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Call Topics for International Cooperation in Horizon 2020 EU and Singapore

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Content

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Industrial Leadership

Horizon 2020 Pillar:	Industrial Leadership
Programme:	Leadership in enabling and industrial technologies (LEIT)
Call Title:	Competitive, low carbon and circular industries
Call Identifier:	h2020-low-carbon-circular-industries-2020
Topic Title:	ERA-NET on materials, supporting the circular economy and Sustainable Development Goals
Topic Identifier:	CE-NMBP-41-2020
Type of Action:	ERA-NET-Cofund ERA-NET Cofund
Deadline(s):	05.02.2020 (single-stage)

Participant Portal Weblink:
https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/ce-nmbp-41-2020

Specific Challenges: Maintaining Europe's position in research related to materials science and engineering requires concentrated action on common European research priorities in view of implementing joint initiatives.

The M-ERA.NET 2 network has successfully targeted the Low Carbon Energy Technologies addressed by the SET Plan. Now the scope should on one hand guarantee some continuation, and on the other hand become more ambitious and underline the commitment of the EU regarding the circular economy and Sustainable Development Goals.

The European Commission has adopted an ambitious new Circular Economy Package to help European businesses and consumers to make the transition to a stronger and more circular economy. Moreover, in 2016, the 17 Sustainable Development Goals (SDGs) of the 2030 Agenda for Sustainable Development came into force. They aim to end poverty, protect the planet, ensure prosperity and tackle climate change. The EU is fully committed to be a frontrunner in implementing the 2030 Agenda and SDGs. Finally, the Commission launched the Battery Alliance initiative in 2017.

Materials research is a relevant field for addressing these overall challenges and for making substantial contributions to achieving the specific objectives.

Global challenges call for co-operation on a global scale to build capacity in science, technology and innovation (STI) at both national and international levels. A strategic and industrially relevant approach is needed that cover the entire research and innovation chain by pooling national research and innovation capacities, thereby mobilising European infrastructure networks as well as promoting education and training in materials research and innovation.

Scope: The proposed ERA-NET aims at coordinating the research efforts of the participating Member States, Associated States and Regions in the field of materials, continuing the activities started by M-ERA.NET, for materials research and innovation, especially targeting the circular economy and Sustainable Development Goals (such as Goal 7 – "Affordable and clean energy", by enabling electromobility through sustainable energy storage technology or Goal 9 "Industrial innovation and infrastructure", by enhancing scientific research and upgrading the technological capabilities of industrial sectors). Proposals should pool the necessary financial resources from participating national or regional research programmes by implementing a joint transnational call for proposals (resulting mainly in grants to third parties) with EU co-funding to fund multinational innovative research initiatives in this domain, including support to the large scale research initiative on future battery technologies launched under the H2020-LC-BAT-2019-2020 Call[1].

Proposers are also requested to implement other joint activities and, additional joint calls without EU co-funding. The proposal should demonstrate that these additional joint calls exclude any overlaps with related on-going actions co-funded by the EU under NMBP.

Proposals should demonstrate the expected impact on national and transnational programmes as well as the leverage effect on European research and competitiveness, and should plan the development of key indicators for supporting this.

Participation of legal entities from **third countries**, and/or regions including those not automatically eligible for funding in accordance with General Annex A is encouraged in the joint call as well as in other joint activities including additional joint calls without EU co-funding. Participants from countries not listed in General Annex A are eligible for EU funding under this topic and may request a Union contribution (on the basis of the ERA-NET unit cost) only for the coordination costs of additional activities.

The Commission considers that proposals requesting a contribution from the EU of EUR 15 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts. EUR 5 million of the requested contribution from the EU should be used as support to transnational projects, co-funded by the Commission, on future battery technologies, fostering synergy between European, national and regional initiatives and promoting broader partnerships between the European stakeholders in future battery technologies.

Expected Impact:

- synergies with international, national and regional programmes that support research and innovation;
- synergies but no overlap with the topics of Horizon 2020 and with related European Partnership initiatives and be open to adapt to future coming initiatives of Horizon Europe;
- leverage of national, regional and European funding;
- contribution to meeting Global Challenges through Better Governance: International Co-operation in Science, Technology and Innovation;

- relevant contribution to the SDGs, including sustainable battery based energy storage technology;
- relevant contribution towards a circular economy.

