



The EU Framework Programme for Research and Innovation

HORIZON 2020

**Smart, green and
integrated Transport**

Work Programme 2017



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Research and
Innovation



Green Vehicles 2017 [1/2]

Total EU contribution: EUR 133 Mio

	Topic title	Year	Type of action
GV-01-2017	Optimisation of heavy duty vehicles for alternative fuels use	2017	IA
GV-04-2017	Technologies for low emission light duty powertrains	2017	RIA
GV-05-2017	Electric vehicle user-centric design for optimised energy efficiency	2017	RIA
GV-06-2017	Physical integration of hybrid and electric vehicle batteries at pack level aiming at increased energy density and efficiency	2017	IA
GV-07-2017	Multi-level modelling and testing of electric vehicles and their components	2017	RIA

RIA = Research and Innovation Action

IA = Innovation Action



Green Vehicles 2017 [2/2]

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GV-08-2017	Electrified urban commercial vehicles integration with fast charging infrastructure	2017	IA
GV-09-2017	Aerodynamic and flexible trucks	2017	IA
GV-10-2017	Demonstration (pilots) for integration in transport system of electrified L-category vehicles	2017	IA
GV-13	Production of next generation battery cells in Europe for transport applications	2017	RIA

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Technologies for low emission light duty powertrains

Topic GV-04-2017 (RIA)

- **Challenge:** Factor-in manufacturing, low weight and cost of materials for the next generation of electric drivetrains
- **Scope:** Functional system integration of electric machines with transmission/breaking system; Lower cost electric machines; Integration of power electronics; Modular powertrain components for mass manufacturing
- **Expected impact:**
 - ✓ *Next generation of electric drives, with reduced costs*
 - ✓ *Full size prototypes (increased torque, power, operating speed, power density, power electronics, reduction in losses)*
- Estimated EC contribution per proposal: EUR 5-10 Mio

Electric vehicle user-centric design for optimised energy efficiency

Topic GV-05-2017 (RIA)

- **Challenge:** Developing advanced solutions to combine increase of range with safety and user requirements (thermal comfort and well-being of occupants) in Electric Vehicles
- **Scope:** Analyse all user-centric design aspects impacting on energy consumption; Improve thermal insulation of vehicles; Integrate advanced systems and components; Implement, test and assess at full vehicle level
- **Expected impact:**
 - ✓ *Increase drive range by 25%*
 - ✓ *Viable solutions in term of cost and production*
- Estimated EC contribution per proposal: EUR 7-10 Mio

Physical integration of hybrid and electric vehicle batteries at pack level

Topic GV-06-2017 (IA)

- **Challenge:** Increase energy density and efficiency of battery packs for higher electric ranges
- **Scope:** Thermal, electrical and mechanical design of battery systems based on existing cells; Design for manufacturing, recycling and second use; Prototyping and mass-production technologies for battery systems; Demonstration on test bench and under real life
- **Expected impact:**
 - ✓ *15-20% energy density improvement (pack level), 20-30% cost reduction, strengthening the EU value chain*
- Estimated EC contribution per proposal: EUR 5-7 Mio

Multi-level modelling and testing of electric vehicles and their components

Topic GV-07-2017 (RIA)

- **Challenge:** Need for advanced methods and tools to ensure safety and improve efficiency of future EVs
- **Scope:** Development of testing facilities for electric traction drive and storage system, of systems/methods to assess reliability and energy content, and of real-time models; Tools and methods integrated with control development for improving safety and reducing costs
- **Expected impact:**
 - ✓ *Reduction of testing efforts (by 40%), improved design capability and shortened time to market*
 - ✓ *Improved efficiency of e-drivetrains (by 20%), and of powertrain safety for all types of electrified vehicles (by a factor of 10)*
- Estimated EC contribution per proposal: EUR 4-10 Mio

Electrified urban commercial vehicles integration with fast charging

Topic GV-08-2017 (IA)

- **Challenge:** Assessing and comparing different options for range extension of medium/heavy electric commercial vehicles
- **Scope:** Development of vehicle drive-train concepts, rapid charging and energy storage delivering the required performances integrated in the global system
- **Expected impact:**
 - ✓ *Vehicles: energy efficiency improvements, low noise operation, reducing polluting emissions and costs*
 - ✓ *Infrastructure: Power transfer capability above 100 kW; transfer efficiencies above 90% for static contactless systems*
- Estimated EC contribution per proposal: EUR 5-15 Mio
- Cooperation with Japan/US-funded projects suggested

