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European PPP research supports economic recovery

New public-private partnerships for research in the **manufacturing**, **construction** and **automotive sectors**

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2009

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PPPs support innovation in key industries

The European Economic Recovery Plan adopted by the European Commission on 26 November 2008 and endorsed by the European Council on 11-12 December 2008 proposes public-private partnership (PPP) initiatives to develop new technologies for the vitally important manufacturing, construction and automotive industries, which have experienced significant downturns in demand as a result of global financial turmoil. The initiative will also assist the transition to a more sustainable economy.

'Smart' R&D investments

On 30 March 2009, Janez Potočnik, Commissioner for Science and Research, signed a Joint Statement with high-level industrial representatives of the three sectors, stating that "it is important to combine the short-term economic and fiscal measures in the Recovery Plan with longer-term 'smart investments' in research and development to lay down a strong base for the future competitiveness of European industry, once we have passed through the current crisis. We need strong cooperation between stakeholders and a coordinated approach at European level to develop the sustainable technologies that will allow Europe to move forward towards a low-carbon, knowledge-based economy. The three PPPs represent a powerful means of boosting research efforts in three large industrial sectors – automotive, construction and manufacturing."

Mobilising public and private funds

An important element of the package is the launch of PPPs addressing key topics in each of the three sectors. These will not only bring the breakthrough innovation needed to propel the EU to the forefront of knowledge-based competitiveness, but also target a transition to greener, more sustainable practices. The European Commission foresees to provide a contribution of 50 % of the total R&D budget in 2010-2013, with matching investment coming from the private sector.

The three PPPs, described in greater detail on the following pages, respectively address:

- 'Factories of the Future' (€1.2 billion), through an initiative intended "to help EU manufacturers, especially SMEs, to adapt to global competitive pressures by increasing the technological base of EU manufacturing through development and integration of the enabling technologies of the future, such as engineering for adaptable machines and industrial processes, ICT (Information and Communication Technologies), and advanced materials";
- 'Energy-efficient Buildings' (€1 billion), with an initiative "to promote green technologies and the development of energy-efficient systems and materials in new and renovated buildings with a view to reducing radically their energy consumption and CO_2 emissions";
- 'Green Cars' (€1 billion), via an initiative "involving research on a broad range of technologies and smart energy infrastructures essential to achieve a breakthrough in the use of renewable and non-polluting energy sources, safety and traffic fluidity". In addition, €4 billion in loans from the European Investment Bank (EIB) will be available to support research and innovation.

The Recovery Plan also includes a front-loading of €70 million of the EC contribution for the Risk-Sharing Finance Facility (RSFF), the guarantee fund for research, development and innovation which has been set up by the EIB and the European Commission under the Seventh RTD Framework Programme (FP7). This will allow an estimated additional €350 million of loan financing in 2009.

Short- and long-term benefits

All three PPPs are part of a comprehensive, integrated package, which will be implemented jointly by the responsible Directorates General within the Commission. The partnerships' activities will be complemented by demand-side actions such as public procurement, and the establishment of appropriate technical standards and regulatory measures.

Although initially introduced to meet an immediate need, the resultant research and innovation investments will help to secure the long-term future of an EU in which the economy has to become knowledge-based and low-carbon, as stated in the Lisbon strategy. This is crucial for Europe to emerge from the crisis stronger, more sustainable and more competitive.

In order to achieve the necessary fast start-up, the PPPs will initially make use of existing FP7 instruments. A series of cross-thematic coordinated calls will be launched in July 2009 by the relevant FP7 Themes under the Work Programme 2010, with the first research projects foreseen to begin in the spring of 2010.

In parallel, a dialogue is going on between the Commission services and Ad-hoc Industrial Advisory Groups set up by the three industrial sectors to develop multi-annual roadmaps of research priorities for the period up to the end of FP7 in 2013. Industry hopes that these PPPs may lead to the creation of streamlined and lean Joint Technology Initiatives.