Cross-cutting Priorities: ERA-NET

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[1] http://ec.europa.eu/research/participants/data/ref/h2020/wp/2018-2020/main/h2020-wp1820-cc-activities_en.pdf

Societal Challenges

Horizon 2020 Pillar: Societal Challenges

Programme: Health, demographic change and wellbeing

Call Title: Better Health and care, economic growth and sustainable health systems

Call Identifier: h2020-sc1-bhc-2018-2020

Topic Title: Innovative actions for improving urban health and wellbeing - addressing environment, climate and socioeconomic factors

Topic Identifier: SC1-BHC-29-2020

Type of Action: RIA Research and Innovation action

Deadline(s): 24.09.2019, 07.04.2020 (two-stage)

Participant Portal Weblink:
https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/sc1-bhc-29-2020

Specific Challenges: The natural and built[1] environment as well as the social fabric are critical determinants of health and well-being. Three quarters of the European population now live in cities and urbanisation continues at high speed, driven by economic growth and employment opportunities. The related environmental changes e.g. pollution of air and water, transportation problems, reduced social cohesion and stress affect physical as well as mental health. Although health has improved in the EU over the last decades, large differences in health still exist between and within all countries in the EU. These differences are caused by many factors such as living conditions, health-related behaviour, education, occupation and income, health care. Some of these inequalities are widening[2]. As European cities are growing, they are increasingly taking action and introducing policies to become more sustainable and liveable, adapting to climate change, investing in a range of smart and innovative solutions such as clean and sustainable transport, higher energy efficiency and stronger social cohesion. Similar initiatives are underway e.g. in Canada, USA as well as in **Asia** and Africa which could provide valuable knowledge.

At EU level, the Urban Agenda for the EU[3] focuses on improving the life of their citizens for example through the development of digital solutions, reducing urban poverty and better integration of migrants and refugees. The headline targets in the EU2020 strategy aim to turn the EU into a smart, sustainable and inclusive economy delivering high levels of employment, productivity and social cohesion[4].

Improving urban health and reducing health disparities can be achieved by changes in individual behaviour as well as policies such as urban design and sustainable transport, (re)creating green and blue space or improved housing standards. There is a need to address public policies across sectors to achieve health benefits, systematically taking into account the health implications of decisions, to seek synergies, and avoid harmful health impacts (health in all policies[5]).

Scope: European research should engage to build the evidence base of effective policies, developing and testing new initiatives to improve urban health and environment in Europe. Given the variety of national experiences across European countries and regions, there is an important potential to learn from each other's practices and develop innovative actions for urban health.

Proposals should develop and test effective actions and/or policies for improved urban health and wellbeing in Europe. Where applicable, health inequalities and environmental aspects should be addressed. These actions or policies should also be assessed for cost-effectiveness as well as barriers and facilitators to implementation. Proposals should address improved physical or mental health, or both, while considering the relevant socio-economic and/or environmental determinants of health. They could address any sector (with priority on other sectors than health care) or policy area relevant to achieve a lasting health improvement. Proposals should include analysis of vulnerable groups and gender aspects and address any such inequities in the design of interventions. Research teams should bring in all appropriate scientific disciplines to design and test interventions. This includes social scientists not least for their role on behavioural aspects

In order to link research to practical needs and user demands, teams should include other relevant parties in urban health, building partnership with stakeholders such as policy makers, users, business, and local communities. Proposals should address the need for more systematic data collection on urban health across the EU, to allow better analysis and conclusions. This may include the linking up with relevant population based cohorts.

As urban health is of concern in many regions of the world, proposals should foresee the possibility to link up internationally with other relevant urban health initiatives. Proposals should include in their budgets funds for participation in at least one international meeting gathering urban health initiatives relevant to the research.

The Commission considers that a proposal requesting an EU contribution 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:

- More robust evidence for policy making on improved urban health in the EU
- Improved population health, physical and/or mental, in urban areas of the EU
- Reduced health inequalities in urban areas

Cross-cutting Priorities: Gender, Open Innovation, Socio-economic science and humanities

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[1] Man-made structures, features, and facilities viewed collectively as an environment in which people live and work (https://en.oxforddictionaries.com/definition/built_environment)

