry out the transnational projects resulting from this call topic themselves. Their participation in the ERA-NET Cofund action must be mandated by the national/regional authorities in charge (normally the responsible Ministry).

The objective should be to undertake research actions to develop better tools, methods and standards on how to produce and use reliable data, new sets of projections and impact indicators relevant for users' needs and capabilities. These are required by users to assess impacts of and adaptation responses to future climate variability and extreme conditions for specific regions, sectors and relevant time periods (seasonal-to-decadal) at regional and local scale. This should also include consideration of research required to respond to specific requests for services and multi-driver risk analyses, which require an inter- and trans-disciplinary two-way dialogue between scientists, information providers and end-users. Links with international climate service initiatives should be established.

Proposals should promote a wide representation of EU Member States.

Expected impact: Facilitated climate-smart public and private decision-making thereby reducing the impact of climate related hazards and promoting climate-proof management of European resources. Strengthened European integration through more effective exchange and transfer of climate-related knowledge across the EU. Support to the development and widening of the Joint Programming Initiative on Climate. Scientific support to the development of Copernicus operational activities and ClimateAdapt web portal. European contribution to the Global Framework for Climate Services (WMO-GFCS), the Future Earth Programme and relevant actions launched by the Belmont Forum. Support to the implementation of the EU Strategy on Adaptation to Climate Change.

Type of action: ERA-NET Cofund

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

SC5-3-2014: The economics of climate change and linkages with sustainable development

Specific Challenge: Policy makers face societal and economic challenges when addressing climate change, including the need to bring climate action into the wider

agenda of economic welfare and sustainable development. Decision-making processes require robust estimates of the costs and benefits, as well as risks and opportunities associated with different mitigation pathways against a background of uncertainty about the future climate and its impacts. It is also necessary to explicitly address the links between the development of low-emission and climate-resilient strategies and other policies to promote sustainable development, and to understand how both the mitigation of and adaptation to climate change is connected to issues such as eradication of energy poverty, increased well-being and welfare, air quality improvement, technology innovation, and food and water availability. To respond effectively to climate change and simultaneously meet sustainable development goals, radical transformations are needed to enable the transition to a clean, low-carbon, sustainable and resilient society, at the national, regional and global levels.

Scope: Proposals shall address only one of the following:

a) developing a comprehensive economic assessment of climate change. The assessment should consider different mitigation and adaptation strategies, focusing on the low-carbon transformation of the economy, and evaluate as well the costs of inaction. Actions should quantify the costs, benefits and risks of different technological and societal transitional changes of the energy system, examine the impacts on green growth, innovation dynamics, job creation and social cohesion, and develop tools and methodologies in support of evidence-based decision making.

The Commission considers that proposals requesting a contribution from the EU of between EUR 6 and 8 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

b) examining the link between climate change actions and sustainable development through international research collaboration efforts and developing a science dialogue between the EU and international partner countries, with a focus on G20 countries. Proposals should develop technological and socio-economic mitigation pathways and adaptation strategies in the context of wider sustainable development goals, examine actual and prospective mitigation and adaptation policies in various countries to support evidence-based policy making for climate action in the context of sustainable development, and undertake international collaboration with scientists with insights into the local challenges and opportunities. In line with the EU's strategy for international cooperation in research and innovation⁴⁹ proposals should contribute to provide support for capacity-building and knowledge-sharing goals under the UNFCCC⁵⁰ and contribute to major international scientific assessments (e.g. IPCC).

The Commission considers that proposals requesting a contribution from the EU of between EUR 3 and 5 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected impact:

⁴⁹ COM(2012)497

⁵⁰ <http://unfccc.int>

a) Support for technological, institutional and socio-economic innovation in the area of climate action. Reduction already in the short-term of the uncertainties in assessing and computing the costs, benefits and economic values of mitigation options. Facilitation of EU⁵¹ and global climate policy goals and mainstreaming of climate change mitigation options across multiple scales and sectors, providing scientific underpinning for the implementation and review of the 'Roadmap for moving to a low-carbon economy by 2050'⁵². Contribution to major international scientific assessment (e.g. IPCC).

b) Increased collaboration and cooperation in scientific research between the EU and key target countries in the area of climate action. Support for capacity-building and knowledge-sharing goals under the UNFCCC. Integration of climate action in the broader development agendas for developing countries. Accelerated transfer of low-carbon and adaptation technologies and knowledge to emerging and developing countries. Contribution to major international scientific assessments (e.g. IPCC).

Type of action: Research and innovation actions

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

SC5-4-2015: Improving the air quality and reducing the carbon footprint of European cities

Specific challenge: The majority of the European population lives in urban environments where citizens are frequently exposed to levels of air pollutants exceeding the limit values established by the European directives. The sources of pollution in cities are mainly linked to urban activities such as transport and heating. Other activities such as energy production, industrial activity, agriculture and trans-boundary pollution play an important role. Air pollution and climate change are strongly connected and there is therefore a need to consider both environmental and climate considerations when designing emission abatement strategies. Integrated approaches are needed to find long-term, sustainable solutions in the EU.

Scope: Development of technological options and strategies to fight against air pollution in urban environments and against climate change, ensuring the involvement of the main pollution-generation sectors. Proposals should include the development and application of tools in support of integrated air quality and climate change governance in EU Member States, with the aim of designing and implementing adequate abatement strategies and practices. The specific circumstances of the different regions and cities of Europe and the complex systems dynamics of societal and technological changes required for a transition to air pollution free/low carbon society should be taken into account. Proposals should foster the integration of advanced tools for the assessment, monitoring, modelling – including source apportionment – with innovative technological options and strategies to improve air quality and reduce the carbon footprint of urban areas. Furthermore, awareness-raising actions and policy support activities should be included. Proposals should include the participation of SMEs, as far as possible.

⁵¹ http://ec.europa.eu/clima/policies/brief/eu/index_en.htm

⁵² COM (2011) 112

The Commission considers that proposals requesting a contribution from the EU of between EUR 6 and 8 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected impact: Reduction of the negative effects on health and climate together with the costs associated with air pollution in the EU. Increase compliance with the EU air quality legislation. Support to EU air policy at EU and Member State level. Rapid market deployment of technological and non-technological innovative solutions. Contribution to the goals of the Smart Cities and Communities focus area. Societal transformation to a green and low carbon economy. Improved air quality in EU cities in the medium- to long-term.

Type of action: Research and innovation actions

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

SC5-5-2014/2015: Coordinating and supporting research and innovation for climate action

Specific challenge: The pace of current developments and uncertainties surrounding likely future trends requires further steps to maintain and strengthen the evidence base to ensure that policy makers, businesses and citizens in the EU can continue to draw on a sound understanding of the state of the climate and the wider environment, the possible response options and their consequences in social, economic and environmental terms.

Better integration and coordination of on-going and future climate change research and innovation initiatives within the EU and beyond is needed, accompanied by timely and open exchange of information and research results to enhance the impact of research and ensure a more efficient use of resources and scientific developments.

Scope: Creation of EU climate change networks to facilitate dialogue among the relevant scientific communities, funding bodies and user communities in the EU throughout the duration of Horizon 2020 and enhance effective communication and dissemination activities targeting different stakeholders, to maximise the impacts of the research and innovation initiatives and increase public awareness about climate science and research results. Proposals should cover activities such as clustering, co-ordinating and creating synergies between international, EU and nationally funded climate change research and innovation actions, developing joint programmes and projects, creating links with related international programmes, forward looking analysis to establish emerging needs, and effective mechanisms to strengthen science-policy interface. This requires genuinely cross-disciplinary, integrated and systemic approach - including the socio-economic dimension-, as well as the engagement and collaboration between the climate science and the broader stakeholder communities.

Proposals shall address only one of the following issues:

a) [2014] **Climate change mitigation options**⁵³: establishment of a comprehensive mapping and assessment of climate change mitigation options, policies and related technologies in the EU Member States and Associated Countries, taking into account their costs and opportunities. It should include analyses of the potential for international cooperation/co-development with emerging economies and developing countries, with the aim of ensuring synergies amongst research projects, foster collaboration with national and international research programmes and maximise impacts and outreach of EU-funded activities, also in view of accelerating technology transfer. Furthermore, the risks, benefits and socio-economic aspects of negative emission technologies (including geo-engineering) should also be addressed, together with new approaches for linking research on impacts and adaptation with those on mitigation options and economic costs. In line with the EU's strategy for international cooperation in research and innovation⁵⁴ international cooperation is encouraged, in particular with emerging economies and developing countries.

b) **Earth-system modelling and climate services [2015]**: parallel development of an Europe-wide climate modelling and service framework to enable and encourage open exchange of knowledge, expertise and data in order to more accurately simulate climate evolution, and to improve the reliability of science based climate information at local, regional and global scales. It should integrate the European climate modelling, observations and service infrastructure initiatives and provide a science-stakeholder communication platform to better manage European resources, reduce fragmentation and improve synergies between national, European and international activities.

Expected impact: Evidence-based policy and appropriate, cost-effective management, planning and adaptation decisions by the public sector, businesses, industry and society through the provision and effective communication of trustworthy and timely science-based information. Enhanced impact of research and innovation activities through better identification of climate change R&I priorities, improved coordination of European, Member States' research and innovation programmes and funded activities, and synergies with international research and innovation programmes and actions.

In addition, the following specific impacts are expected:

a) Better coordination of relevant research and innovation in the EU, including cooperation with the European Institute of Innovation and Technology (EIT). Enhanced implementation of the EU 2050 Roadmap⁵⁵ and relevant initiatives through improved dissemination of key research findings.

b) European society's improved resilience to climate change and mitigation of the risk of dangerous climate change.

Type of action: Coordination and support actions

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

⁵³ This activity directly aimed at supporting the development and implementation of evidence base for R&I policies and supporting various groups of stakeholders is excluded from the delegation to EASME and will be implemented by the Commission services.

⁵⁴ COM(2012)497

⁵⁵ COM (2011)112

PROTECTING THE ENVIRONMENT, SUSTAINABLY MANAGING NATURAL RESOURCES, WATER, BIODIVERSITY AND ECOSYSTEMS

SC5-6-2014: Biodiversity and ecosystem services: drivers of change and causalities

Specific Challenge: Biodiversity provides ecosystem services (provisioning, regulating, maintaining and cultural) crucial for human well-being. However, knowledge gaps remain in understanding the causality relationships between drivers/pressures (individually and collectively) and changes in biodiversity, ecosystem functions and ecosystem services and their societal impacts.

Since biodiversity is declining rapidly, leading to declines in ecosystem service provision, there is an urgent need to both document and evaluate the effects of drivers of change on all relevant levels of biological organisation, to better understand the links between biological diversity, ecosystem functions and resilience, and in turn to ecosystem service provision, so as to ensure effective policy and sustainable development.

Scope: Through a systematic approach and within an integrated socio-economic-ecological framework, while building as far as possible on existing knowledge, proposals should cover all of the following aspects:

- assess the causalities between biodiversity and ecosystem functions and services;
- assess the impacts of direct, indirect and emerging drivers of change, separately and in combination and interaction, on status and trends of biodiversity and ecosystem function (at all relevant scales), resilience and service provision;
- provide forecasting methodologies to predict future variation in drivers of change, their expected impact on biodiversity and the ensuing consequences of ecosystem service delivery;
- develop and refine sound and cost-effective indicators on biodiversity, ecosystem function/resilience and ecosystem service which capture all the relevant ecological and socio-economic dimensions and are widely applicable;
- develop innovative ecosystem service oriented management concepts (including participatory initiatives), common frameworks and tools for the conservation and sustainable management of biodiversity and ecosystem services.

