European Green Cars Initiative PPP
Progress in the Coverage of the Multiannual Roadmap

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EU Green Cars Initiative

• One of the three Public Private Partnerships (PPP) for research
• R&D on technologies and infrastructures essential for climate protection, energy security, zero local emissions, safety, traffic fluidity, and global competitiveness of the automotive industry
• Main focus is on the electrification of cars
• Research topics also include long-distance trucks, and logistics.
• Total budget: one billion Euro for R&D projects in FP7
• Implemented by the ETPs

• Industrial Advisory Board established
• Supported by two Coordination Actions:
Topics Electrification

• Energy Storage Systems
  (cost, performance, lifetime, safety)

• Drive Train Technologies
  (energy recovery, range extenders)

• System Integration
  (energy efficient interplay of components)

• Grid Integration
  (charging, metering, renewables, V2G)

• Safety
  (crashworthiness, HV, emergency)

• Transport System Integration
  (road infrastructures, intermodal use)
Roadmap Electrification

European Roadmap
Electrification of Road Transport

Drafted by
ERTRAC/EPoSS/SmartGrids
Task Force Electrification

Milestones

- **Milestone 1**: Introduction
  - Adapting existing vehicles

- **Milestone 2**: Intermediate
  - 2nd gen. EV updated powertrain

- **Milestone 3**: Mass Production of dedicated vehicles
  - 5 Mio. by 2020

Number of EV and PHEV in the EU

- 2010
- 2012
- 2014
- 2016
- 2018
- 2020

Milo
Roadmap Electrification

Drive Train Technologies
- Develop Low-Cost/Weight
- Develop Highly Integrated
- Optimize Combustion Engines
- Develop Highly Integrated

System Integration
- Optimize System Efficiency
- Find new Solutions for Hybrid
- Design Electrical Architecture
- Create New Concepts for
- Research Light-Weight

Grid Integration
- Develop Adaptive On-Board/In-Plug Charging Dev.
- Develop System for Information
- Develop Simulation, Monitors
- Develop Protocols/Devices for
- Investigate Quick Charging
- Develop Contactless Charging
- Develop Bidirectional Charging
- Establish 1st Generation Charging
- Create Business Models for
- Connect Regions by Highways
- Establish Business Model for
- Create Network of Quick Charging
- Regulate Coverage with Charging
- Standardize Billing Concept

Safety
- Improve Crashworthiness of Lightweight Cars
- Develop Acoustic Perception
- Develop Integrated Safety Concept (HV, Fire, ..)
- Setup Standards for Emergency Handling
- Create & Review Standards for Safety, EMI, Health

Transport System Integration
- Explore Potential of ITS for Energy Efficiency
- Provide Convenient Transition Between Modes
- Apply Sensors & C2X for Autonomous Driving
- Promote Green Image of Electric Vehicles
- EU Wide Signage of Roads and Vehicles

Research & Development
Production & Market
Regulatory Framework

# Call Implementation

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Topics Heavy Duty

• **Vehicle Efficiency**
  (safe & intelligent truck, matching to operation; aerodynamics; rolling resistance; energy management; materials)

• **Driveline Efficiency**
  (powertrain concepts & system integration, advanced combustion & aftertreatment; waste heat recovery; powertrain control; multi-fuel capabilities, hybridization)

• **Driver Efficiency**
  (driver support systems)
Topics Logistics

• City Logistics
  (consumer demands, distribution systems)

• Green Hubs and Green Corridors
  (key performance indicators, new business world, network integration)

• Supply Chain Management
  (interoperability between modes, IT applications, e-Freight)
### Projects

**Technology field** | **# Projects**
---|---
Electrification | 60
Energy storage systems | 21*
Drive train technologies | 15*
Vehicle system integration | 22*
Grid integration | 9*
Transport system integration | 5*
Safety | 6*
Headv Duty Vehicles based on ICE | 2
Logistics & Comodality | 8

* * double counts occur
Roadmap Electrification 2.0

- Assessment of Milestone 1
  - Safety
    - Develop Integrated Safety Concept (HV, Fire, ...)
    - Develop Acoustic Perception
    - Improve Crashworthiness of Lightweight Cars
    - Study Relation to Roadside Restraint Systems
    - Setup Standards for Emergency Handling Including Roadside and Tunnel Safety
    - Create & Review Standards for Safety, EMI, Health
  
- Introduction of Milestone 4 – 2025
- New chapter Transversal Functions (Annexes)
- Update of Recommendations
Roadmap Electrification 2.0

European Roadmap
Electrification of Road Transport
2nd Edition

2nd Edition available

Accumulated Number of EV / PHEV on the road in the EU

Milestone 1
Introduction adapting existing vehicles

Milestone 2
Intermediate 2nd Gen EV updated powertrain

Milestone 3
Mass Production dedicated EV accumulated 5 Mio. by 2020

Milestone 4
Mass Production 3rd Gen EV fully revised EV concept


June 2012

ICT4FEV
AP!RE
What’s next

• Review of project results (internal/external)
• Edition of roadmaps on transversal functions
• Definition of topics to be covered in Horizon 2020