[2] http://www.health-inequalities.eu/about-hi/health-inequalities-in-the-eu

[3] https://ec.europa.eu/futurium/en/urban-agenda

[4] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2010:2020:FIN:EN:PDF

[5] http://www.who.int/healthpromotion/conferences/8gchp/statement_2013/en

Horizon 2020 Pillar: Societal Challenges

Programme: Smart, green and integrated transport

Call Title: 2018-2020 Digitising and Transforming European Industry and Services: Automated Road Transport

Call Identifier: h2020-dt-art-2018-2019-2020

Topic Title: Efficient and safe connected and automated heavy-duty vehicles in real logistics operations

Topic Identifier: DT-ART-05-2020

Type of Action: IA Innovation action

Deadline(s): 21.04.2020 (single-stage)

Participant Portal Weblink:
https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/dt-art-05-2020

Specific Challenges: Connected and automated driving systems for heavy commercial vehicles have great potential to bring a disruptive change to the trucking industry, fleet operators and the whole logistics sector. They can improve safety and efficiency of freight transport and make vehicle operations more comfortable. Fuel efficiency gains can be achieved through automated truck operations, such as platooning. Various automated trucks and truck platooning concepts are being tested in several countries. Positive impacts can be expected when highly automated systems will be used in logistics operations going from hub to hub including both operations in mixed traffic and in confined areas.

There are a number of specific challenges that need to be addressed before connected, cooperative and automated driving technologies for heavy commercial vehicles can be widely deployed: vehicle technologies, driver/user interaction/collaboration, vehicle-to-vehicle and vehicle-to-infrastructure communication, operational challenges in confined areas (ports, logistics terminals, consolidation centres, truck parkings, etc.) and in mixed traffic on public roads.

Scope: The focus of this topic is to develop, test and demonstrate connected and automated systems for heavy commercial vehicles in real logistics operations.

Proposed actions should include all the following aspects:

- Identify logistics operational needs and analyse new, emerging business and operating models and related technologies for efficient, high capacity and safe

connected and automated heavy commercial vehicles (preferably low-emission vehicles) and optimised links with other parts in the logistics chain.

- Develop, design, test and validate enhanced connected and automated vehicle technologies for heavy commercial vehicles for improved perception and localisation, vehicle control, connectivity (vehicle-to-vehicle, vehicle-to-cloud and vehicle-infrastructure), system resilience and dependability, functional safety, cyber security, interoperability and system cost optimization, reduced emissions and fuel consumption at fleet level.
- Test and demonstrate innovative, efficient and safe connected and automated heavy commercial vehicles for real logistics operations on hub-to-hub corridors, on open roads in mixed traffic or in confined areas addressing mixed traffic capabilities to prepare for operation in real road conditions.
- Enhanced interaction between connected and automated heavy commercial vehicles and their users and other (vulnerable) road users. Innovative services for automated freight logistics of individual transport units.

A cost-benefit analysis will demonstrate the added value and economic viability of automated systems in real logistics operations for users and stakeholders.

The active involvement of shippers, freight forwarders and truck manufacturers is strongly encouraged. The cooperation with organisations linked to actions of the TEN-T network is encouraged.

In line with the Union's strategy for international cooperation in research and innovation, international cooperation is encouraged. In particular, proposals should foresee cooperation with projects or partners from the US, Japan, South Korea, **Singapore** and/or Australia. Proposals should foresee twinning with entities participating in projects funded by US DOT to exchange knowledge and experience and exploit synergies. Twinning with Japan is also encouraged.

The Commission considers that proposals requesting a contribution from the EU between EUR 15 and 20 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: Actions are expected to contribute to the accelerated deployment of innovative connected and automated freight transport solutions in Europe. Actions will show that they will help to increase the overall safety and efficiency of freight operations of individual trucks or fleets (emissions/freight ratio, fuel consumption, road occupancy, vehicle utilization, capacity of transport network) in confined areas and in mixed traffic (hub to hub) through innovative connected and automated driving systems. Actions will show the uptake of new business models and seek to reach a total cost reduction of operations and logistics and supply chain leading to improved competitiveness of the European transport and logistics industry.

