

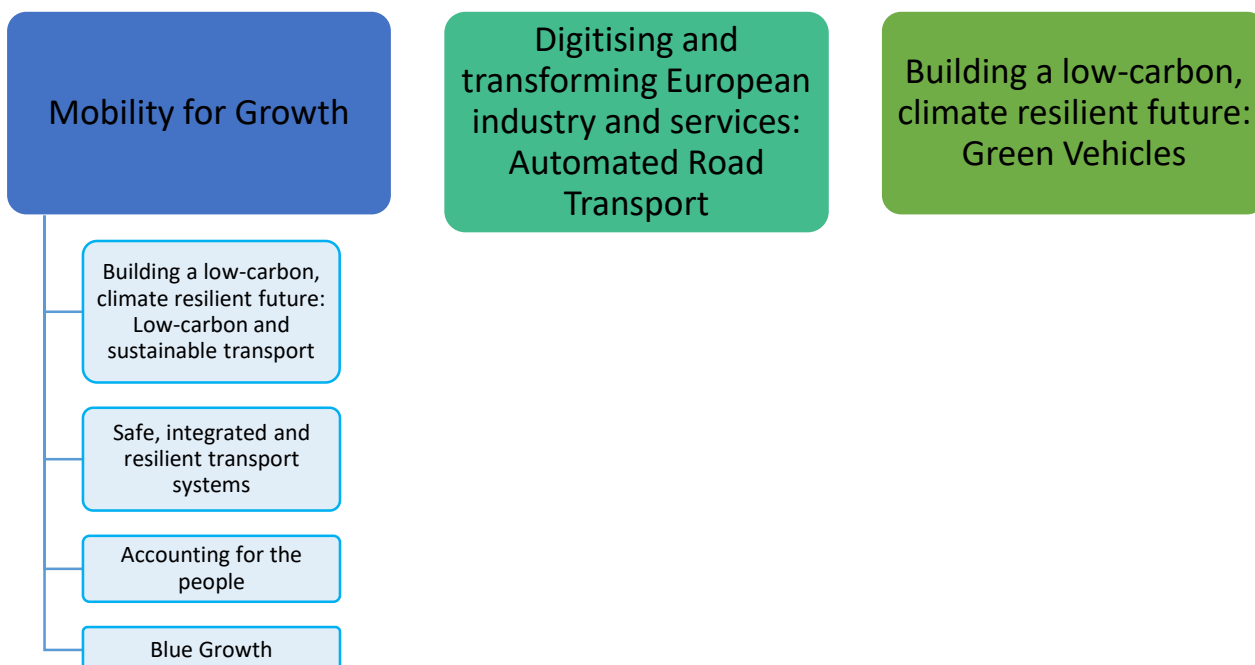
## SC4 - Smart, green and integrated transport



The Specific Programme of SC4 "Smart, green and integrated transport" is structured in four broad lines of activities aiming at:

- a) **Resource efficient transport that respects the environment.** The aim is to minimise transport's systems' impact on climate and the environment (including noise, air and water pollution) by improving its efficiency in the use of natural resources, and by reducing its dependence on fossil fuels and energy imports.
- b) **Better mobility, less congestion, more safety and security.** The aim is to reconcile the growing mobility needs with improved transport fluidity, through innovative solutions for seamless, inclusive, affordable, safe, secure and robust transport systems that make full use of modern information and communication technologies (ICT) capabilities.
- c) **Global leadership for the European transport industry.** The aim is to reinforce the competitiveness and performance of European transport manufacturing industries and related services on global markets including logistic processes and retain areas of European leadership (e.g. such as aeronautics).
- d) **Socio-economic and behavioural research and forward looking activities for policy making.** The aim is to support improved policy making which is necessary to promote innovation and meet the challenges raised by transport, including the internalisation of external costs, and the societal needs related to it. Socio-economic research is also an important instrument for reaching the objectives under this programme.

The activities of this Work Programme in 2019 will be implemented by three Calls for proposals:



In 2019 a new Work Programme part, titled "Cross-cutting activities", has been released. It contains the call "[Building a Low-Carbon, Climate Resilient Future: Next-Generation Batteries](#)". The seven topics, all with deadline 25 April 2019, can be found [here](#). The summary of the call can be found on page 4.

# Mobility for Growth

## Building a low-carbon, climate resilient future: Low-carbon and sustainable transport

Research and innovation activities will support the **transition towards zero-emission and quieter mobility** across all transport modes. Grounded on a people's perspective, it will lead to **improved tools and mechanisms for monitoring and detection of emissions and noise in road vehicles, ships and aircrafts** and will provide cities, regional and national authorities and spatial planners with evidence of long term impacts of the current developments in transport technologies and business models on spatial planning to **support decision making processes in policy and planning**.

