European Green Cars Initiative: a coordinated approach

Transport Directorate, DG Research and Innovation - European Commission
A European Economic Recovery Plan

- Adopted by the EC on 26 Nov 2008 and endorsed by the EU Council on 11-12 Dec 2008 “To support innovation in manufacturing, construction and in the automobile sector, which have recently seen demand plummet as a result of the crisis and which face significant challenges in the transition to the green economy…”

- The European green car initiative is one of 3 Public-Private Partnerships (PPPs) proposed, along with:
  - European energy efficient buildings initiative
  - Factories of the future initiative
Public-Private Partnerships

- **Objective:** to promote the convergence of *public interest* with *industrial* commitment and leadership in determining strategic research activities

- **Quick response:** use existing schemes & structures (FP7 and ETPs)

- **Smart investments:** to improve *competitiveness* of European industries & *environmental protection*

- **Implementation approach:** cross-thematic calls and exploitation of other possibilities
EGCI: interface with the industry
Ad Hoc Industrial Advisory Group

Role:
• integration of all involved sectors and EC services
• strategic dialogue between Commission and industry
• implementation of the Green Cars Initiative as a PPP
• give advice for the R&D priorities of FP7 calls

Members (representing ETPs ERTRAC, EPoSS, SmartGrids, EIRAC):

• AVL
• Bosch
• Continental
• ECT
• FEV
• Fiat Research Center
• Iberdrola
• IFP
• KU Leuven
• Procter & Gamble
• PTV
• Renault
• Ricardo

• Schachinger
• Siemens
• Valeo
• VDI/VDE-IT
• Volkswagen
• Volvo

+ DG RTD
• DG INFSO
• DG MOVE
• DG ENVI
• DG ENTR
• EIB
European Green Cars Initiative: 3 main streams of actions

• Research activities
  
  Budget: €1 billion (€500 million from FP7 matched by a similar amount from industry and Member States)

• EIB loans in support of industrial innovation
  
  Budget: €4 billion (additional amount for 2009-2010)

• Demand size measures & public procurement: e.g. reduction of circulation and registration taxes for cars with low CO2 emission (no budget foreseen)
Estimated Budget Breakdown for the Green Car Initiative: FP7 contribution

<table>
<thead>
<tr>
<th>Year</th>
<th>EC funding (€ Mio)</th>
<th>Transport</th>
<th>NMP</th>
<th>Energy</th>
<th>Envir.</th>
<th>ICT</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>ca. 118</td>
<td>ca.238</td>
<td>ca.60</td>
<td>ca.75</td>
<td>ca.25</td>
<td>ca.120</td>
</tr>
<tr>
<td>2011</td>
<td>ca. 112</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td>ca. 143</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2013</td>
<td>ca. 145</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>518</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

% 44% 12% 15% 5% 24%
EIB Loans

• Can be used in addition to FP7 grants
• Best tool for R&D or innovation support that involves greater risk
• A new loan instrument (ECTF) has been designed specifically for the transport industry.
EIB Loans: RSFF Risk-Sharing Finance Facility

- What is RSFF?
  Loans for research, development and innovation. A tool for implementing the Green Car Initiative.

- What does it offer?
  Loans of up to 50% of cost of research projects.

- Who can apply?
  Entities of any size and ownership.

- What specific requirements?
  Projects must be in line with FP7 objectives.

- How to apply?
  Contact RDI@eib.org
What is ECTF?

*Investment support for research in emission reductions. ECTF is in addition to the Green Car Initiative.*

What does it offer?

*Loans of up to 75% of eligible project costs. 4 billion euro budget per year.*

Who can apply?

*OEMs and Suppliers in the automotive industry. Industries in other transport modes (rail, air, shipping)*

What specific requirements?

*Emissions reduction projects only.*

How to apply?

*Contact: RDI@eib.org*
EGCI: research activities

Heavy duty vehicles (Internal combustion engines, technologies for energy optimisation)

Road and urban transport electrification

Logistics, co-modality and Intelligent Transport Systems
Electrification - Challenges

• **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)
Long Distance Truck - Challenges

A. Vehicle efficiency
B. Driveline efficiency
C. Driver efficiency

A. Vehicle efficiency
1. The safe and intelligent truck (v2v & v2i)
2. Matching vehicle to operation
3. Design dimensions for optimised load capacity
4. Aerodynamics
5. Low Rolling Resistance
6. Energy Management & Efficient Auxiliaries
7. Advanced Materials and Design
Long Distance Truck - Challenges

B. Driveline efficiency
1. Future Powertrain concepts & complete system integration
2. Advanced Combustion and Aftertreatment
3. Waste Heat Recovery
4. Advanced Powertrain Control
5. Alternative and multi-fuel capabilities
6. Friction
7. Hybrid Powertrain
8. Innovative high efficiency energy conversion

C. Driver Efficiency
1. Driver support systems
2. Freight handling
Logistics and Co-Modality - Challenges

A. City logistics
B. Green hubs and green corridors
C. Intelligent logistics systems, optimising e-freight

Main targets:

• Improve load factors and the balanced use of modes of transport across the European freight transport system.
• Reduce CO2 emissions as well as other emissions.
• Remove congestion, delay and time loss.