Cross-cutting Priorities: International cooperation

Horizon 2020 Pillar: Societal Challenges

Programme: Smart, green and integrated transport

Call Title: 2018-2020 Digitising and Transforming European Industry and Services: Automated Road Transport

Call Identifier: h2020-dt-art-2018-2019-2020

Topic Title: Large-scale, cross-border demonstration of connected and highly automated driving functions for passenger cars

Topic Identifier: DT-ART-06-2020

Type of Action: IA Innovation action

Deadline(s): 21.04.2020 (single-stage)

Participant Portal Weblink:
https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/dt-art-06-2020

Specific Challenges: Significant progress has been made in developing technologies for connected and automated driving in Europe and many large-scale demonstration projects are already ongoing. Automated driving functions for passenger cars at SAE Level 3[1], such as Traffic Jam Chauffeur or Highway Chauffeur, are expected to be introduced into the market from 2020 onwards.

However, several challenges remain, in particular for highly automated vehicles, before we will see them on the roads. Highly automated vehicles must achieve very high levels of availability and effectiveness of the vehicle functions and their performance has to be better compared to the performance of human drivers. Based on ongoing demonstration pilots, new large scale, cross-border corridor projects for highly automated driving systems are needed to ensure that no new risks are introduced and to study user and customer expectations and acceptance, market potentials and risks.

Scope: The proposed actions should include all the following aspects:

- Demonstrate the robustness and reliability (functional safety) and user acceptance of connected and highly automated driving technologies and systems for passenger cars (SAE level 4[2]) for different use cases in particularly challenging and complex environments that are expected to be introduced into the market after 2020.
- Test innovative connectivity technologies for connected and automated driving since communication and cooperation of automated vehicles with other vehicles, infrastructure and other road users has the potential to increase the safety, comfort, productivity and the enabling of innovative

business models of automated vehicles and to improve the efficiency of the overall transport system.

- The use of the European Global Navigation Satellite Systems (Galileo and EGNOS) should be encouraged to achieve the full potential of advanced satellite positioning for automated driving functions.
- Optimised use of digital technologies such as the Internet of Things, Artificial Intelligence and Big Data for automation should be considered.
- Conduct cross-border demonstrations to ensure that new services and systems are compatible and interoperable at European level, to optimise the use of digital technologies for automation between countries, to coordinate investments towards reliable communication coverage and to exploit the full potential of hybrid communications between short-range and long-range technologies and technologies within the 5.9 GHz spectrum band.
- Develop and test solutions for smooth communication and interaction between automated vehicles and their users and other (vulnerable) road users, taking into account gender differences, when relevant.
- Holistic concept for cybersecurity to protect automated driving systems (and its connectivity points) to avoid any (conscious) manipulations of the information enabling automated driving functions and to assure confidentiality, availability and integrity of data. This concept should also include the protection of the information collected by the automated vehicles and the external data transferred to the vehicles. Provide support to the development of testing and validation procedures of connected and automated driving functions, including their performance related to cyber-security.
- Evaluate effects of connected, cooperative and highly automated driving systems on transport system efficiency, safety, security, environment as well as on user behaviour and user acceptance, taking into account gender differences and other intersectionalities, when relevant.

Lessons learned (data, knowledge and experiences from the project, including disengagements and edge cases) should be provided. Consortia should commit to make the data collected during the pilots available through common data sharing frameworks in order to foster further research.

In line with the Union's strategy for international cooperation in research and innovation, international cooperation is encouraged. In particular, proposals should foresee cooperation with projects or partners from the US, Japan, South Korea, **Singapore**, and/or Australia. Proposals should foresee twinning with entities participating in projects funded by US DOT to exchange knowledge and experience and exploit synergies. Twinning with Japan is also encouraged.

The Commission considers that proposals requesting a contribution from the EU between EUR 15 and 30 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: Actions are expected to demonstrate at large-scale the technological readiness, reliability and safety of the connected and highly automated driving functions for different use cases in particularly challenging

and complex environments. They will show that highly automated driving systems for passenger vehicles can increase road safety and transport efficiency, reduce energy use, pollutant emissions and traffic congestions, and therefore support climate action and sustainable development objectives. Better protection of connected and automated vehicles against any type of cyber threats to guarantee safe operations. Actions will seek to improve user acceptance of innovative connected and highly automated driving systems and the uptake of new business models. They will contribute to a better understanding of viable business and operating models that could lead to private and/or public private investments in communication infrastructure.

Cross-cutting Priorities: International cooperation

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[1] Definition of SAE Level 3 – Conditional Automation – "the driving mode-specific performance by an automated driving system of all aspects of the dynamic driving task, with the expectation that the human driver will respond appropriately to a request to intervene", according to the SAE International's standard J3016.