Action	Topic	Opening date	Deadline(s)
RIA	Advancements in aerodynamics and innovative propulsion systems for quieter and greener aircrafts	05/09/2018	16/01/2019 12/09/2019
RIA	Aviation operations impact on climate change (InCo flagship) <sup>1</sup>	04/12/2018	25/04/2019
RIA	Future propulsion and integration: towards a hybrid/electric aircraft (InCo flagship) <sup>2</sup>	04/12/2018	25/04/2019
RIA or IA	Retrofit Solutions and Next Generation Propulsion for Waterborne Transport	05/09/2018	16/01/2019 12/09/2019
RIA	Upgrading transport infrastructure in order to monitor noise and emissions	05/09/2018	16/01/2019 12/09/2019
RIA	Logistics solutions that deal with requirements of the 'on demand economy' and for shared-connected and low-emission logistics operations	05/09/2018	16/01/2019 12/09/2019
CSA	Structuring R&I towards zero emission waterborne transport	04/12/2018	25/04/2019

## Safe, integrated and resilient transport systems

Research under this section is expected to contribute significantly to **transport safety** across transport modes. It is also expected to contribute to the **decongestion of road/city infrastructure** by modernising and increasing the reliability and competitiveness of Intra-European Waterborne transport, as well as to the **integration of the European network for logistics into the global one** by supporting the sustainable development of new logistics routes and their links with national/regional markets.

Action	Topic	Opening date	Deadline(s)
RIA	Moving freight by Water: Sustainable Infrastructure and Innovative Vessels	05/09/2018	16/01/2019 12/09/2019
RIA	Safety in an evolving road mobility environment	05/09/2018	16/01/2019 12/09/2019
RIA	Innovative applications of drones for ensuring safety in transport	05/09/2018	16/01/2019 12/09/2019
RIA	InCo Flagship on Integrated multimodal, low-emission freight transport systems and logistics <sup>3</sup>	05/09/2018	16/01/2019 12/09/2019

## Accounting for the people

The overall objectives are to create an innovative and inclusive digital travel environment that improves accessibility and social inclusion, travel experience and citizen well-being. In doing so, the research topics will contribute to a **smooth adoption of new and emerging transport mobility solutions, ensuring equity and societal acceptance**.

Action	Topic	Opening date	Deadline(s)
CSA	Support for dissemination events in the field of Transport Research: support for TRA 2022	05/09/2018	16/01/2019
RIA	An inclusive digitally interconnected transport system meeting citizens' needs	04/12/2018	25/04/2019
ERA-NET COFUND	Supporting Joint Actions on sustainable urban accessibility and connectivity	04/12/2018	25/04/2019

## Blue Growth

The following topic belongs to "Blue Growth", the long term EU strategy to support sustainable growth in the marine and maritime sectors as a whole.

Action	Topic	Opening date	Deadline(s)
RIA	Ship emission control scenarios, marine environmental impact and mitigation	04/12/2018	25/04/2019

<sup>1</sup> International cooperation with China.

<sup>2</sup> International cooperation with Japan, Russia, USA and Canada.

<sup>3</sup> International cooperation with US, Japan, Canada, China, Latin America

## Digitising and transforming European industry and services: Automated Road Transport

By supporting innovative connected and automated driving technologies and mobility solutions, the call will help to create new global market opportunities for European industry and strengthen the position of Europe as a world leader in innovative mobility. Actions under this call are expected to contribute to **more road safety** as well as to **better traffic flow, less congestion, fuel efficiency and reduce carbon emissions**. **New shared and fully automated mobility services** can help decrease the total number of cars on the road, alleviating the overall traffic.

Action	Topic	Opening date	Deadline(s)
RIA	<a href="#">Human centred design for the new driver role in highly automated vehicles</a>	04/12/2018	25/04/2019
IA	<a href="#">Developing and testing shared, connected and cooperative automated vehicle fleets in urban areas for the mobility of all</a>	04/12/2018	25/04/2019



In all these topics, international cooperation with the following countries is strongly encouraged: USA (US Department Of Transport – DOT projects), Japan, South Korea, Singapore, Australia.

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

By supporting innovative connected and automated driving technologies and mobility solutions, the call will help to create new global market opportunities for European industry and strengthen the position of Europe as a world leader in innovative mobility. Actions under this call are expected to contribute to **more road safety** as well as to **better traffic flow, less congestion, fuel efficiency and reduce carbon emissions**. **New shared and fully automated mobility services** can help decrease the total number of cars on the road, alleviating the overall traffic.

Action	Topic	Opening date	Deadline(s)
IA	<a href="#">User centric charging infrastructure</a>	04/12/2018	25/04/2019
IA	<a href="#">Low-emissions propulsion for long-distance trucks and coaches</a>	04/12/2018	25/04/2019
IA	<a href="#">InCo flagship on “Urban mobility and sustainable electrification in large urban areas in developing and emerging economies”<sup>1</sup></a>	04/12/2018	25/04/2019

<sup>1</sup> international cooperation with Asia (China, India, etc.), CELAC, Africa.