The Commission considers that proposals requesting a contribution from the EU of between EUR 5 and 10 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected impact: In the mid-term, enhanced predictive capacity concerning causalities between biodiversity and ecosystem function/service provision on the one hand and the drivers of change and biodiversity/ecosystem services on the other is expected. In the short to long term, this action should lead to more cost-effective environmental monitoring and enhanced evidence- and science-based policy, management and business

models within a sustainable environmental and socio- economic context, enhanced citizen awareness and participation; as well as contribute to the achievement of EU and international biodiversity targets (EU 2020 Biodiversity Strategy⁵⁶, Convention on Biological Diversity, Rio+20) and link in with international efforts and fora on biodiversity and ecosystem services.

Type of action: Research and innovation actions

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

SC5-7-2015: More effective ecosystem restoration in the EU

Specific Challenge: Ecosystem restoration is frequently an expensive and almost always a lengthy process but it is capable of delivering extensive benefits in a cost-effective manner while also conserving and enhancing Europe's natural capital. The restoration sector has accumulated a lot of expertise but knowledge, technologies and capacity will need to grow rapidly (and be shared) if the full potential offered by restoration is to be achieved.

Scope: Proposals should develop for conceptually coherent ecosystem types tools, approaches, methodologies and methods to assess and predict the effectiveness relative to their stated objectives – including both cost-effectiveness and benefits in relation to biodiversity and ecosystem services – of environmental restoration measures. They should engage the whole restoration community (business, academia, including social sciences and humanities, public administrations and civil society) in a major initiative to exchange experiences, identify strengths, weaknesses and best practices, encourage new techniques and technologies, and share information, knowledge and know-how in order to promote effective and sustainable restoration activities across the EU.

Proposals should use pilot projects or case studies, including a demonstration phase.

The Commission considers that proposals requesting a contribution from the EU of between EUR 5 and 7 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected impact: In the mid-term, improved design of restoration/rehabilitation measures and incentives; more effective integration of the 'restoration agenda' into the delivery of major policy objectives related to growth, job creation, urban and rural development, resilience to climate change, conservation and enhancement of natural capital; innovative policy mechanisms that can facilitate restoration; contribution to advances in green infrastructure; contribution to the objectives of the EU 2020 Biodiversity Strategy⁵⁷ and the EU Water Framework Directive; better assessment of potential benefits of establishing restoration site networks allowing for long-term observations and sharing of experiences for different types of ecosystems and pressures.

Type of action: Research and innovation actions

⁵⁶ COM(2011) 244 final

⁵⁷ COM(2011) 244 final

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

SC5-8-2014: Preparing and promoting innovation procurement for soil decontamination⁵⁸

Specific Challenge: Soil contamination is typically caused by industrial activity, mining and smelting practices, agricultural chemicals or improper disposal of waste and is increasingly becoming a very serious environmental and health problem. Member States are making efforts to establish national decontamination/remediation strategies which are generally very costly. It is therefore crucial for public authorities to be able to identify the most fit-for-purpose and cost-effective solutions.

Scope: Proposals should establish and promote a network of public procurers in the area of soil decontamination/remediation, with a focus on sustainable methods which in particular avoid 'dig and dump', in order to raise awareness, share knowledge, debate common procurement needs and draw up common specifications, taking into account longer-term public sector requirements and socio-economic aspects, with the aim of investigating the feasibility of launching joint pre-commercial procurement (PCP) to find common innovative solutions in the field.

Expected impact: In the mid-term, leverage of additional investment in research, development and innovation in the area of soil decontamination and provision of innovative solutions to address associated challenges. In the medium/long term, promotion of innovation in the sector from the demand side at reduced costs. Over the medium/long term, creation of new markets in the area of soil decontamination/remediation. Increased competitiveness of SMEs and industrial partners in this area.

Type of action: Coordination and support actions

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

SC5-9-2014: Consolidating the European Research Area on biodiversity and ecosystem services

Specific challenge: Biodiversity is our life insurance providing us with various (ecosystem) services and its deterioration and loss jeopardises the provision of these services. The challenge is to advance towards completing the European Research Area in this field and to develop further the common vision and activities currently undertaken by Member States, enhancing coordination and thereby the overall impact of research and innovation in this domain. Ultimately, a unified and open biodiversity research area that promotes free circulation of scientific knowledge and technology and strengthens competitiveness needs to be created.

⁵⁸ This activity directly aimed at supporting the development and implementation of evidence base for R&I policies and supporting various groups of stakeholders is excluded from the delegation to EASME and will be implemented by the Commission services.

Scope: Proposals should pool the necessary financial resources from the participating national (or regional) research programmes with a view to implementing a joint call for proposals resulting in grants to third parties with EU co-funding in this area, based on a joint vision and a common strategic research agenda for biodiversity and ecosystem services, involving also social sciences and humanities as appropriate. The joint call should be implemented in cooperation with non-EU countries where relevant, and by developing links with appropriate research infrastructures. In line with the EU's strategy for international cooperation in research and innovation⁵⁹ international cooperation with international partners is encouraged. Proposers should also consider implementing other joint activities, including the establishment of a pan-European network of funding agencies and other key players in Europe, building on previous experience and avoiding overlaps with other initiatives, support to mutual learning and training, exchange of good practice, researcher mobility and equal opportunities (e.g. through EURAXESS) and better careers in the field as well as additional joint calls without EU co-funding.

Expected impact: Effective trans-national, pan-European research networking and synergies among national/regional and EU research programmes in the area of biodiversity and ecosystem services to promote sustainable development. New knowledge-intensive products and services. Improved evidence-based policy through interdisciplinary and trans-disciplinary science-policy interface and link in with international efforts and fora on biodiversity and ecosystem services.

Type of action: ERA-NET Cofund

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

SC5-10-2014/2015: Coordinating and supporting research and innovation for the management of natural resources⁶⁰

Specific Challenge: The pace of current developments and uncertainties surrounding likely future trends in ecosystems and their services requires further steps to maintain and strengthen the evidence base to ensure that policy makers, businesses and citizens in the EU and Associated Countries can continue to draw on a sound understanding of the state of natural resources and the wider environment, the possible impact of response options and their consequences in social, economic and environmental terms.

Better coordination of often fragmented research and innovation actions within Europe and beyond is needed, accompanied by timely and open exchange of information and research results to enhance the impact of research and ensure a more efficient use of resources and scientific developments.

Innovative ways are required to mobilise all relevant actors, increase policy coherence, resolve trade-offs, manage conflicting interests, increase participation of citizens in decision-making and improve public awareness and business uptake of research results.

⁵⁹ COM(2012)497

⁶⁰ All the activities under this topic, directly aimed at supporting the development and implementation of evidence base for R&I policies and supporting various groups of stakeholders, are excluded from the delegation to EASME and will be implemented by the Commission services.

Scope: Creation of European networks to facilitate dialogue among the relevant scientific communities, funding bodies and user communities in Europe throughout the duration of Horizon 2020. Proposals should cover activities such as clustering, coordinating and creating synergies between international, European and nationally funded research and innovation actions, developing joint programmes and projects, creating links with related international programmes, forward looking analysis to establish emerging needs, communication and dissemination activities for an improved science-policy interface, and aligning research with decision-making requirements. This requires cross-disciplinary interaction and an integrated, systemic approach, especially between socio-economic and environmental sciences.

Proposals shall address only one of the following issues:

a) [2014] Enhancing mapping ecosystems and their services: developing a flexible methodology that permits consistent aggregation and comparison across scales for coordination of a transparent, comparable and evidence-based mapping and assessment of ecosystems and their services, including multiple ones, across the entire EU (including the outermost regions) and at national and regional level in order to guide policy- and decision-making. It should also analyse their interdependency, inter-linkages, synergies and potential trade-offs and value their multi-functionality for human well-being, building on the outcomes of the Millennium Ecosystem Assessment (MA) work and the Economics of Ecosystems and Biodiversity (TEEB) studies.

b) [2014] Structuring research on soil, land-use and land management in Europe: a network of funding agencies and other key players in Europe (and possibly beyond) to scope national funded research activities, develop a joint vision and design a strategic research agenda (SRA) for activities on soil, land-use and land management that should be implemented through future joint calls. Examples of relevant issues are: land-use change impacts and trends, including the ones related to bioenergy/bioeconomy resources, spatial planning, soil threats, sustainable use of the soil-sediment-water system, impacts at global level and effects on trading partners, integrating socio-economic research and identifying elements linking to relevant policy domains and multilateral environmental agreements.

c) [2015] An EU support mechanism for evidence-based policy on biodiversity & ecosystems services: setting up an innovative, self-sustainable governance mechanism with a long-term perspective extending beyond the life of the project to enhance effective and efficient interactions between science, society and policy related to biodiversity and ecosystems services in the EU. This should build on existing science-policy interfaces and include all EU Member States, Associated or Accession Countries and should be open to observers.

Expected impact: Evidence-based policy and appropriate, cost-effective management, planning and adaptation decisions by the public sector, businesses, industry and society through the provision and effective communication of trustworthy and timely science-based information. Enhanced impact of research and innovation activities through better identification of R&I priorities, improved coordination of EU and Member State/Associated Country research and innovation programmes and funded activities, and synergies with international research and innovation programmes.

In addition, the following specific impacts are expected:

- a) In the short term (1-3 years), an enhanced capacity and more consistent approach of Member States, through leveraging and complementing their actions, to carry out their obligations in line with the EU 2020 Biodiversity Strategy and national requirements.
- b) In the short-term establish a jointly agreed vision and SRA and a network of funding agencies determined to implement it through a joint call in a follow-up phase. Enhance synergies and collaboration between national research programmes in the domain. Medium to long-term, improved evidence-based policy making in domains such as agriculture, environment, climate action, spatial planning, energy transition, drinking water production, resource efficiency and cohesion, and for implementing the Rio+20 pledge to achieve a 'land-degradation neutral' world.
- c) Swift response to scientific and technical needs resulting from EU research and innovation and environmental policies in the short term (1-3 years) and further improvements in the medium term (3-10 years). Long-term positive impact on policy- and decision-making to address local, regional, cross-border or pan-European challenges through the provision of knowledge assessments, advice and science-based options and link in with international efforts and fora on biodiversity and ecosystem services.

Type of action: Coordination and support actions

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

ENSURING THE SUSTAINABLE SUPPLY OF NON-ENERGY AND NON-AGRICULTURAL RAW MATERIALS

SC5-11-2014/2015: New solutions for sustainable production of raw materials

Specific challenge: The EU is highly dependent on imports of raw materials that are crucial for a strong European industrial base, an essential building block of the EU's growth and competitiveness. However, Europe is confronted with a number of challenges along the entire raw materials value chain, starting with exploration, to secure a sustainable access to raw materials, including Critical Raw Materials (CRM).

The major challenges are the geological uncertainty, technological and economic feasibility of mine development, and high and growing costs for exploration. In Europe, additional challenges include difficult operation in densely populated areas (access to land) and the fact that the majority of new deposits in Europe will be found at greater depths or in extreme environments such as the Arctic and the oceans.

Europe is also facing the fact that it has been actively mined over many centuries so easy-to-access mineral deposits are mostly exhausted, and exploration activity in the past decades was too low to enable the identification of a sufficient amount of new resources. The major opportunities to access the fresh raw materials within the EU are in greater depths or in smaller deposits where larger mining operations may not be feasible.

In the processing step, the available primary and secondary raw materials feeds are becoming more complex and low grade, and they may also vary in composition over time and contain different size of particles from coarse to very fine grains. Efficient processing requires a series of complex and integrated solutions leading to high

investment installations, that will only be economically viable when operating at certain size (economy of scale) and for a predictably-sufficient long time taking into consideration volatility of metal prices. The production process also faces challenges related to water and sediment pollution, atmospheric dispersion, transport and deposition of toxic particles, noise, transport of ores etc.