[1][2] Definition of SAE Level 4 – High Automation: "the driving mode-specific performance by an automated driving system of all aspects of the dynamic driving task, even if a human driver does not respond appropriately to a request to intervene", according to the SAE International's standard J3016.

Horizon 2020 Pillar: Societal Challenges

Programme: Smart, green and integrated transport

Call Title: Building a low-carbon, climate resilient future: Green Vehicles

Call Identifier: h2020-lc-gv-2018-2019-2020

Topic Title: Setting up a common European research and innovation strategy for the future of road transport

Topic Identifier: LC-GV-09-2020

Type of Action: CSA Coordination and support action

Deadline(s): 21.04.2020 (single-stage)

Participant Portal Weblink:
https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/lc-gv-09-2020

Specific Challenges: The objective of this topic is to define R&D roadmaps for a sustainable and efficient road transport system in Europe. It calls for a Coordination and Support Action to support ERTRAC (the European Technology Platform for Road Transport), future Partnerships relevant to road transport in Horizon Europe and the European Commission in defining the research needs for their upcoming research and innovation programmes, and by then helping to achieve the targets set at EU and global level (EU Transport White Paper, COP21 for decarbonisation, etc.).

International cooperation with developing and emerging economies should also be developed in order to increase efficient mobility for all, reduce local (air and noise) and CO2 emissions, and tackle health and safety issues, and increase attractiveness and competitiveness in particular in urban areas.

Scope: Proposals should take a comprehensive approach ranging from components up to system integration, and include enabling technologies where relevant. Both passenger mobility and freight transport should be addressed and covering urban mobility as well as inter-urban and long-distance transport. They should address all the following aspects:

- Updating of research agendas and roadmaps developed by the European Technology Platform ERTRAC (European Road Transport Research Advisory Council) and supporting the definition of research priorities of future Horizon Europe Partnerships relevant to road transport, covering all transport research fields.
- Facilitating cooperation between cities in Europe, **Asia**, Latin America and Africa. Actively support policy and knowledge exchange and establish a peer-

to-peer exchange and capacity building programme that takes advantage of the results of a large number of relevant cities. Cooperation between EU and international projects on urban mobility. Develop implementation concepts for sustainable mobility including shared private vehicles (e.g. light-duty vehicles and 2-, and 3-wheelers), logistics (e.g. e-Trucks, cargo bikes), public transport systems (e.g. Bus Rapid Transit Systems, buses, soft modes) and new mobility services.

- Liaise with international financing institutions to foster the take-up and implementation of the concepts developed, support the European Commission in international discussions and specialised sectorial Fora related to Mobility for All, Climate Change and the New Urban Agenda. Track global progress on urban electric mobility and support UN activities, such as the Urban Electric Mobility Initiative (UEMI).

The implementation requires close collaboration with the leading European stakeholders in transport research, including vehicles manufacturers, supply industry, and research and engineering organisations, as well as strong links with other relevant European initiatives and associations. In line with the strategy for EU international cooperation in research and innovation, international cooperation is encouraged with key emerging countries, in particular with **Asia**, Latin America and Africa.

The Commission considers that proposals requesting a contribution from the EU of between EUR 0.8 to 1 million each would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected Impact: This action will bring together the leading European stakeholders in road transport research to develop roadmaps and support international cooperation. It will contribute to a further harmonisation of research and innovation, and therefore contribute to the European Research Area, in particular also in the view of innovation, as well as to the European strategies for a future transport system.

Proposals are expected to contribute to:

- The objective of the European Union for climate action and sustainable development.
- The objectives set by the Paris Agreement (COP21) and the New Urban Agenda.
- The fulfilment of post 2020 emission targets in road transport (at least 30% by 2030 compared to 2021)
- The EU's long-term goal of moving close to zero fatalities and serious injuries by 2050 ("Vision Zero")
- UN's Sustainable Development Goals 11 "Sustainable cities and communities" (with particular attention to 11.2) and 13 "Climate Action"
- Strengthening the collaboration of the European Union with **Asia**, Latin America and Africa.