Demo (Pilots) for integration of electr. L-category vehicles in urban system

Topic GV-10-2017 (IA)

- **Challenge:** Widespread use of L-category vehicles for individual passenger transport and for small logistics
- **Scope:** Demonstration of potential market penetration of EL-Vs in European cities; Compatibility with other vehicles' charging stations; Deployment of ICT tools for driver support
- **Expected impact:**
 - ✓ *Speed up penetration of EL-Vs in cities and into the market*
 - ✓ *Help develop successful business models*
 - ✓ *Provide data on real driving conditions and use patterns*
- Estimated EC contribution per proposal: EUR 7-10 Mio
- At least two cities as beneficiaries in the consortium

Production of next generation battery cells for transport applications

Topic GV-13-2017 (RIA)

- **Challenge:** Support the future development of a production base for next generation Lithium or post-Lithium battery cells
- **Scope:** Identifying manufacturing challenges for future Li-ion and post-Li-ion chemistries. Developing generic advanced production technologies (milling, mixing, coating, calendaring, assembly lines, quality inspection etc.) to address them
- **Expected impact:**
 - ✓ *Increase knowledge to improve battery quality and lower costs*
 - ✓ *Promote sustainable production and cross-sector synergies (stationary applications, long-distance transport)*
- Estimated EC contribution per proposal: EUR 3-5 Mio

Optimisation of heavy duty vehicles for alternative fuels use

Topic GV-01-2017 (IA)

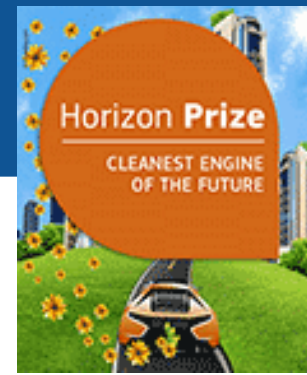
- **Challenge:** Optimising powertrains for Heavy Duty Vehicles (HDV) running on alternative fuels to achieve higher efficiency and decrease emissions
- **Scope:** Evaluating energy efficiency, costs vs benefits, performance of alternative fuels-powered HDVs; Prototype demonstration & validation of new vehicles (in real conditions)
- **Expected impact:**
 - ✓ *Contribute to climate action and sustainable development objectives*
 - ✓ *Oil substitution and reduction of pollutant emissions (Euro VI, C.F.1.2)*
 - ✓ *Market development*
- Estimated EC contribution per proposal: EUR 5-10 Mio



- **Challenge:** Designing adaptable and configurable truck concepts to improve energy efficiency of logistics and co-modal transportation
- **Scope:** Define potential solutions for real time configurable trucks; Develop new concepts and technologies for reduced drag, which are safer, comfortable and cost effective
- **Expected impact:**
 - ✓ *Improvements in energy efficiency (by 18-33%)*
 - ✓ *Standardisation of components, economies of scale*
- Estimated EC contribution per proposal: EUR 7-10 Mio



Horizon prize for the cleanest engine of the future



- **Challenge:** stimulate the development of next generation engines and powertrains using conventional fuels in order to improve air quality issues in European cities
- **Scope:** solution integrated in a system prototype, able to demonstrate reduction of emissions of pollutants and lowering fuel consumption in real driving conditions without affecting the operational capabilities of the vehicle
- **Expected impact:**
 - ✓ *reduce emissions of pollutants in real driving conditions to the lowest level possible*
 - ✓ *delivering better fuel economy and lower CO2 emissions under the same realistic test conditions*
- **Prize Cleanest engine of the future: € 3.5 Million**
- **Deadline for submissions: 20 August 2019**

Horizon prize for the cleanest engine Retrofit



- **Challenge:** spurring the development of new technologies that can be applied to existing diesel engines and powertrains to reduce emissions of pollutants, to improve air quality issues in European cities
- **Scope:** development of retrofittable technology (i.e. devices or modification of existing engines) to extend the life of retrofitted vehicles while greatly reducing their impact on the urban environment.
- **Expected impact:**
 - ✓ *greatly reducing emissions of NO_x, particles, hydrocarbons in real driving conditions*
 - ✓ *technology should not affect the operational capabilities of the retrofitted vehicles*
- **Prize Engine retrofit for clean air: € 1.5 Million**
- **Deadline for submissions: 12 September 2017**

Thank you for your attention



Find out more:

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www.ec.europa.eu/research/participants/portal/desktop/en/home.html

www.ec.europa.eu/research/horizonprize/index.cfm