This specific challenge is identified in the Priority Area 'Technologies for primary and secondary raw materials' production of the European Innovation Partnership (EIP) on Raw Materials.

Scope: Proposals shall address only one of the following issues. All proposals should facilitate the market uptake of solutions developed through industrially-driven multidisciplinary consortia.

The Commission considers that proposals requesting a contribution from the EU of between EUR 2 and 8 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts. Related environmental and safety risks should be assessed for all proposed actions.

Proposals should develop solutions, proving concept and feasibility at the level of Technology Readiness Levels (TRL) 4-6; please see part G of the General Annex.

a) [2014] Mining of small and complex deposits and alternative mining

Proposals should develop new sustainable concepts and technological solutions, including alternative approaches, for mining of small, complex or difficult to access mineral deposits, including mining wastes and abandoned mining sites, particularly addressing the challenges of accessibility, industrial viability and environmental impacts. Proposals should include the participation of SMEs, as far as possible.

b) [2014] Flexible processing technologies

Proposals should develop new integrated sustainable processing concepts and systems with higher technical, economic, energy, health, safety and environmental performance and flexibility, versatility, and where appropriate mobility and modularity, for processing and refining of different raw materials from low grade and/or complex feeds with changing composition and logistically distributed material sources along all processing steps to refining. Proposals should focus on processing and refining of feeds containing ores, industrial and construction minerals, and wood-based fibres, if justified also with secondary materials feeds.

c) [2015] Deep mining on continent and/or in sea-bed

Proposals should develop new highly-automated technological sustainable solutions for deep mining on the continent and/or in the sea bed combined with *in-situ* processing of minerals, particularly addressing the challenge of industrial viability, the exposure of workers underground and the impact on the continental and marine environment and reducing the amount of waste rock to be transported. Related raw materials, marine and maritime policies are to be taken into account.

d) [2015] New sustainable exploration technologies and geomodels

Proposals shall address one or both of the following issues:

- develop new or improved highly efficient and cost-effective, sustainable exploration technologies, such as new drilling techniques, integrated drilling and analytical technologies, down-hole and cross-hole sensing, 3D and 4D geochemical and geophysical (seismic, gravimetric, magnetic, electrical and electromagnetic), automation, robotics, and other relevant tools;
- develop new geo-models of mineral deposits or belts formation, interpreting in a useful form the data and information obtained from integrated geological, geophysical, geochemical and other methods, with the aim of increasing knowledge on mineral deposit/belt types and decreasing exploration costs (such as the number of expensive deep drills needed).

e) [2015] New metallurgical systems

Proposals should develop a design and elements of an integrated sustainable metallurgical system (such as pyro-, hydro-, bio-, electro-chemistry) for metals processing and/or refining, maximising metal recovery yield and minimising energy consumption and/or the environmental footprint, while ensuring the economic viability of the entire process. Upstream (pre-processing) and down-stream (treatment/use of metallurgical wastes such as slags, dusts, effluents) interfaces should also be considered.

Expected impact: In the longer term pushing the EU to the forefront in the areas of sustainable exploration, mining and processing technologies and solutions. Improved competitiveness and creation of added value and new jobs in materials producing and downstream industries. Unlocking a substantial volume of various raw materials within the EU. In the short to medium term enabling the better efficiency of exploitation of raw materials' resources and increasing the range and yields of recovered raw materials. Reduced exploration costs for the industry through new cost-effective exploration technologies. Improved competitiveness and creation of numerous new jobs in mining and equipment manufacturing industries. Improved economic viability and investment security of mining operations. Increased process efficiency (including water and energy consumption) and reduced environmental footprint. Contribution to achieving the objectives of the EIP on Raw Materials.

Type of action: Research and innovation actions

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

SC5-12-2014/2015: Innovative and sustainable solutions leading to substitution of raw materials

Specific challenge: High-tech products, including electric and electronic equipment, green energy technologies or extreme applications, contain substantial amounts of certain Critical Raw Materials (CRM). Although the amount of CRM per product in general is very low, the huge number of products manufactured makes the total amounts very impressive. The prices and availability of CRM varies in time. There is therefore a need to find alternative solutions to replace certain CRM in concrete applications, or to diversify the supply of raw materials sources. Substitution of CRMs can also increase the recyclability of waste products, allowing for more efficient processes and reduce environmental impacts.

This specific challenge is identified in the Priority Area 'Substitution of raw materials' of the European Innovation Partnership (EIP) on Raw Materials.

Scope: Proposals should develop solutions proving concept and feasibility at the level of TRL 3-5; please see part G of the General Annexes.

Related environmental and safety risks should be assessed for all proposed actions.

The Commission considers that proposals requesting a contribution from the EU of between EUR 2 to 5 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Proposals shall address only one of the following issues:

a) [2014] Materials for electronic devices: development of innovative and sustainable solutions for the appropriate substitution of critical and scarce raw materials in electronic devices, including substitution of indium in transparent conductive layers and substitution of CRMs in light sources, targeting appropriately materials and applications that are difficult to recycle and where there are limited prospects to increase primary supply within the EU. Proposals should actively involve end users from a variety of concerned sectors such as touch screen, flexible electronics, solar energy, lighting and the built environment (smart windows). Synergies with existing relevant initiatives should be ensured, in particular, with the Future & Emerging Technologies (FET) Flagship on graphene and the possible Photonics Public Private Partnership.

b) [2015] Materials under extreme conditions: development of innovative and sustainable solutions for the appropriate substitution of critical and scarce raw materials in applications under extreme conditions, such as substitution of CRM in heat resistant super alloys, in hard materials, critical alloying elements in bulk metals or in corrosion resistant materials, targeting appropriately materials and applications that are difficult to recycle and where there are limited prospects to increase primary supply within the EU. Proposals should actively involve end users from a variety of concerned sectors, such as energy, transport, tooling or the process industry, and ensure synergies with existing relevant initiatives.

Expected impact: In the longer term pushing the EU to the forefront in the area of sustainable raw materials substitution. Improved competitiveness and creation of new jobs in materials producing and downstream industries, demonstrated by a return-on-investment study. Significant contribution to reduced dependency on CRMs in the medium term. Contribution to the large scale adoption of the new cost-effective technology in the EU, measured by quantitative and qualitative indicators. Availability of new materials with improved performance under extreme conditions and for electronic devices. Contribution to achieving the objectives of the EIP on Raw Materials.

Type of action: Research and innovation actions

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

SC5-13-2014/2015: Coordinating and supporting raw materials research and innovation

Specific Challenge: The appropriate and sustainable supply of raw materials requires framework conditions which relate to mineral policies, permitting procedure and data reporting system, raw materials knowledge infrastructure, research and innovation coordination, and international cooperation. Mineral policies are sometimes not clear, too dispersed in their implementation or insufficiently linked to other related policies (e.g. land-use planning and management) to be fully effective. A common understanding of which mineral deposits are of public importance is lacking. Permitting procedures can be lengthy and sometimes conflict with other public authorities' requirements. Knowledge of raw materials reserves and resources is dispersed, terminology is often heterogeneous and reporting standards vary throughout the Member States. There is no raw materials knowledge infrastructure at EU level.

Research and development in the area of raw materials is scattered between different players. Further coordination is required between industrial players, researchers in the EU and across the whole value chain and EU and Member State funding authorities. There is a need to better exploit synergies in R&D with the best world players in raw materials technology and scientific developments, as well as to learn from the experience of raw materials-producing countries.

These specific challenges are identified in the Strategic Implementation Plan of the European Innovation Partnership (EIP) on Raw Materials.

Scope: The Commission considers that proposals requesting a contribution from the EU of between EUR 1 to 2 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts. Proposals shall address only one of the following issues:

a) [2014] Mineral deposits of public importance: developing a concept and methodology for defining and protecting the mineral deposits of public importance with an adequate regulatory (including permitting) or guidance framework similar to NATURA 2000 in order to ensure the best use of the mineral deposits of public importance in the future. It should develop an appropriate mapping framework with the detailed definition and qualifying conditions of the concept of mineral deposits of public importance, covering all minerals with stress on the occurrence of critical minerals and defining deposits of local, regional, national or EU interest and importance and their safeguarding. It should also examine how to incorporate the concept into the national and regional minerals policies as well as in land use planning policies of different scales through different policy scenarios and their impacts, and test the methodology on several areas and scales for ensuring robustness at all scales (local, regional, national and EU) and transferability across Member States. The proposal shall engage all relevant actors across the EU from local, regional, national to EU levels, including civil society, relevant representatives of public administration and experts on mineral deposits, land use and development planning, mining and related legislation (particularly permitting), and the relevant industries.

b) [2014] Strategic international dialogues and cooperation on raw materials with technologically advanced countries: in line with the EU's strategy for international cooperation in research and innovation⁶¹ proposals will contribute to promoting the cooperation with technologically advanced countries to facilitate discussion in multilateral fora (such as OECD, UNEP, G20, G8) and strategic international dialogues and cooperation with technologically advanced countries (such as Australia, Canada, Japan, South Africa, US and others⁶²). Mapping and addressing the cooperation opportunities in terms of the synergies in research and innovation, joint educational and skills programmes, raw materials trade aspects, and exchange of best practices in exploration, extraction, processing and recycling of raw materials essential for industry, and in management and substitution of Critical Raw Materials.

c) [2015] Innovation friendly minerals policy framework: developing a comprehensive guide to relevant EU and Member States' legislation and mineral policy, including a benchmark analysis of existing national minerals policies and the exchange of best practices in the area of mineral policies and related regulations among Member States. It should focus on the elements catalysing introduction of innovative raw materials production in the EU, such as promoting innovative mining, processing and recycling solutions or streamlining the permitting procedure along the whole chain of mining activities. It should also be based on information on exploration, mineral production, trade, reserves and resources that should be standardised and systematically reported on by EU and Member States. It should also explore the feasibility of implementing existing rules or developing alternative ones for the exploitation of sub-surface and deep sea resources across Member State borders taking into account UNCLOS when the sea resources are considered.

For sub-topic c, the Commission considers that proposals requesting a contribution from the EU of up to EUR 2 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

d) [2015] Raw materials research and innovation coordination: improving both research and innovation collaboration among all the relevant European Technology Platforms and other industrial and research initiatives, improving coordination with the relevant EU, Member States and regional policies and initiatives in the area of raw materials, engaging all the relevant players, particularly civil society and authorities at regional and local level, across the whole EU. The action should develop a common long term 2050 vision and roadmap for the relevant raw materials, including metals, industrial minerals and aggregates, wood and natural rubber-based materials.

For sub-topic d, the Commission considers that proposals requesting a contribution from the EU of up to EUR 1 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

e) [2015] Raw materials intelligence capacity: developing a methodology for reviewing and selecting all relevant methods and tools necessary for providing high quality expertise for different stakeholders, including advisors and decision makers at

⁶¹ COM(2012)497

⁶² http://ec.europa.eu/enterprise/policies/raw-materials/international-aspects/index_en.htm#h2-1

EU, Member State and industry level as well as the expert community and general public, taking into account methods and tools such as: statistics, life cycle assessment, materials flows analysis, 2-4D modelling, forecasting global supply and demand, and other trends. When appropriate, mentoring, dissemination of best practices, analysis on related policy, regulations, trade and other relevant issues, involving the international community, should be incorporated. In line with the EU's strategy for international cooperation in research and innovation⁶³ international cooperation is encouraged.

For sub-topic e, the Commission considers that proposals requesting a contribution from the EU of up to EUR 2 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

f) [2015] Strategic international dialogues and cooperation with raw materials producing countries and industry: aiming to promote the activity of European companies active in the mining and raw materials sectors in non-EU countries, inward mining investment to the EU and cooperation with raw materials producing countries, including exchange of best practices in raw materials policy, stakeholder dialogues, and social licence to operate, resulting in strong and sustainable relationships with these countries. In line with the EU's strategy for international cooperation in research and innovation⁶⁴ international cooperation with international partners is encouraged, in particular with Australia, US, Canada, European Neighbourhood Policy countries, African Union and Latin American countries.