Advantages for industry

These new initiatives hold many advantages for the manufacturing, construction and automotive industries, notably:

- renewed confidence to invest in long-term research even when faced with short-term economic problems;
- a central role for industry, including SMEs, in the development of the strategic roadmaps and in the implementation of the research projects;
- a multi-annual integrated work programme with a pre-defined budget, ensuring continuity and allowing industry to make long-term investment plans;
- a cross-thematic approach going from basic and applied research through to validation and large-scale demonstration, with an increased emphasis on impact and exploitation;
- increased opportunities to support innovation in SMEs;
- single-stage submission of proposals leading to a faster evaluation process and time to contract.

Factories of the Future

Factories of the Future (FoF) is a €1.2 billion programme in which the European Commission and industry will collaborate in research to support the development of new enabling technologies for the EU manufacturing sector.

The Factories of the Future initiative is intended to help EU manufacturing enterprises, especially SMEs, to adapt to global competitive pressures by improving the technological base of EU manufacturing systems.

Facts and figures

Europe's wide-ranging manufacturing industries face intense and growing competition, on the one hand from the lower-wage economies of the world and on the other from countries such as the USA, Japan and Korea in the high-tech arena. Manufacturing nevertheless remains the driving force for European prosperity, generating about 20% of EU-27 Value Added and 18% of EU-27 employment, providing more than 30 million jobs. It covers more than 25 different industrial sectors, largely dominated by SMEs.

Value through technology

Achieving continued growth and sustainability depends on a long-term shift from cost-based competitive advantage to an approach based on high added value. It requires European manufacturing to expand its technological base and develop a number of new enabling production technologies with cross-sectoral benefits.

There is also an increasing demand for greener, more customised and higher quality products. Manufacturing has to address the challenge of producing more, while consuming less material, using less energy and creating less waste.

Emerging ideas have to be transformed rapidly into new products and processes, and the Factories of the Future initiative will provide manufacturing SMEs with access to the funding and collaborative research capacity needed to pursue high-risk innovative manufacturing technologies.

New ways of production

The activities of the PPP will concentrate on the development and integration of engineering technologies, ICT and advanced materials for adaptable machines and industrial processes. Specific actions will be defined with regard to the shorter- and medium-term RTD and innovation needs. Demonstration of newly-developed industrial technologies, ICT and materials will improve the competitiveness of the companies. In particular, the initiative is expected to deliver:

- a **new European model of production systems for the factories of the future** (e.g. transformable factories, networked factories, learning factories) depending on drivers such as high performance, high customisation, environment-friendliness, safety, high resource-efficiency, enhancing human potential and new knowledge creation;
- **ICT-based production systems and high quality manufacturing technologies** capable of optimising performance with a high degree of autonomy and adaptability, for a balanced combination of high throughput and high accuracy production;
- **sustainable manufacturing tools, methodologies and processes** capable of cost-efficient shaping, handling and assembling of products composed of complex and novel materials.

FP7 Themes

FoF involves financial support from the NMP (Nanotechnologies, Materials and Production technologies) and ICT (Information and Communication Technologies) Themes of FP7.

FoF CROSS-THEMATIC COORDINATED CALL IN JULY 2009

<table>
<tr><th>FP7 Theme</th><th>Topic</th><th>Budget (M€)</th><th>Funding scheme</th><th>Deadline</th></tr>
<tr><td rowspan="3">NMP</td><td>FoF.NMP.2010-1 Plug and Produce components for adaptive control</td><td rowspan="3">60</td><td rowspan="4">Collaborative Projects</td><td rowspan="5">3 Nov 2009</td></tr>
<tr><td>FoF.NMP.2010-2 Supply chain approaches for small series industrial production</td></tr>
<tr><td>FoF.NMP.2010-3 Intelligent, scalable, manufacturing platforms and equipment for components with micro- and nano-scale functional features</td></tr>
<tr><td rowspan="2">ICT</td><td>FoF.ICT.2010.10-1 Smart Factories: ICT for agile and environmentally friendly manufacturing</td><td>33.5</td></tr>
<tr><td>FoF.ICT.2010.10-1 Smart Factories: ICT for agile and environmentally friendly manufacturing – Coordination Action</td><td>1.5</td><td>CSA</td></tr>
</table>

Note: This information is only indicative as the calls of WP 2010 had not yet been published at the time of preparation of this brochure.