Horizon 2020 Pillar: Societal Challenges

Programme: Smart, green and integrated transport

Call Title: 2018-2020 Mobility for Growth

Call Identifier: h2020-mg-2018-2019-2020

Topic Title: Towards sustainable urban air mobility

Topic Identifier: MG-3-6-2020

Type of Action: RIA Research and Innovation action

Deadline(s): 21.04.2020 (single-stage)

Participant Portal Weblink:
https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/mg-3-6-2020

Specific Challenges: Urban air mobility (UAM) is a field of disruptive innovation, not only for aviation but also for mobility systems and urban planning at large. At urban / suburban and peri-urban / inter-urban level, point-to-point air connection can help overcome the lack or congestion of surface transport, lighten and complement logistic chains whilst saving time and recurrent infrastructure costs.

The companies enabling urban air mobility and the cities and regions embracing it may develop competitive advantages, both in terms of manned/unmanned aircraft systems' business and in terms of mobility services for people, emergency services and freight.

Innovation is at the core of the challenge to make urban air mobility not only safe, secure, quiet and green but also more accessible, faster, affordable, inclusive and publicly accepted. Research activities are not only aeronautical but also cross-disciplinary to enable aerial traffic in the urban environment. This will notably encompass more autonomous systems and efficient integration with urban infrastructure, with energy and communication networks and with other transport modes in a system-of-systems approach and in line with the Commission's climate change Long Term Strategy[1]

Scope: Proposals should address novel concepts, technologies and solutions beyond the state-of-the-art. Proposals should address all the following three research areas:

A. Safety and security: particularly when operating over populated areas – including several aspects such as adverse weather and airflow conditions at low altitudes, human factors and automation, collision and avoidance; electro-magnetic compatibility; detection and surveillance of physical and

cyber threats, prevention, preparedness, response and recovery from threats, including intentional interference and misuse of urban air mobility; and/or other relevant hazards and threats in a operation centric and risk-based approach.

B. Sustainability with regard to the overall environmental footprint (e.g. energy demand; local emissions and global greenhouse gas emissions); and sustainability with regard to noise and visual pollution, including those aspects dealing with perception, monitoring and mitigation in urban environments..

C. Public acceptance, socio-economic modelling and relevant regulatory and organisational aspects of urban air mobility systems, such as those evolving from noise, visual pollution, privacy, shared-use, land-use, liability, safety (including airworthiness) and security of operations (including enforcement), or dedicated certification schemes. Co-creation and involvement of citizens is key for this area e.g. to anticipate the behaviour, the blocking points, the needs and public tolerance/embracement for such a new mobility. Policy recommendations should also include procurement and deployment strategies

In addition, the proposals will also have to address one or more of the following research areas:

D. Services: new door-to-door or emergency services concepts allowing UAM traffic to be embedded in multi-modal urban transportation environment; new approaches for regulatory due processes associated to the sign-off of urban air services.

E. Operations: new concepts of operations allowing UAM traffic to be interwoven with the multi-modal urban transportation or emergency systems (e.g. ground/air ambulances), with due account of the safe and secure utilisation of the air space.

F. Power-plant/propulsion system development for safe, economic and environmentally friendly UAM. Characteristics shall include high power/weight ratio, fast battery recharge/fuel-cell refill, high level of reliability and fail-safety and low level of noise, emissions and maintenance requirements.

G. Infrastructure adaptation, evolution and integration into transport, energy and ICT networks for efficient and seamless door-to-door mobility.

Particular emphasis should be addressed to potentially early urban air mobility services (e.g. for air medical emergencies, for safety & security services, for logistics, etc).

TRL can reach up to level 6 depending on the level of resources leveraged for the activities.

Proposals should ensure complementarities with the European U-space Demonstrator Network and with SESAR JU U-space activities. In addition to research and industrial involvement, proposals should ensure a strong commitment for collaboration and communication with local authorities and

communities as well as with players from other relevant leading-edge industrial and service sectors that can substantially contribute to meet the challenges at stake. Proposals can leverage synergies with other EU activities such as:

- The European Innovation Partnership on Smart Cities and Communities (EIP-SCC), in particular the initiative on urban air mobility, and the CIVITAS initiative.
- The European Institute of Technology – Knowledge and Innovation Center (EIT-KIC) on Urban Mobility.
- EU satellite-based systems for navigation (EGNOS/Galileo), observation (Copernicus) and EU communication/connectivity initiatives (e.g. 5G, C-ITS).

The proposals may include the explicit commitment from the European Aviation Safety Agency (EASA) to assist or to participate in the actions. This is particularly important in view of the new EU drone regulation.