For sub-topic f, the Commission considers that proposals requesting a contribution from the EU of up to EUR 1.5 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected impact: In the medium to longer term enhanced impact of research and innovation activities through better identification of R&I priorities, improved co-ordination of EU and Member States' research and innovation programmes and funded activities, and synergies with international research and innovation programmes. Greater EU influence in multilateral processes and better support to implementation of international commitments. Contribution to evidence-based policy and appropriate, cost-effective management, planning and adaptation decisions by the public sector, businesses, industry and society addressing global challenges in the EU and beyond through the provision and effective communication of trustworthy science-based information. Establishing and maintaining strong and sustainable relationships with the countries concerned. Improved conditions for sustainable access and supply of raw materials in the EU. Facilitated decision-making at EU, national, regional and local levels and in the minerals industry. Safeguarding of mineral wealth for future generations by defining mineral deposits of public importance. Stable and competitive supply of raw materials from EU sources. Promotion of good governance and facilitation of public acceptance in the EU. Increased competitiveness of the EU industry and minerals supply from EU sources. Increased transparency of EU raw materials policies and legislation. Increased EU raw materials knowledge for different stakeholders, increased transparency

⁶³ COM(2012)497

⁶⁴ COM(2012)497

of EU raw materials information through completion of an inventory of raw materials. Better understanding of longer term raw materials research and innovation needs and initiatives by the wider society in the EU. Facilitated translation of the industrial needs into governmental planning, policy and decision making and vice versa resulting in an improved environment for the industry in the EU. Contribution to achieving the objectives of the EIP on Raw Materials.

Type of action: Coordination and support actions

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

ENABLING THE TRANSITION TOWARDS A GREEN ECONOMY AND SOCIETY THROUGH ECO-INNOVATION

SC5-14-2014: Consolidating global knowledge on the green economy in support of sustainable development objectives in the EU and internationally⁶⁵

Specific challenge: Global challenges in the areas of climate change, environment, resource efficiency and raw materials require global solutions. Research and innovation can make an important contribution to the EU's involvement in multilateral processes and implementation of international commitments in these areas. Following Rio+20 there is a need to support the emerging sustainability framework post-2015, and reconcile it with the green economy agenda, also with the involvement of civil society. At the same time, the challenge is to harness the opportunities provided by existing, new and emerging markets to increase the EU's global competitiveness.

Innovative ways are required to mobilise all relevant global actors, exchange best practices, resolve trade-offs, manage conflicting interests, addressing in-context specificities, including cultural aspects, increase participation of citizens in decision-making and improve both public awareness and business uptake of research results beyond the borders of the EU.

Scope: Creation of networks to facilitate dialogue among the relevant scientific communities in the EU and beyond throughout the duration of Horizon 2020. Proposals should cover activities such as clustering, coordinating and creating links and synergies between international and European research and innovation programmes and other initiatives in the area of climate action, environment, resource efficiency and raw materials, and communication and dissemination activities for an improved science-policy interface in response to decision-making requirements. Network activities between stakeholders should contribute to consolidating European experience and research findings that are relevant to the green economy, including on systemic eco-innovation. This requires cross-disciplinary interaction and an integrated, systemic approach, especially between socio-economic and environmental sciences to support European initiatives for a green economy, in which global aspects are taken into due consideration.

⁶⁵ This activity directly aimed at supporting the development and implementation of evidence base for R&I policies and supporting various groups of stakeholders is excluded from the delegation to EASME and will be implemented by the Commission services.

In line with the EU's strategy for international cooperation in research and innovation⁶⁶ proposals should contribute to establish effective links to relevant international networks and initiatives, particularly those supporting the Rio+20 follow up and the green economy agenda at international level. Examples of areas of activity include: sustainable consumption and production, greening global value chains, green growth and jobs, green behaviour, climate resilience, economic and environmental policies etc. Proposals should be geared towards supporting the development and implementation of sustainable development goals.

Proposals should include a sufficient number of international partners from the target region(s) to ensure adequate scale and scope of cooperation.

Expected impact: Enhanced impact of EU research and innovation activities through evident synergies with relevant international research and innovation programmes and other initiatives. Greater EU influence in multilateral processes and better support to implementation of international commitments. Significant contribution to evidence-based policy and appropriate, cost-effective management, planning and adaptation decisions by the public sector, businesses, industry and society addressing global challenges in the EU and beyond through the provision and effective communication of trustworthy science-based information. Increased coordination between different actors and stakeholders to minimise the risk of overlaps and duplication of efforts. Strengthened synergies on green economy and sustainability issues and increased awareness of both technologically and socially eco-innovative solutions. Demonstrated improved science-based evidence in support of sustainability decision making at national, regional and global level and for the implementation of sustainable development goals. Demonstrated increased multi-stakeholder participation as well as general public and private sector engagement in support of the transition to a green economy.

Type of action: Coordination and support actions

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

DEVELOPING COMPREHENSIVE AND SUSTAINED GLOBAL ENVIRONMENTAL OBSERVATION AND INFORMATION SYSTEMS

SC5-15-2015: Strengthening the European Research Area in the domain of Earth Observation

Specific challenge: Decision makers require access to the information they need, when they need it, and in a format they can use. Bringing together and strengthening European national and regional research and innovation programmes in the domain of Earth Observation can contribute to this.

Many European countries and pan-European organisations are conducting research and innovation programmes on Earth Observation but these activities remain quite fragmented. They need to be better integrated at institutional level to reach the critical

⁶⁶ COM(2012)497

mass that would enable the EU to be better positioned with regard to its main competitors.

Scope: Proposals should pool the necessary resources from national (or regional) research programmes with a view to implementing a joint transnational call for proposals with EU co-funding on observing and monitoring changes affecting the Earth's atmosphere, oceans, cryosphere and landscapes, with human activities being a major driver of these changes in the domain of climate, environment and resource efficiency.

The joint call should address the issue of the coherence of European participation within the Group on Global Earth Observation (GEO) and should also provide a research and innovation component to the Copernicus programme. International European interest organisations⁶⁷ conducting research activities in the domain of Earth Observation, such as the European Space Agency, may participate in this ERA-NET.

The action is targeted at publically-funded research performing and business innovation support organisations. Their participation must be mandated by the national/regional authorities in charge (normally the responsible Ministry). The co-funded call for proposals must be based on in-kind contributions from their institutional funding and the beneficiaries will carry out the transnational projects resulting from their call for proposals fully or partially themselves. Exceptional cash contribution could be provided through this ERA-NET by international European interest organisations, resulting in grants to third parties and allowing a broader participation of researchers.

Expected Impact: In the short-term, reinforced European leadership within GEO post-2015. In the medium-term, effective coordination mechanism and integration of major European research and innovation Earth Observation programme as a contribution to Global Earth Observation System of Systems (GEOSS) and Copernicus. In the medium-term, significant improvement of shared Earth Observation architectural components and related information infrastructure, improved, open and unrestricted data sharing across borders and disciplines, and interoperability amongst observational, modelling, data assimilation and prediction systems to maximise value and benefits of Earth observation investments. Significant use of the GEO resources in decision making in the domains of climate, environment, resource efficiency and natural hazards.

Type of action: ERA-NET Cofund

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

SC5-16-2014: Making Earth Observation and Monitoring Data usable for ecosystem modelling and services

Specific challenge: Maximum benefit should be made of the investments made in Earth Observation data and information when developing terrestrial and marine ecosystem models and sustainable ecosystem services, in order to deliver major benefits to citizens, businesses and governments. To achieve this, there is a need to develop innovative

⁶⁷ as defined in Article 2 of the Horizon 2020 rules for participation and dissemination (Regulation 1290/2013 of 11 December 2013)

solutions that will provide open and unrestricted access to interoperable ecosystem Earth Observation data and information. This demanding task is rendered more difficult by the still fragmented and limited ability to collect, store, integrate, analyse and share the required Earth Observations. Overcoming this challenge will contribute to assessing the status of our planet's biodiversity and developing sustainable ecosystem services and natural capital.

Scope: Proposals should focus on recovering existing data, supporting new measurements and observations, synthesis and interpretation of data for making all information and knowledge available to scientists, policy makers, citizens and other concerned stakeholders to provide a full picture of the state and temporal evolution of ecosystems in existing internationally recognised protected areas. The scope of the action should include enhancing participation of all players in social and political decisions regarding the protection and management of key ecosystems and the definition of future protected areas. They should undertake pilot actions in selected protected areas to further develop the Global Earth Observation System of Systems (GEOSS) and foster a knowledge base regarding ecosystem observations for the Copernicus (Global Monitoring for Environment and Security) initiative.

Proposals should, as far as possible, include the participation of pan European organisations with a remit in the domain of Earth Observation in order to facilitate access to the necessary data for projects. Proposals should include coordination to avoid duplication with the ESA Climate Change Initiative, as well as measures to find synergies.

The Commission considers that proposals requesting a contribution from the EU of between EUR 8 and 15 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected Impact: In the short-term, strong European support and leadership within the GEO Ecosystem tasks. Documented monitoring methodology to define ecological status of future protected areas. Significant contribution to the research requirement for the Copernicus operational services. By the end of the project: new prototype products and ecosystem services, based on improved access to (notably via GEOSS) and long-term storage of ecosystem Earth Observation data and information in existing protected areas, tested, evidence-based environmental policy making and administrative efficiency, and contribution to transparency in public administration and the provision of better public services concerning natural resources management. Improved evidence-based environmental policy making and political decisions.

Type of action: Research and innovation actions

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

SC5-17-2015: Demonstrating the concept of 'Citizen Observatories'

Specific challenge: New *in-situ* observatories ('Citizen Observatories') based on citizens' own devices (e.g. smart phones, tablets, laptops, and other social media) used together with innovative technologies can strengthen environmental monitoring capabilities, have the potential to generate new and original applications to reduce investment and running costs of in-situ observations and monitoring applications and solutions, and involve novel partnerships between the private sector, public bodies, NGOs and citizens. However, achieving this depends on further development and testing in real conditions, wider deployment and commercialisation by the private sector and greater user acceptance. This requires leveraging emerging technologies, data and information sharing, developing services and actively engaging in governance at all levels and scales in the domain of environment. It also calls for innovative approaches and tools to handle complexity, interactions and interfaces and to facilitate knowledge transfer, assessment, valuation, uptake and exploitation of data and results for policy, industry and society at large.

Scope: Proposals should scale up, demonstrate, deploy, test in its entirety and validate in real-life conditions the system proposed for Citizen Observatories and the effective transfer of environmental knowledge for policy, industrial, research and societal use, with a focus on the domain of land cover/land use, both in rural and urban areas. Proposals should include a strong involvement of citizens and citizens' associations together with the industrial sector, in particular SMEs, as far as possible. The data collected should complement those from existing systems (e.g. the Copernicus Land Service) and surveys, including national surveys.

The Commission considers that proposals requesting a contribution from the EU of between EUR 3 and 5 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected Impact: Lowered cost and extension of the *in-situ* component of the GEOSS and Copernicus initiatives. Better decision-making through the empowerment and active role of citizens and citizen's associations in environmental monitoring, co-operative planning and environmental stewardship, with special impact on land resources management. Enhanced implementation of governance and global policy objectives. Increased deployment and market uptake of innovative *in-situ* monitoring techniques. Increased European role in the business of *in-situ* monitoring of the environment.

Type of action: Innovation actions

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

SC5-18-2014/2015: Coordinating and supporting Earth Observation research and innovation in the EU, and in the North African, Middle East, and Balkan region

Specific Challenge: The specific challenge is to strengthen the Earth Observation networks (space-based, airborne, and particularly in-situ) of the broad European and North African, Middle East, and Balkan region to reinforce its contribution to the knowledge base for climate, natural resources, and raw materials.