## Focus on “Cross-cutting activities” part of the Work Programme

### Call: Building a Low-Carbon, Climate Resilient Future: Next-Generation Batteries



**Electric batteries** are currently seen as important technological enablers to drive the transition towards a de-carbonised society, by integration of renewable and clean energy sources (such as wind energy and photovoltaics) in the electricity grid, and, in particular, by electrification of transport. Energy storage is the common denominator: it includes both **electro-mobility** and **stationary applications** despite the different constraints applying to each of these applications in real life. Electric batteries have recently achieved considerable improvements in terms of their technical performance (such as energy density, power density, thermal stability and durability) and economic affordability. Such improvements are major contributors to the successful introduction of electric vehicles (which are becoming cheaper and have longer range) and of stationary energy storage systems. But for a successful mass introduction of electrified mobility and renewable and clean energy systems with market competitive performances and - in the case of electric vehicles - fast charging capability, substantial improvements of the electric battery technologies are required.

Currently, the world production of automotive battery cells is dominated by Asian companies which represent more than 90% of the present world capacity. It will be very challenging for European companies to catch-up. Europe has to search for better performance, and strongly force the development of more price competitive and sustainable battery storage solutions. Beyond research on **improved electrochemistry** and **new battery materials** (e.g. advanced Li-ion, solid-state and post-Li-ion technologies), it is the **complete electric batteries value chain and life-cycle** that has to be considered, from access to raw material, over innovative advanced materials and nanotechnologies to modelling, production, recycling, second life, life cycle and environmental assessment and skills.

In 2019, proposals are invited to the following topics:

Action	Topic	Opening date	Deadline(s)
RIA	<a href="#">Strongly improved, highly performant and safe all solid state batteries for electric vehicles</a>	24/01/2019	25/04/2019
RIA	<a href="#">Strengthening EU materials technologies for non-automotive battery storage</a>	24/01/2019	25/04/2019
RIA	<a href="#">Modelling and simulation for Redox Flow Battery development</a>	24/01/2019	25/04/2019
RIA	<a href="#">Advanced Redox Flow Batteries for stationary energy storage</a>	24/01/2019	25/04/2019
RIA	<a href="#">Research and innovation for advanced Li-ion cells (generation 3b)</a>	24/01/2019	25/04/2019
RIA	<a href="#">Li-ion Cell Materials &amp; Transport Modelling</a>	24/01/2019	25/04/2019
CSA	<a href="#">Network of Li-ion cell pilot lines</a>	24/01/2019	25/04/2019

RIA: Research and Innovation Action

IA: Innovation Action

CSA: Coordination and Support Action

COFUND: Co-funding of regional, national and international programmes

## Other opportunities for Transport research and innovation across Horizon 2020

### Prize

- Horizon prize for [Cleanest engine of the future](#)

### Bottom-up activities

- [European Research Council](#)
- [European Innovation Council](#) (SME Instrument, Fast-Track-to-Innovation, FET, Prizes)
- [Marie Skłodowska-Curie Actions](#)

### Societal Challenges and LEIT

- SC2: [Blue Growth Call](#)
- SC3: [Secure, clean and efficient energy](#)
- SC5: [Climate action, environment, resource efficiency and raw materials](#)
- SC7: [Secure Societies](#)
- LEIT: [Nanotechnologies, advanced materials, biotechnology and advanced manufacturing and processing](#)
- LEIT: [Information and Communication Technologies](#)
- LEIT: [Space](#)

## The policy context

### GLOBAL COMMITMENTS:



<http://www.un.org/sustainabledevelopment/sustainable-development-goals/>



[https://ec.europa.eu/clima/policies/international/negotiations/paris\\_en#tab-0-0](https://ec.europa.eu/clima/policies/international/negotiations/paris_en#tab-0-0)



United Nations  
Framework Convention on  
Climate Change

[http://unfccc.int/paris\\_agreement/items/9485.php](http://unfccc.int/paris_agreement/items/9485.php)

### EUROPEAN POLICIES:



Energy Union

<https://ec.europa.eu/energy/en/topics/energy-strategy-and-energy-union>



Transport White Paper

[https://ec.europa.eu/transport/sites/transport/files/themes/strategies/doc/2011\\_white\\_paper/white-paper-illustrated-brochure\\_en.pdf](https://ec.europa.eu/transport/sites/transport/files/themes/strategies/doc/2011_white_paper/white-paper-illustrated-brochure_en.pdf)



Clean Energy for All Europeans

<https://ec.europa.eu/energy/en/topics/energy-strategy-and-energy-union/clean-energy-all-europeans>



Accelerating Clean Energy Innovation

[https://ec.europa.eu/energy/sites/ener/files/documents/1\\_en\\_act\\_part1\\_v6\\_0.pdf](https://ec.europa.eu/energy/sites/ener/files/documents/1_en_act_part1_v6_0.pdf)



Communication on “a European Strategy for Low-Emission Mobility”

<http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52016SC0244&from=EN>



Circular economy

[http://ec.europa.eu/environment/circular-economy/index\\_en.htm](http://ec.europa.eu/environment/circular-economy/index_en.htm)



Digital single market

<https://ec.europa.eu/digital-single-market/>