International cooperation is encouraged in cases of mutual benefit, such as sharing of practices with early adopters of urban air mobility in non-European megacities (e.g. **Singapore**, Dubai, Sao Paulo, Mexico DF, etc.)

The Commission considers that proposals requesting a contribution from the EU between EUR 4 and 6 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting lower amounts.

Expected Impact: The following impacts have to be addressed by all proposals:

- Contribute to smarter and more sustainable cities and air transport.
- Contribute to maintain aviation safety levels.
- Contribute to the development of European / international standards and legislation for urban air mobility.
- Contribute to increase the capability of public authorities – such as air regulators and urban planners – to handle the regulatory due processes for UAM services.
- Contribute to decrease the overall environmental footprint.

In addition, when relevant, the following impacts can also be addressed:

- Contribute to decrease the time in door-to-door travel or in case of emergency interventions.
- Contribute to reduce the lead time-to-market and de-risk the set-up of UAM services.
- Contribute to new urban planning tools to integrate UAM services in existing plans, in particular Sustainable Urban Mobility Plans (SUMPs) and transport/logistics plans of individual institutions.
- Contribute to increase the competitiveness and economic growth, as congestion in cities is detrimental to business reactivity.
- Contribute to inspire and engage new generations of students, engineers and urban planners and mobility managers.

Cross-cutting Priorities: Socio-economic science and humanities, International cooperation

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[1] COM(2018) 773: A Clean Planet for all: A European strategic long-term vision for a prosperous, modern, competitive and climate neutral economy

Horizon 2020 Pillar: Societal Challenges

Programme: Climate action, environment, resource efficiency and raw materials

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

Call Identifier: h2020-lc-cla-2018-2019-2020

Topic Title: Polar climate: understanding the polar processes in a global context in the Arctic and Antarctic Regions

Topic Identifier: LC-CLA-17-2020

Type of Action: RIA Research and Innovation action

Deadline(s): 13.02.2020, 03.09.2020 (two-stage)

Participant Portal Weblink:
https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/lc-cla-17-2020

Specific Challenges: Many of the natural physical processes occurring in the polar atmosphere and oceans are potentially of profound significance in controlling conditions across the globe and affecting lives and livelihoods across the world, in the Polar, sub-Polar, temperate, and tropical regions. Understanding the interacting nature and feedback of polar processes and addressing their consequences in a global context will benefit the people, policy and businesses well beyond the Polar Regions.

Scope: Proposals should aim at developing innovative approaches, building on existing data resources and infrastructures, the latest observational products (including in-situ observations), and state-of-the-art climate models, to assess the key physical and chemical processes in the ocean and atmosphere and the key ocean-atmosphere-ice interactions. Proposals should cooperate with relevant projects funded by the ESA Earth Observation Programme. In addition, they are encouraged to join the EU Arctic Cluster in order to build synergies and maximise the complementarity of the different actions in the Cluster. Proposals should build upon previous actions funded under Horizon 2020 and avoid duplication or overlap.

In line with the strategy for EU international cooperation in research and innovation (COM(2012)497), international cooperation is encouraged, in particular with countries – beyond the EU Member States and countries associated to Horizon 2020 – that took part in the Arctic Science Ministerial meetings of 28 September 2016 and 25-26 October 2018[1].

The Commission considers that proposals requesting a contribution from the EU in the range of EUR 7-8 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:

The project results are expected to contribute to:

- improved understanding of how the changing polar climate systems affect and are affected by lower latitudes through ocean and atmospheric circulation;
- improved understanding of the key ocean-atmosphere-ice interactions;
- improved understanding of the fully coupled physical climate system (atmosphere-ocean-ice) on diverse space and time scales;
- improved understanding of the key physical and chemical processes in the ocean and in the atmosphere;
- improved projections of future polar and global climate, including feedbacks and impacts
- improved capability to respond to the impact of climatic change on the environment and human activities in the Polar Regions (with a focus on the Arctic), both in the short and longer term;
- the IPCC scientific assessments, the consolidation phase of the Year Of Polar Prediction (YOPP) and to the Copernicus Climate Change (C3S) services.
- supporting the assessment of regional climate impacts.