The EU's contribution to the monitoring of our planet by land, sea, air and space-based Earth Observation systems remains too fragmented. In addition, geopolitical and economic events in recent years in the EU's southern and south-eastern neighbourhood regions have had adverse effects on infrastructures and services as well as on its already quite modest Earth Observation capacities. An improvement is therefore urgently needed to enable effective, sustainable planning and management of measures to cope with regional and global challenges such as food security, climate change and access to raw materials and energy.

Scope: Proposals should focus on Earth Observation related research activities with the aim of continuously providing timely and accurate information, forecasts and projections. In line with the EU's strategy for international cooperation in research and innovation⁶⁸ proposals should contribute to implementing the Global Earth Observation System of Systems (GEOSS) and Copernicus.

Proposals shall address only one of the following issues:

a) [2014] Coordinating European Observation Networks to reinforce the knowledge base for climate, natural resources and raw materials⁶⁹: bringing together Earth Observation-related research and innovation networks and activities (space-based, airborne and particularly *in-situ*) within the EU to provide coherent, continuous, timely and accurate information, forecasts and projections in support of GEOSS and Copernicus. It should also identify critical gaps in, *inter alia*, observation specifications and parameters, geographical areas, and observation and information accessibility, and then establish practical methods and set priorities for addressing these gaps.

b) [2015] Integrating North African, Middle East and Balkan Earth Observation capacities in GEOSS: integrating, coordinating and supporting initiatives in these countries to deliver Earth Observation information services that will benefit critical economic and social sectors such as tourism, agriculture, transportation, health, research and education, while involving service providers in those sectors. Regional observational systems that are needed to complete GEOSS are of particular importance. In line with the EU's strategy for international cooperation in research and innovation⁷⁰ international cooperation is encouraged, ensuring a sufficient number of international partners from the target region to ensure adequate scale and scope of cooperation.

Expected impact:

a) Improved assessment and prediction of future changes through continuous provision of timely and accurate information, forecasts and projections. Coherent European monitoring and observation of the Earth Systems. Improved planning for future Earth Observation and information systems. Upgraded and expanded Earth observations capacity by harnessing national and regional investments in scientific and technological advances and innovative approaches. Preparation of further integration of research and innovation programmes in the domain of Earth Observation in the EU.

⁶⁸ COM(2012)497

⁶⁹ This activity directly aimed at supporting the development and implementation of evidence base for R&I policies and supporting various groups of stakeholders is excluded from the delegation to EASME and will be implemented by the Commission services.

⁷⁰ COM(2012)497

b) Improved food security, access to raw materials and energy, and adaptation to climate change in the North-African, Middle-East, and Balkan regions due to improved Earth Observation data and information services. Rapid re-installation of the required infrastructures by the relevant public services and decision makers. Future investments in this region, leading to sustainable development of resources and activities. Strengthened competitiveness and performance of critical economic and social sectors such as tourism, agriculture, transportation, health, research, and education.

Type of action: Coordination and support actions

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

CROSS-CHALLENGE TOPICS

SC5-19-2014/2015: Coordinating and supporting research and innovation in the area of climate action, environment, resource efficiency and raw materials

Specific challenge: Better transnational cooperation and coordination of research and innovation policies, programmes and initiatives in the area of climate action, environment, resource efficiency and raw materials within the EU is needed to enhance the impact of research and innovation and ensure a more efficient use of resources and R&I developments.

Trans-national cooperation between National Contact Points (NCPs) within this Societal Challenge should be facilitated with a view to identifying and sharing good practices and raising the general standard of support to programme applicants, taking into account the diversity of actors that make up the constituency of this Societal Challenge.

Innovative ways are required to link up all relevant actors, increase policy coherence and improve public awareness of EU research and innovation.

Scope: Enhancing European networks to facilitate dialogue among the relevant scientific communities, funding bodies and user communities in the EU throughout the duration of Horizon 2020. Proposals should enhance coordination and synergies, and avoid overlaps, between European and nationally or regionally funded research and innovation actions, and create links with related international programmes, as appropriate.

Proposals shall address only one of the following issues:

a) [2014] Facilitating transnational cooperation between NCPs in Societal Challenge 5⁷¹: Support will be given to a consortium of formally nominated H2020 NCPs in the area of climate action, environment, resource efficiency and raw materials. The activities will be tailored according to the nature of the area, and the priorities of the NCPs concerned. Various mechanisms may be included, such as benchmarking, joint workshops, enhanced cross-border brokerage events, specific training linked to this Societal Challenge as well as to the gender dimension of research and innovation, and

⁷¹ This activity directly aimed at supporting the development and implementation of evidence base for R&I policies and supporting various groups of stakeholders is excluded from the delegation to EASME and will be implemented by the Commission services.

twinning schemes. Special attention will be given to enhancing the competence of NCPs, including helping less experienced NCPs rapidly acquire the know-how accumulated in other countries.

The focus throughout should be on issues specific to the climate action, environment, resource efficiency and raw materials Societal Challenge and should not duplicate actions foreseen in the NCP network for quality standards and horizontal issues under 'Science with and for Society'.

Only NCPs from EU Member States, Associated Countries and Neighbourhood Policy countries which have been officially appointed by the relevant national authorities are eligible to participate in and receive funding for this action. In line with the EU's strategy for international cooperation in research and innovation⁷² international cooperation is encouraged, in particular with neighbourhood policy countries.

The consortium should have a good representation of experienced and less experienced NCPs.

Submission of a single proposal is encouraged. NCPs from EU Member States or Associated Countries choosing not to participate as a member of the consortium should be identified and the reason explained in the proposal. These NCPs are nevertheless invited and encouraged to participate in the project activities (e.g. workshops), and the costs incurred by the consortium of such participation (e.g. travel costs paid by the consortium) may be included in the estimate budget and be eligible for funding by the Commission.

The Commission will only fund one proposal under this topic.

b) [2015] Mapping Member State research and innovation in climate change, environment, resource efficiency and raw materials: identifying baselines, trends, good practices, threats, opportunities and potential synergies between EU, national and regional programmes, over the entire duration of Horizon 2020, building on existing sources, studies and databases, including ERA-Watch.

Expected impact:

a) Improved and professionalised NCP service across the EU, thereby helping simplify access to Horizon 2020 calls, lowering the entry barriers for newcomers, and raising the average quality of proposals submitted. A more consistent level of NCP support services across the EU.

b) Evidence-based policy and appropriate, cost-effective management, planning and adaptation decisions by the public sector, businesses, industry and society through the provision and effective communication of trustworthy and timely science-based information. Enhanced impact of research and innovation activities through better identification of R&I priorities, improved coordination of EU and Member State research and innovation programmes and funded activities, and synergies with international research and innovation programmes. Evidence-based R&I policy-making at EU and national/ regional as well as international levels; knowledge-based support to business management decisions; synergy between international, EU, national and regional programmes; recommendations for European Semester.

⁷² COM(2012)497

Type of action: Coordination and support actions

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

SC5-20-2014/2015: Boosting the potential of small businesses for eco-innovation and a sustainable supply of raw materials

Specific challenge: Innovative SMEs have been recognised as being able to become the engine of the green economy and to facilitate the transition to a resource efficient, circular economy. They can play an important role in helping the EU to exit from the economic crises and in job creation. The potential of commercialising innovative solutions from SMEs is however hindered by several barriers including the absence of the proof of concept, the difficulty to access risk finance, the lack of prototyping, insufficient scale-up studies, etc. Growth therefore needs to be stimulated by increasing the levels of innovation in SMEs, covering their different innovation needs over the whole innovation cycle.

Innovative SMEs should be supported and guided to reach and accelerate their full green growth potential. This topic is targeted at all types of eco-innovative⁷³ SMEs in all areas addressing the climate action, environment, resource efficiency and raw materials challenge, focusing on SMEs showing a strong ambition to develop, grow and internationalise. All kinds of promising ideas, products, processes, services and business models, notably across sectors and disciplines, for commercialisation both in a business-to-business (B2B) and a business-to-customer (B2C) context, are eligible.

Scope: The SME instrument consists of three separate phases and a coaching and mentoring service for beneficiaries. Participants can apply to phase 1 with a view to applying to phase 2 at a later date, or directly to phase 2.

In phase 1, a feasibility study shall be developed verifying the technological/practical as well as economic viability of an innovation idea/concept with considerable novelty to the industry sector in which it is presented (new products, processes, design, services and technologies or new market applications of existing technologies). The activities could, for example, comprise risk assessment, market study, user involvement, Intellectual Property (IP) management, innovation strategy development, partner search, feasibility of concept and the like to establish a solid high-potential innovation project aligned to the enterprise strategy and with a European dimension. Bottlenecks in the ability to increase profitability of the enterprise through innovation shall be detected and analysed during phase 1 and addressed during phase 2 to increase the return in investment in innovation activities. The proposal should contain an initial business plan based on the proposed idea/concept.

The proposal should give the specifications of the elaborated business plan, which is to be the outcome of the project and the criteria for success.

Funding will be provided in the form of a lump sum of EUR 50.000. Projects should last around 6 months.

⁷³ http://ec.europa.eu/environment/eco-innovation/index_en.htm

In phase 2, innovation projects will be supported that address the Societal Challenge 'Climate action, environment, resource efficiency and raw materials' and that demonstrate high potential in terms of company competitiveness and growth underpinned by a strategic business plan. Activities should focus on innovation activities such as demonstration, testing, prototyping, piloting, scaling-up, miniaturisation, design, market replication and the like aiming to bring an innovation idea (product, process, service etc) to industrial readiness and maturity for market introduction, but may also include some research. For technological innovation a Technology Readiness Level of 6 or above (or similar for non-technological innovations) are envisaged; please see part G of the General Annexes.

Proposals shall be based on an elaborated business plan either developed through phase 1 or another means. Particular attention must be paid to IP protection and ownership; applicants will have to present convincing measures to ensure the possibility of commercial exploitation ('freedom to operate').

Proposals shall contain a specification for the outcome of the project, including a first commercialisation plan, and criteria for success.

The Commission considers that proposals requesting a contribution from the EU of between EUR 0.5 and 2.5 million would allow phase 2 to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts. Projects should last between 12 and 24 months.

In addition, in **phase 3**, SMEs can benefit from indirect support measures and services as well as access to the financial facilities supported under Access to Risk Finance of this work programme.

Successful beneficiaries will be offered coaching and mentoring support during phase 1 and phase 2. This service will be accessible via the Enterprise Europe Network and delivered by a dedicated coach through consultation and signposting to the beneficiaries. The coaches will be recruited from a central database managed by the European Commission and have all fulfilled stringent criteria with regards to business experience and competencies. Throughout the three phases of the instrument, the Network will complement the coaching support by providing access to its innovation and internationalisation service offering. This could include, for example, depending on the need of the SME, support in identifying growth potential, developing a growth plan and maximising it through internationalisation; strengthening the leadership and management skills of individuals in the senior management team and developing in-house coaching capacity; developing a marketing strategy or raising external finance.

Expected impact:

- Enhancing profitability and growth performance of SMEs by combining and transferring new and existing knowledge into innovative, disruptive and competitive solutions seizing European and global business opportunities.
- Market uptake and distribution of innovations tackling the specific Challenge of 'Climate action, environment, resource efficiency and raw materials' in a sustainable way.
- Increase of private investment in innovation, notably leverage of private co-investor and/or follow-up investments.

- The expected impact should be clearly described in qualitative and quantitative terms (e.g. on turnover, employment, market size, IP management, sales, return on investment and profit).