<table>
<thead>
<tr>
<th></th>
<th>2015</th>
<th>2020</th>
<th>2025</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transport efficiency:</td>
<td>65%</td>
<td>75%</td>
<td>85%</td>
</tr>
<tr>
<td>load factors</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Environmental footprint:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CO2</td>
<td>230 mln ton (-/- 15%)</td>
<td>200 mln ton (-/- 25%)</td>
<td>162 mln ton (-/- 40%)</td>
</tr>
<tr>
<td>Negative effects:</td>
<td>6500 km (-/- 15%)</td>
<td>5600 km (-/- 25%)</td>
<td>4500km (-/- 40%)</td>
</tr>
<tr>
<td>congestion</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
State of play/
major achievements

- Calls for proposals launched in 2010 and 2011
- Joint call on electric batteries in 2010 (electro-chemistries) and in 2011 (production and recycling)
- Strategic analysis for calls 2012/2013
- Other Thematic calls (DG INFSO)
• Concentration of the research around three key priorities
• Composition of the industrial advisory group
• An ERANET+ on electro-mobility
• 3 multi-annual road-maps
  – electrification of road transport
  – long distance truck
  – comodality and logistics
• Combining research with industrial exploitation of the results, demand side measures and legislation/standardisation
• Contribution to the Communication on “clean and energy efficient vehicles”
<table>
<thead>
<tr>
<th>Topic</th>
<th>Projects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electrical machines</td>
<td>2</td>
</tr>
<tr>
<td>Integrated electric auxiliaries and on-board systems</td>
<td>2</td>
</tr>
<tr>
<td>Optimised thermal engine development and integration</td>
<td>2</td>
</tr>
<tr>
<td>Smart storage integration</td>
<td>1</td>
</tr>
<tr>
<td>Advanced electric vehicle concepts</td>
<td>6</td>
</tr>
<tr>
<td>Implementing Public-Private Partnership in the ‘European Green Cars Initiative’</td>
<td>1</td>
</tr>
<tr>
<td>Raising awareness of potential job opportunities related to the electrification of road transport</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>15</td>
</tr>
</tbody>
</table>
• Deals with the assessment, measurement and modelling of potential Electromagnetic Radiation (EM) radiation hazard for EV users
• Coordinated by SINTEF, Norway
• Total EU funding: 2.25M€
WIDEMOB

- Deals with the development of a small, lightweight urban vehicle with high safety requirements, improved total efficiency and solar panels for zero carbon extended autonomy
- Coordinated by Fiat Research Center
- Total EU funding: 2.6M€
HI WI

- Deals with the development of an innovative electric motor architecture, based on magnetic nanomaterials, that might improve total efficiency and reduce rare earth content
- Coordinated by the University of Cambridge
- Total EU funding: 2.4M€
## Call FP7-SST-2011-RTD-1
### Green Car projects

<table>
<thead>
<tr>
<th>Topic</th>
<th>Projects</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Electric vehicles</strong></td>
<td></td>
</tr>
<tr>
<td>Specific safety issues of electric vehicles</td>
<td>1</td>
</tr>
<tr>
<td>Integrated Thermal Management</td>
<td>-</td>
</tr>
<tr>
<td>Architectures of Light Duty Vehicles for urban freight transport</td>
<td>3</td>
</tr>
<tr>
<td>ERA-Net Plus “Electromobility”</td>
<td>1</td>
</tr>
<tr>
<td><strong>Heavy duty vehicles</strong></td>
<td></td>
</tr>
<tr>
<td>Efficient long distance transport - waste heat recovery</td>
<td>1</td>
</tr>
<tr>
<td>Efficient long distance transport - future power train concepts (includes advanced combustion and after-treatment)</td>
<td>1</td>
</tr>
<tr>
<td><strong>Logistics and Co-modality</strong></td>
<td></td>
</tr>
<tr>
<td>Urban – interurban shipments</td>
<td>1</td>
</tr>
<tr>
<td>Integrated intermodal traveller services</td>
<td>1</td>
</tr>
<tr>
<td>Capability of improving and exploiting capacity</td>
<td>1</td>
</tr>
<tr>
<td>E-freight solutions and supply chain management</td>
<td>1</td>
</tr>
</tbody>
</table>
Joint call on electrochemical storage - 2010

7 projects:

- 1 project develops advanced metal air batteries, aiming at developing chemistries capable of delivering more than double the range of the best current Lithium cells for a given weight;

- 4 projects aim to improve the performance of lithium based cells, while improving cost, safety and environmental features (getting away from costly and harmful materials like nickel, cobalt, organic electrolytes…);

- 2 projects propose to improve the performance of supercapacitors
5 projects:

- 4 large-scale projects addressing advanced eco-design and manufacturing processes for batteries and electrical components
- 1 project on operational guidance for life cycle assessment studies of the European Green Cars Initiative
Thank you for your attention