Cross-cutting Priorities: International cooperation, Blue Growth

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[1] i.e. the United States of America, Canada, the People's Republic of China, Japan, the Russian Federation, South Korea, New Zealand, India, **Singapore**, and Greenland; see https://www.arcticscienceministerial.org/en

Horizon 2020 Pillar: Societal Challenges

Programme: Climate action, environment, resource efficiency and raw materials

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

Call Identifier: h2020-lc-cla-2018-2019-2020

Topic Title: Supporting the implementation of GEOSS in the Arctic in collaboration with Copernicus

Topic Identifier: LC-CLA-20-2020

Type of Action: RIA Research and Innovation action

Deadline(s): 13.02.2020, 03.09.2020 (two-stage)

Participant Portal Weblink:
https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/lc-cla-20-2020

Specific Challenges: In order to gain more insight in the fast rate of climate, ecological and environmental change taking place in the Arctic and to facilitate well-informed decisions, there is a need to develop coordinated Earth observations and information services specifically targeting this region, also building on the essential contribution of indigenous knowledge and community-based monitoring systems. These observations and services need to be delivered in order to support a sustainable development in the Arctic, particularly for responding to the needs of the people who live there. Observations and services are also necessary to improve the monitoring and predicting capabilities on changes that may affect other parts of the planet, and in particular the Northern hemisphere. The challenge and suitable actions to alleviate adverse consequences were identified in the 2nd Arctic Science Ministerial Joint Statement of Ministers.[1]

Scope: The action should aim at:

(i) advancing the operationalisation of an integrated pan-Arctic Observing System in preparation for a possible future ArcticGEOSS initiative;

(ii) improving and extending the terrestrial, marine and cryospheric in-situ measurements and the community-based monitoring systems necessary for the monitoring of the Arctic;

(iii) setting up pilot services and implementing the coordinated network of those services necessary for the adaptation to climate change in the region;

(iv) contributing to the interoperability of Arctic Data systems; and

(v) to make a positive contribution to national, regional and international decision-making processes and science strategies.

The action should help to build an Arctic “window”[2] of Copernicus by bringing together all Arctic relevant observations deriving from different Copernicus services and promoting access to relevant Copernicus datasets.

The action should coordinate with projects stemming from the NSFs Arctic portfolio, such as the "Navigating the New Arctic" programme, and other actions of the Transatlantic Ocean Research Alliance, by establishing joint operational activities, in order to support the mission and objectives of the international initiative on Arctic observations brought forward by the Sustaining Arctic Observing Networks (SAON).

In line with the strategy for EU international cooperation in research and innovation (COM(2012)497), international cooperation is encouraged, in particular with the countries and Indigenous Peoples organisations participating in the 2nd Arctic Science Ministerial[3].

The action should build on the outcomes of previous EU-funded projects in the framework of GEO and Copernicus, create synergies and avoiding un-necessary duplications also by joining the EU Arctic Research Cluster. Likewise, the action should cooperate with relevant projects funded by the ESA Earth Observation Programme. To this end, proposals should foresee a dedicated work package and /or task and earmark the appropriate resources accordingly.

The pilot services should fall into the scope of EuroGEOSS and follow the direction of the EuroGEOSS initiative. Data and services produced through the projects should be registered in the GEOSS Common Infrastructure (GCI).

The Commission considers that proposals requesting a contribution from the EU in the range of EUR 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:

The project results are expected to contribute to:

- the implementations the GEO-Cold Region Initiative with a specific emphasis on the Arctic, and the initiating of an ArcticGEOSS initiative;
- sound and effective decision-making by policy makers in the Arctic regions through the use of reliable and science-based Earth observation and information;
- supporting of the 2030 Agenda for Sustainable Development, the Paris Agreement and Sendai Framework for Disaster Risk Reduction 2015-2030;
- strengthening Earth observation capacity focused on the European region;
- delivering EuroGEOSS services for the Arctic;
- improved handling, archiving and interoperability of environmental data in polar regions;
- a coherent data management, through the use of GEOSS Data Management Principles and best practices (aligning with INSPIRE).

Cross-cutting Priorities: Blue Growth, International cooperation

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[1] Joint Statement of Ministers, 2nd Arctic Science Ministerial, Berlin 2018, https://www.arcticscienceministerial.org/files/ASM2_Joint_Statement.pdf

[2] https://www.copernicus.eu/en/copernicus-services-information-and-sentinel-products-arctic-region

[3] i.e. the United States of America, Canada, the People's Republic of China, Japan, the Russian Federation, South Korea, New Zealand, India, **Singapore**, and Greenland; see https://www.arcticscienceministerial.org/en