Type of action: SME Instrument (70%)

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

CONDITIONS FOR THIS CALL

Opening date(s)⁷⁴: 11/12/2013 for 2014 topics
 10/12/2014 for 2015 topics

Deadline(s)⁷⁵:

SC5-5a-2014, SC5-8-2014, SC5-9-2014, SC5-10a-2014, SC5-10b-2014, SC5-11a-2014, SC5-11b-2014, SC5-12a-2014 SC5-13a-2014, SC5-13b-2014, SC5-14-2014, SC5-18a-2014, SC5-19a-2014	08/04/2014 at 17.00.00 Brussels time	
SC5-1-2014, SC5-3-2014, SC5-6-2014, SC5-16-2014	First stage 08/04/2014 at 17.00.00 Brussels time	Second stage 16/09/2014 at 17.00.00 Brussels time
SC5-2-2015, SC5-5b-2015, SC5-10c-2015, SC5-11c-2015, SC5-11d-2015, SC5-11e-2015, SC5-12b-2015, SC5-13c-2015, SC5-13d-2015, SC5-13e-2015, SC5-13f-2015, SC5-15-2015, SC5-18b-2015, SC5-19b-2015	21/04/2015 at 17.00.00 Brussels time	
SC5-4-2015, SC5-7-2015, SC5-17-2015	First stage 21/04/2015 at 17.00.00 Brussels time	Second stage 08/09/2015 at 17.00.00 Brussels time

⁷⁴ The Director-General responsible may decide to open the call up to one month prior to or after the envisaged date of opening.

⁷⁵ The Director-General responsible may delay this deadline by up to two months.

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SC5-20-2014/2015 – Open call cut-off dates – Open from 01/03/2014 for 2014 topics for phase 1 and phase 2 ⁷⁶ – Open from 18/12/2014 for 2015 topics for phase 1 and phase 2 ⁷⁷	Phase 1	Phase 2	Phase 1	Phase 2
	18/06/2014 24/09/2014 17/12/2014	09/10/2014 17/12/2014	18/03/2015 17/06/2015 17/09/2015 16/12/2015	18/03/2015 17/06/2015 17/09/2015 16/12/2015

Overall indicative budget: EUR 166.00 million from the 2014 budget, and EUR 185.00 million from the 2015 budget⁷⁸

Topics	2014 EUR million	2015 EUR million
SC5-11-2014/2015	33.00	48.00
SC5-1-2014, SC5-3-2014, SC5-4-2015	42.00	15.00
SC5-2-2015,		25.00
SC5-5-2014/2015, SC5-10-2014/2015, SC5-14-2014, SC5-18b-2015	9.00	9.00
SC5-6-2014, SC5-7-2015	20.00	15.00
SC5-8-2014, SC5-18a-2014	2.00	
SC5-9-2014, SC5-15-2015	12.00	11.00

⁷⁶ The Director-General responsible may delay this deadline by up to two months.

⁷⁷ The Director-General responsible may delay this deadline by up to two months.

⁷⁸ Subject to the availability of the appropriations provided for in the draft budget for 2015 after the adoption of the budget for 2015 by the budgetary authority or if the budget is not adopted as provided for in the system of provisional twelfths.

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SC5-12-2014/2015	10.00	10.00
SC5-13-2014/2015	5.00	8.00
SC5-16-2014, SC5-17-2015	14.00	20.00
SC5-19-2014/2015	2.00	5.00
SC5-20-2014/2015	17.00 out of which 1.70 for phase 1 14.96 for phase 2 0.34 for mentoring & coaching support and phase 3	19.00 out of which 1.90 for phase 1 16.72 for phase 2 0.38 for mentoring & coaching support and phase 3
	Single stage for both phase 1 and phase 2. The budget available for phase 1 and phase 2 will be divided equally between each cut-off date.	

Eligibility and admissibility conditions: The conditions are described in parts B and C of the General Annexes to the work programme, with the following exceptions:

SC5-2-2015, SC5-5-2014/2015, SC5-8-2014, SC5-9-2014, SC5-10-2014/2015, SC5-13a-2014, SC5-13b-2014, SC5-13c-2015, SC5-13d-2015, SC5-13e-2015, SC5-14-2014, SC5-15-2015, SC5-18-2014/2015, SC5-19-2014/2015	Up to <u>one</u> project per (sub-)topic shall be funded.
SC5-20-2014/2015	Proposals for phase 1 are not required to provide a draft plan for exploitation and dissemination. A proposal for phase 2 shall include a first commercialisation plan.

Evaluation criteria, scoring and threshold: The criteria, scoring and threshold are described in part H of the General Annexes to the work programme, with the following exceptions:

SC5-20-2014/2015	Proposals will be evaluated individually when they arrive. They will
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	<p>be ranked after the respective cut-off dates.</p> <p>The criterion Impact will be evaluated first, then Excellence and Implementation. If the proposal fails to achieve the threshold for a criterion, the evaluation of the proposal will be stopped.</p> <p>For phase 1 the threshold for individual criteria will be 4. The overall threshold, applying to the sum of the three individual scores, will be 13.</p> <p>For phase 2 the threshold for the criterion Impact will be 4. The overall threshold, applying to the sum of the three individual scores, will be 12.</p> <p>The final consensus score of a proposal will be the median of the individual scores of the individual evaluators; and the consensus report will comprise a collation of the individual reports, or extracts from them. Where appropriate, a Panel Review will be organised remotely.</p> <p>Applicants can provide during the electronic proposal submission up to three names of persons who should not act as an evaluator in the evaluation of their proposal for potential competitive reasons⁷⁹.</p>
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Evaluation procedure: The procedure for setting a priority order for proposals with the same score is given in part H of the General Annexes.

The full evaluation procedure is described in the relevant guide⁸⁰ published on the Participant Portal.

Indicative timetable for evaluation and grant agreement:

	Information on the outcome of the evaluation (<i>single or first stage</i>)	Information on the outcome of the evaluation (<i>second stage</i>)	Indicative date for the signing of grant agreements	
SC5-2-2015, SC5-5-2014/2015, SC5-8-2014, SC5-9-2014, SC5-10-2014/2015, SC5-11-	Maximum 5 months from the final date for submission		Maximum 3 months from the date of informing applicants	

⁷⁹ If any of the persons identified is an independent expert participating in the evaluation of the proposals for the call in question, they may be excluded from the evaluation of the proposal concerned, as long as it remains possible to have the proposal evaluated.

⁸⁰ See: http://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/pse/h2020-guide-pse_en.pdf

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2014/2015, SC5-12- 2014/2015 SC5-13- 2014/2015, SC5-14-2014, SC5-15-2015, SC5-18- 2014/2015, SC5-19- 2014/2015				
SC5-1-2014, SC5-3-2014, SC5-4-2015, SC5-6-2014, SC5-7-2015, SC5-16-2014, SC5-17-2015	Maximum 3 months from the final date for submission	Maximum 5 months from the final date for submission	Maximum 3 months from the date of informing applicants	
SC5-20- 2014/2015	Two months after the corresponding cut-off date set out above for phase 1 and four months after the corresponding cut-off date set out above for phase 2.		One month from the date of informing applicants in phase 1 and two months from the date of informing applicants in phase 2.	

Consortium agreements: In line with the Rules for Participation, participants in Research and Innovation Actions or in Innovation Actions are required to conclude a consortium agreement prior to grant agreement.

For the SME Instrument (SC5-20/2014-2015), in the case of two or more SMEs submitting a proposal, in line with the Rules for Participation and the Model Grant Agreement, participants are required to conclude a consortium agreement prior to grant agreement.

Fast Track to Innovation – Pilot

Full details on this pilot are provided in the separate call for proposals under the Horizon 2020 Work Programme Part – Fast Track to Innovation Pilot (Part 18 of this Work Programme).

Other Actions⁸¹

1. Interim evaluation of the Joint Baltic Sea research and development programme (BONUS)⁸²

An Interim Evaluation of the Joint Baltic Sea research and development programme (BONUS) is required by decision of the European Parliament and Council 862/2010/EU. This evaluation will assess the progress of BONUS towards the objectives set out in Article 2 and Annex 1 of this decision as well as the recommendations of BONUS on the ways to further enhance integration, on the quality and efficiency of implementation (scientific, management and financial) and on whether the level of financial contribution of the participating states is appropriate. The evaluation will also provide a foundation for the impact assessment required for any potential programme following BONUS. Five external experts will provide this analysis. A special allowance of EUR 450/day will be paid to the experts appointed in their personal capacity and acting independently and in the public interest.

Type of action: Expert contracts

Indicative timetable: Second Quarter of 2014

Indicative budget: **EUR 0.15 million from the 2014 budget**

2. Policy relevant analyses and forward looking reflection⁸³

External experts will provide analyses of past activities, assess policy relevant state-of-the-art scientific knowledge and innovation, engage in forward looking reflection and contribute to establishing an EU reference policy framework for research and innovation on issues related to green economy and sustainable development.

Due to the very wide range of issues and specialist disciplines covered by Societal Challenge 5 'Climate action, environment, resource efficiency and raw materials', a wide range of experts and a number of distinct Expert Groups are required in order to achieve the necessary depth of expertise. One expert group will therefore be set up for each of the following issues:

2014:

- a) **Expert Group on a systemic approach to eco-innovation, to achieve a low-carbon, circular economy:** This Expert Group will support the European Commission with advice and expertise on defining an EU framework for systemic eco-innovation which promotes a circular economy and strengthens the EU's global leadership in resource efficient products and services. The Group may also contribute

⁸¹ Subject to the availability of the appropriations provided for in the draft budget for 2015 after the adoption of the budget for 2015 by the budgetary authority or if the budget is not adopted as provided for in the system of provisional twelfths.

⁸² This activity directly aimed at supporting the development and implementation of evidence base for R&I policies and supporting various groups of stakeholders is excluded from the delegation to EASME and will be implemented by the Commission services.

⁸³ This activity directly aimed at supporting the development and implementation of evidence base for R&I policies and supporting various groups of stakeholders is excluded from the delegation to EASME and will be implemented by the Commission services.

to the monitoring and assessing of the implementation of the “Eco-innovation Action Plan” (Eco-AP)⁸⁴ adopted by the Commission on 15 December 2011. The Group will develop a Multi-annual Roadmap for EU research and innovation actions on a ‘Systemic approach to Eco-innovation’. This will include assessing the strength and weaknesses of the present situation; defining potential research and innovation actions to demonstrate the potential of systemic eco-innovation and assessing options for action by public authorities; evaluating the expected benefits for EU Member States, citizens and other relevant stakeholders; supporting a communication strategy; identifying other public or private sector funding sources at EU, national and regional levels; providing advice on potential supply- and demand-side measures that may help the take-up of systemic eco innovation among end-users in various sectors, and the establishment of new business models, markets and jobs, both in the public and in the private sectors.

A dedicated Expert Group is needed for these tasks, which require the drafting of a complex and articulated set of documents. Experts will be selected from the experts' database produced following the Horizon 2020 call for expression of interest for experts⁸⁵. A special allowance of EUR 450/day will be paid to the experts of the Group, appointed in their personal capacity and acting independently and in the public interest, due to the considerable amount of work and of drafting involved that will entail a level of high level of commitment and a considerable time investment.

- b) **Expert Group on nature-based solutions and re-naturing cities:** This Expert Group will support the European Commission by contributing to establishing a coherent EU R&I reference policy framework and agenda for nature-based solutions and re-naturing cities to address global societal challenges. It will identify the societal challenges to which nature-based solutions present the clearest competitive advantage in terms of sustainability, cost-effectiveness, innovation and market potential; assess costs of no-deployment; identify systemic and knowledge gaps; evaluate opportunities for up-scaling and large-scale deployment; defining incentives to overcoming barriers; identify relevant actors and stakeholders, and recommend strategies for engagement, mobilisation, buy-in and up-take.

The inter- and trans-disciplinary nature, the wide scope of issues to be addressed, as well as the specific expertise and experience required for achieving the objectives of the 'Nature-Based Solutions and Re-Naturing Cities' Expert Group, requires a distinct group to be set up. The subject covers a very wide domain and requires the input from highly qualified experts, and an excellent balance of expertise and experience. The Group will have an innovative composition to take a fresh look at this research and innovation agenda for growth and jobs, and all experts will have to contribute their own field of expertise to specific parts of the report that will be produced. A special allowance of EUR 450/day will be paid to experts appointed in their personal capacity who act independently and in the public interest to ensure participation of all relevant sectors, including from sectors that are traditionally

⁸⁴ Communication 'Innovation for a sustainable Future: The Eco-innovation Action Plan (Eco-AP)', COM(2011)899fin of 15 December 2011

⁸⁵ OJ C342 of 22 November 2013

under-represented, including finance, insurance, industry, and private sector beyond consultancies. They will be selected from the experts' database produced following the Horizon 2020 call for expression of interest for experts⁸⁶. Their remuneration is justified in relation to the work to be accomplished for both remote work and participation in meetings in Brussels.

- c) **Expertise on climate services and solutions for a climate-resilient society:** Experts will assist the European Commission in drafting a long-term Research and Innovation Roadmap for Climate Services. The experts should identify the most appropriate research & innovation actions needed to pass from current capabilities to operational high-added-value climate services for end-users and market applications. In doing so, the experts should also identify the actors and the funding sources, considering – beyond Horizon 2020 – Copernicus, the JPI-Climate, the EIT Climate-KIC, national activities, international cooperation activities (such as those of the Belmont Forum), and activities supported by the private sector. Moreover, the experts should provide advice to the Commission on potential supply- and demand-side measures that may help the implementation of the Roadmap, on promotion and take-up of climate services among end-users in various sectors, and on establishing a flourishing market in climate services, both in the public and in the private sector domains.

One of the main tasks of these experts will be to interact and engage with the wide stakeholder community of providers and potential users of climate services, through appropriate means of consultation (web-based and hearings). Drafting a long-term Research and Innovation Roadmap for Climate Services, passing from the orientation level⁸⁷ to a much higher level of elaboration, engaging with stakeholders and undertaking operational planning, requires the drafting of a complex and articulated set of documents, which can only be undertaken by a specialised expert group. A special allowance of EUR 450/day will be paid to the five experts appointed in their personal capacity and act independently and in the public interest. They will be selected from the experts' database produced following the Horizon 2020 call for expression of interest for experts⁸⁸.

- d) **Expert Group on cultural heritage:** This Expert Group will build on past and present activities on cultural heritage to support the European Commission in setting out a forward-looking and innovative EU agenda for the coming 5-7 years for future cultural heritage research and innovation. It will focus on future opportunities, trans-disciplinary and multi-stakeholder approaches, innovative financing and investment, social innovation, new governance modes and innovative business models and services for cultural heritage, as well as possible linkages with natural heritage. Until now, the focus of cultural heritage research and innovation has mainly been on safeguarding cultural heritage by developing materials and technologies. The Expert Group will propose ways in which challenges can be transformed into innovation

⁸⁶ OJ C342 of 22 November 2013

⁸⁷ E.g. as evidenced in the documents prepared by European Commission services for the Workshop on Climate Services organised by DG Research and Innovation in March 2014, and further specified by the Horizon 2020 Societal Challenge 5 Advisory Group Report of May 2014

⁸⁸ OJ C342 of 22 November 2013

opportunities in order for cultural heritage entrepreneurs, cultural heritage innovators and cultural heritage services to be promoted, considering cultural heritage as a resource and an investment rather than a cost.

The specific nature of the tasks and of the particular expertise needed cannot be covered by any other Expert Group currently set up. It is essential to support the launch of a renewed cultural heritage research and innovation agenda that the experts come from many various fields of policy and research, which would not traditionally be involved, including from cultural economics, asset management, innovation, banking. Experts will all have to contribute their own field of expertise to specific parts of the Report that will be produced. They will be selected from the experts' database produced following the Horizon 2020 call for expression of interest for experts⁸⁹. Their remuneration, including a special allowance of EUR 450/day paid to the experts appointed in their personal capacity and who act independently and in the public interest, can be justified in relation to the work to be accomplished for both remote work and participation in meetings in Brussels.

2015:

- e) **Expert Group on consolidating, supporting and promoting the European Research Area and research and innovation policy as a source of green growth and job creation, related to Societal Challenge 5:** Research and innovation are main enablers of green growth in Europe for today and tomorrow. A coherent and synergic policy will provide a framework to facilitate the convergence of European and national research investments and innovation measures in sectors of the green economy with a high impact on competitiveness and new green jobs. The initiative supports the Europe 2020 vision of smart, sustainable and inclusive growth for Europe, within a sustainable economic model that builds its foundation on knowledge and innovation and is prompted by research.

This Expert Group will provide advice on the bottlenecks, missing building blocks and room for action in order to deploy the full innovation potential of Horizon 2020. It will also help to identify areas of research and innovation, new synergies and alliances in particular with the private industrial and financing sectors, and other factors of success. The use of new support instruments will also be addressed. The Group will be composed of high level experts, including from financing bodies, selected from the experts' database produced following the Horizon 2020 call for expression of interest for experts⁹⁰. A special allowance of EUR 450/day will be paid to the experts of the Group appointed in their personal capacity and acting independently and in the public interest, due to the substantial amount of work and of drafting involved that will entail a level of high level of commitment and a considerable time investment.

- f) **Expert Group on follow-up to Rio+20, notably the Sustainable Development Goals:** Horizon 2020 is expected to contribute at least 60% of its budget to

⁸⁹ OJ C342 of 22 November 2013

⁹⁰ OJ C342 of 22 November 2013

sustainable development⁹¹. Following the Rio+20 Sustainable Development Conference in June 2012, a process has been launched to develop universally applicable Sustainable Development Goals (SDGs) that will have to be implemented in a post-2015 framework. This Expert Group will support the European Commission in maximising the value and relevance at international level of the European Commission's mechanism tracking Horizon 2020 expenditure in support of sustainable development objectives by better aligning this monitoring and reporting exercise with the emerging framework, while at the same time providing advice on the main research and innovation work streams that could support its implementation in Europe and beyond, taking into account the Rio+20 outcome. It will also provide guidance and orientation on: how future science, technology and innovation (STI) activities could be best integrated in the new post-2015 framework in which SDGs will be central; the follow up of specific Rio+20 actions in which research and innovation play a role and that are relevant to the implementation of the SDGs, including improving the science-policy interface in the field of sustainable development and environment, and the facilitation of clean and environmentally sound technologies; how the European Commission through Horizon 2020 can support the EU's follow up of the above mentioned areas and make its activities internationally relevant, including suggesting links with relevant research-centred international initiatives linked to the Rio+20 follow up (i.e. Green Growth Knowledge Platform, Future Earth, Global Sustainable Development Report, etc.).

The Expert Group will be composed of high level experts, including from relevant international organizations, selected from the experts' database produced following the Horizon 2020 call for expression of interest for experts⁹². A special allowance of EUR 450/day will be paid to the experts of the Group appointed in their personal capacity and acting independently and in the public interest, due to the substantial amount of work and of drafting involved that will entail a level of high level of commitment and a considerable time investment.

The activities carried out by the experts will be essential to the development of the above mentioned policy areas and EU reference policy framework.

Type of action: Expert contracts

Indicative timetable: 6 distinct policy areas, of which 4 to be launched in the first and second Quarters of 2014, and 2 to be launched in the first and second Quarters of 2015

Indicative budget: **EUR 0.50 million from the 2014 budget and EUR 0.20 million from the 2015 budget**

⁹¹ Horizon 2020 Regulation (Regulation 1291/2013 of 11 December 2013) states: "Climate action and resource efficiency are mutually reinforcing objectives for achieving sustainable development. The specific objectives relating to both should be complemented through the other specific objectives of Horizon 2020. As a result it is expected that at least 60% of the overall Horizon 2020 budget should be related to sustainable development. It is also expected that climate-related expenditure should exceed 35% of the budget, including mutually compatible measures improving resource efficiency."

⁹² OJ C342 of 22 November 2013

3. External expertise

This action will support the use of appointed independent experts for the evaluation of project proposals (EUR 2.5 million 2014 and EUR 2.5 million 2015) and, where appropriate, for the monitoring of running and completed projects (EUR 0.75 million in 2014 and EUR 0.5 million in 2015).

Type of action: Expert contracts

Indicative budget: **EUR 3.25 million from the 2014 budget and EUR 3.00 million from the 2015 budget**

4. Global Earth Observation (GEO)

An annual contribution to the 2014 and 2015 activities of the GEO Secretariat, as subscription to a body of which they are a member, according to Article 121(2)(d) of the Financial Regulation applicable to the general budget of the European Communities.

As a full member of GEO the Commission will pay a contribution on behalf of the EU to the GEO Trust Fund, which is the budgetary structure agreed by the GEO members to fund the GEO secretariat (hosted by the World Meteorological Organisation in Geneva, Switzerland), to ensure the implementation of the Global Earth Observation System of Systems (GEOSS) according to its annual work plan and the continuity of the leadership and participation of the EU in GEO.

Type of action: Subscription

Indicative timetable: Second Quarter of 2014 and second Quarter of 2015

Indicative budget: **EUR 0.80 million from the 2014 budget and EUR 0.80 million from the 2015 budget**

5. Intergovernmental Panel on Climate Change (IPCC)⁹³

The IPCC is the key global climate science-policy interface, underpinning European and international climate policy making and is the leading body responsible for the scientific assessment of climate change. The European Union has an enhanced observer status at the UN and may exercise the following procedural rights at IPCC Sessions: the right to speak in turn, the right to reply and the right to introduce proposals.

The Commission will pay a contribution on behalf of the EU to the IPCC secretariat (hosted by the World Meteorological Organisation in Geneva, Switzerland) with the aim of supporting the preparation of the next IPCC Assessment Report and facilitating the participation of scientists from the EU and from developing countries in this process. The action will also support the organisation of IPCC high-level dissemination events in Europe, targeting policy makers and other relevant stakeholders, in order to provide timely, high-quality and policy-relevant information and strengthen the science-policy dialogue on climate change.

⁹³ This activity directly aimed at supporting the promotion of coherent and effective cooperation with third countries is excluded from the delegation to EASME and will be implemented by the Commission services.

Legal entity: IPCC secretariat, hosted by the World Meteorological Organisation, Geneva, Switzerland

Type of action: Grant to identified beneficiary – Coordination and support action

The standard evaluation criteria, thresholds, weighting for award criteria and the maximum rate of co-financing for this type of action are provided in parts D and H of the General Annexes.

Indicative timetable: Third Quarter 2014

Indicative budget: **EUR 0.70 million from the 2014 budget**

6. Support actions for raw materials policy⁹⁴

Actions to support raw materials policy will cover the following:

a) Support to the EU's raw materials policy through an administrative arrangement with the JRC, comprising:

- technical assistance (EUR 0.25 million in 2014 and EUR 0.25 million in 2015) supporting the monitoring and evaluation of the European Innovation Partnership (EIP) on Raw Materials, based on the expertise and experience of JRC gained from SETIS the monitoring platform of the SET-Plan, and monitoring of the EIP on Active and Healthy Ageing;
- a study (EUR 0.30 million in 2015) to support policy work on improving the methodology for defining critical raw materials, based on the expertise and experience of JRC gained from the criticality assessment in low carbon energy technologies. The current methodology, despite its merits, has shown that further aspects of criticality need to be taken into account, while ensuring comparability with previous exercises, in order to further improve the base for policy in fields such as research and innovation for production and substitution of critical raw materials.

Type of action: Provision of technical/scientific services by the EC Joint Research Centre

Indicative timetable: Fourth Quarter 2014 and fourth Quarter 2015

Indicative budget: **EUR 0.25 million from the 2014 budget and EUR 0.55 million from the 2015 budget**

b) Support to the EU's raw materials policy through public procurement, comprising:

- the secretariat supporting the implementation of the European Innovation Partnership (EIP) on Raw Materials (EUR 0.45 million in 2014 and EUR 0.45 million in 2015);

⁹⁴ This activity directly aimed at supporting the development and implementation of evidence base for R&I policies and supporting various groups of stakeholders is excluded from the delegation to EASME and will be implemented by the Commission services.

- a study to support policy on the cascading principle for use of wood (EUR 0.30 million in 2014).

Type of action: Public procurement (call for tender or use of existing framework contract)

Indicative timetable: Fourth Quarter 2014 and fourth Quarter 2015

Indicative budget: **EUR 0.75 million from the 2014 budget and EUR 0.45 million from the 2015 budget**

7. Developing GEOSS-based (Global Earth Observation System of Systems) smart internet applications to inform European citizens on the changes affecting their local environment⁹⁵

Under this activity it is proposed to develop smart and easy internet applications that non-experts could customise and execute on-demand using the GEOSS Data-Core and FP7 GEO project data resources. These applications, which could also exploit the benefits of the mobile internet, will provide citizens with qualitative information on their changing environment (e.g. change detection in climate, biodiversity, water bodies, coastal areas, built environment, green areas, forestry, agricultural land and crops, and atmospheric composition). The administrative arrangement for technical and scientific services with the JRC would cover the cost of: defining applications with highest potential for extensive use by European citizens; designing the applications; identifying and pre-processing the data; developing, testing with an appropriate large number of citizens in various EU countries and releasing the software and required applications.

The development of popular internet-based applications using Earth Observation databases developed through FP7 such as the GEOSS Data-Core falls under the mandate of the JRC which is to deliver Commission's in-house science services.

Type of action: Provision of technical/scientific services by the EC Joint Research Centre

Indicative timetable: Fourth Quarter 2014; expected duration of the action 12 months

Indicative budget: **EUR 1.2 million from the 2014 budget**

8. International Conference 'Adaptation Futures' – The Netherlands, May 2016⁹⁶

The United Nations Environmental Programme (UNEP) established in 2009 the Programme of Research on Climate Change Vulnerability, Impacts and Adaptation (PROVIA). Since 2010 PROVIA has organised 'Adaptation Futures', a biennial

⁹⁵ This activity directly aimed at supporting the development and implementation of evidence base for R&I policies and supporting various groups of stakeholders is excluded from the delegation to EASME and will be implemented by the Commission services.

⁹⁶ This activity directly aimed at supporting the promotion of coherent and effective cooperation with third countries, and supporting various groups of stakeholders is excluded from the delegation to EASME and will be implemented by the Commission services.

international conference on climate change adaptation, bringing together scientists, practitioners and policy-makers, with very high visibility and momentum.

The European Commission will support the organisation of the Conference in 2016, in cooperation with the Dutch Government, holding the EU Presidency at the time. The 2016 Adaptation Futures Conference will be the first edition to be held on EU territory and will include a large exhibition of climate change adaptation technologies and solutions.

The Conference will build on the results of the EU-funded research on climate change vulnerability, impacts and adaptation, maximising their outreach and dissemination. The EC contribution will also support the participation of scientists and exhibitors from low-income countries, and of students/early career scientists and start-up SMEs from EU Member States and Associated Countries.

Co-funding from the Dutch Government, from UNEP/PROVIA and from other sponsors should be detailed in the proposal.

Legal entity: The Ministry of Infrastructure and Environment of the Netherlands, Plesmanweg 1-6, 2597 JG The Hague, The Netherlands.

The standard evaluation criteria, thresholds, weighting for award criteria and the maximum rate of co-financing for this type of action are provided in parts D and H of the General Annexes.

Type of action: Grant to identified beneficiary – Coordination and support action

Indicative timetable: Third Quarter 2014

Indicative budget: **EUR 0.7 million from the 2014 budget**

9. Support to the implementation of the Strategic Research Agenda (SRA) of the Joint Programming Initiative in Cultural Heritage and Global Change (JPI CH)⁹⁷

Under this activity it is proposed to build on the results expected by JHEP – the coordination action in support of the Joint Programming Initiative in Cultural Heritage and Global Change (JPI CH) – and support the FP7 ERA-Net plus activity 'Heritage Plus' in the implementation of the JPI CH's Strategic Research Agenda (SRA) and Action Plan. Effective and efficient methods of collaboration should be used, such as those proposed by the 'Voluntary guidelines on Framework Conditions', adopted by the High Level Group on Joint Programming. Alignment of national research programmes and activities as well as the effective governance and support to the implementation of joint calls should be ensured.

Based on the High Level Group for Joint Programming (GPC) Working Group on Alignment guidance expected in summer 2014, a report is required on the effectiveness and efficiency of governance of the alignment of national research and innovation programmes and activities on cultural heritage – and as appropriate with relevant H2020

⁹⁷ This activity directly aimed at supporting the development and implementation of evidence base for R&I policies and supporting various groups of stakeholders is excluded from the delegation to EASME and will be implemented by the Commission services.

activities – and on the identification and possible application of quantitative and qualitative key performance indicators (KPIs) for such alignment.

The support granted through this activity should be equally distributed to all the 'Heritage Plus' partners.

Legal entity: Ministero de Beni e Delle Attivita Culturali e del Turismo, Via del Collegio Romano 27, Roma, 00186, Italy (Coordinator of 'Heritage Plus' and Chair of JPI Cultural Heritage)

Type of action: Grant to identified beneficiary – Coordination and support action

The standard evaluation criteria, thresholds, weighting for award criteria and the maximum rate of co-financing for this type of action are provided in parts D and H of the General Annexes.

Indicative timetable: Fourth Quarter 2014; expected duration of the action 48 months

Indicative budget: **EUR 1.0 million from the 2014 budget**

10. Citizens' Engagement in EU Research and Innovation policy-making on Nature-Based Solutions⁹⁸

This action aims to introduce the 'citizen dimension' in EU Research and Innovation policy-making on Nature-Based Solutions, notably for re-naturing cities, and actively engaging citizens by collecting their concerns, ideas and preferences for the future.

This action should facilitate public engagement through face-to-face group gatherings whilst ensuring sufficient representation of the population in each of the 28 EU Member States.

Type of action: Public procurement (one contract to be procured either by call for tender or use of existing framework contract)

Indicative timetable: Fourth Quarter 2014

Indicative budget: **EUR 0.5 million from the 2014 budget**

⁹⁸ This activity directly aimed at supporting the development and implementation of evidence base for R&I policies and supporting various groups of stakeholders is excluded from the delegation to EASME and will be implemented by the Commission services.

Budget

	2014 Budget EUR million⁹⁹	2015¹⁰⁰ Budget EUR million
Calls		
Call H2020-WASTE-2014/2015 Waste: A resource to recycle, reuse and recover raw materials	59.00 ¹⁰¹ <i>of which 17.00 from 02.040301 and 42.00 from 08.020305</i>	44.00 ¹⁰² <i>of which 4.00 from 02.040301 and 40.00 from 08.020305</i>
Call H2020-WATER-2014/2015 Water Innovation: Boosting its value for Europe	67.00 <i>from 08.020305</i>	93.00 ¹⁰³ <i>from 08.020305</i>
Call H2020-SC5-2014/2015 Growing a Low Carbon, Resource Efficient Economy with a Sustainable Supply of Raw Materials	166.00 <i>of which 51.55 from 02.040301 and 114.45 from 08.020305</i>	185.00 <i>of which 70.00 from 02.040301 and 115.00 from 08.020305</i>
Contribution from this societal challenge to call ‘H2020-BG-2014/2015’ (under Part 9 of the work programme)	23.00 <i>from 08.020305</i>	15.00 <i>from 08.020305</i>
Contribution from this societal challenge to call ‘H2020-EE-2014/2015’ (under Part 10 of the work programme)	5.00 <i>from 08.020305</i>	–

⁹⁹ The budget figures given in this table are rounded to two decimal places.

¹⁰⁰ Subject to the availability of the appropriations provided for in the draft budget for 2015 after the adoption of the budget for 2015 by the budgetary authority or if the budget is not adopted as provided for in the system of provisional twelfths.

¹⁰¹ To which EUR 9 million from the societal challenge ‘Food security, sustainable agriculture and forestry, marine and maritime and inland water research and the bioeconomy’ (budget line 08.020302) and EUR 5 million from Leadership in ‘Nanotechnologies, advanced materials, biotechnology and advanced manufacturing and processing’ (budget line 08.020201) will be added making a total of EUR 73.00 million for this call.

¹⁰² To which EUR 10 million from the societal challenge ‘Food security, sustainable agriculture and forestry, marine and maritime and inland water research and the bioeconomy’ (budget line 05.090301) and EUR 4 million from the societal challenge ‘Food security, sustainable agriculture and forestry, marine and maritime and inland water research and the bioeconomy’ (budget line 08.020302) will be added making a total of EUR 58.00 million for this call.

¹⁰³ To which EUR 3 million from the societal challenge ‘Food security, sustainable agriculture and forestry, marine and maritime and inland water research and the bioeconomy’ (budget line 05.090301) will be added making a total of EUR 96.00 million for this call.

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Contribution from this societal challenge to call ‘H2020-DRS-2014/2015’ (under Part 14 of the work programme)	18.00 <i>from 08.020305</i>	28.00 <i>from 08.020305</i>
Contribution from this societal challenge to call ‘H2020-FTIPilot-2015’ (under Part 18 of the work programme)	–	7.15 <i>of which 1.49 from 02.040301 and 5.66 from 08.020305</i>
Other Actions		
Experts (expert evaluators, experts groups, monitors)	3.90 <i>of which 0.62 from 02.040301 and 3.28 from 08.020305</i>	3.20 <i>of which 0.56 from 02.040301 and 2.64 from 08.020305</i>
Subscription – GEO secretariat	0.80 <i>of which 0.17 from 02.040301 and 0.63 from 08.020305</i>	0.80 <i>of which 0.17 from 02.040301 and 0.63 from 08.020305</i>
Grant to identified beneficiary – IPCC	0.70 <i>from 08.020305</i>	–
Grant to identified beneficiary – Ministry of Infrastructure and Environment of the Netherlands	0.70 <i>from 08.020305</i>	–
Grant to identified beneficiary – Joint Programming Initiative in Cultural Heritage and Global Change	1.00 <i>from 08.020305</i>	–
Administrative arrangement with JRC – Support actions for raw materials policy	0.25 <i>from 02.040301</i>	0.55 <i>from 02.040301</i>
Administrative arrangement with JRC – GEOSS-based smart internet applications	1.20 <i>from 08.020305</i>	–
Public procurement – Support actions for raw materials policy	0.75 <i>from 02.040301</i>	0.45 <i>from 02.040301</i>
Public procurement – Citizens' engagement on Nature-Based Solutions	0.50 <i>from 08.020305</i>	–
Estimated total budget	347.80	377.15

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Contribution to horizontal activities (08.020500)		
Dissemination activities (see Part 17 of the work programme)	<i>0.30 of which 0.06 from 02.040301 and 0.24 from 08.020305</i>	<i>0.32 of which 0.07 from 02.040301 and 0.25 from 08.020305</i>
Corporate communication (see Part 17 of the work programme)	<i>0.16 of which 0.03 from 02.040301 and 0.13 from 08.020305</i>	–
Estimated total budget for the horizontal activities	0.46	0.32

Estimated total budget including horizontal activities	348.26	377.47
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