Energy-efficient Buildings

The Energy-efficient Buildings (EeB) PPP will devote €1 billion to boosting the construction sector by researching methods and technologies to slash the energy consumption and CO_2 emissions of new and renovated buildings.

The goal of the EeB programme, financed jointly by industry and the European Commission under FP7, is to introduce green technologies and develop energy-efficient systems and materials across the construction sector at large.

Facts and figures

The construction industry generates about 6.4% of EU-27 Value Added and 7.2% of EU-27 employment, corresponding to 16.4 million jobs. According to the European Construction Industry Federation, output in 2007 represented about 51.5% of EU investment in fixed assets. The sector comprised 2.9 million enterprises, of which 95% were SMEs with fewer than 20 employees.

At present, buildings account for around 40% of all energy consumption in Europe – giving rise to one third of the region's CO_2 emissions. The industry also consumes billions of tons of natural resources, and produces 22% of total waste. Radical improvements must urgently be sought in all of these areas.

Retrofitting is key

There is a current stock of around 160 million buildings in the EU. The present rate of construction of new buildings is below 2% per year in all major European countries, and recession could further inhibit growth. These figures push the horizon for a truly energy-efficient built environment far beyond one century, and probably closer to two centuries if action is limited to new buildings.

Focus is therefore needed on the renovation of existing buildings, including historic ones. Reducing energy consumption during the whole life-cycle would be an effective action against climate change, while also contributing to a decrease in the EU's dependence on energy imports. In order to make a substantial impact, there is a need to act at a Europe-wide level, with public buildings representing a prime target.

Meeting the ambitious targets

In March 2007, the European Council set clear goals for a reduction by 2020 of 20% in the total energy consumption, 20% contribution of renewable energies to total energy production and a 20% reduction of greenhouse gas emissions compared with the figures for 1990.

In this context, the building sector must assume very ambitious objectives of 165 Mtoe (millions of tons of oil equivalent) in energy reduction, and contribute 50 Mtoe from renewable energies by 2020. To underline the magnitude of the task, these figures are equivalent to the total joint energy consumption of Spain, Portugal, Greece and Ireland in 2004.

The PPP EeB will devote specific attention to the development and integration of design and simulation tools, new materials, building systems and equipment and ICT for energy efficiency. The main RTD priorities are:

- **energy efficiency in buildings and districts**, coupled with improved quality of life (health, comfort and indoor environment) for citizens;
- **development of information and communication technologies** for 'smart' buildings and districts, and the integration of renewable energy systems;
- **use of nanotechnologies, new materials, components, systems and construction processes**, and their integration into energy-efficient buildings;
- **large-scale demonstration actions** highlighting innovative technologies in the final phase of their development;
- **industrialisation of products and components** – phase-change materials, insulation materials, smart windows and facades, etc. – contributing to energy-efficiency, taking account of eco-design and Life Cycle Assessment;
- **adaptation of processes**, for building and product design, finding adequate financing, initiating new commissioning procedures, tackling behavioural issues, ensuring knowledge transfer.

FP7 Themes

EeB involves financial support from the NMP (Nanotechnologies, Materials and Production technologies), ICT (Information and Communication Technologies), Energy, and Environment (including Climate Change) Themes of FP7.


EeB CROSS-THEMATIC COORDINATED CALL IN JULY 2009

<table>
<tr><th>FP7 Theme</th><th>Topic</th><th>Budget (M€)</th><th>Funding scheme</th><th>Deadline</th></tr>
<tr><td rowspan="2">NMP</td><td>EeB.NMP.2010-1 New nanotechnology-based high performance insulation systems for energy efficiency</td><td rowspan="2">30</td><td rowspan="5">Collaborative Projects</td><td rowspan="6">3 Nov 2009</td></tr>
<tr><td>EeB.NMP.2010-2 New technologies for energy efficiency at district level</td></tr>
<tr><td>Environment</td><td>EeB.ENV.2010.3.2.4-1 Compatible solutions for improving the energy efficiency of historic buildings in urban areas</td><td>5</td></tr>
<tr><td>Energy</td><td>EeB.ENERGY.2010.8.1-2 Demonstration of energy efficiency through retrofitting of buildings</td><td>15</td></tr>
<tr><td rowspan="2">ICT</td><td>EeB.ICT.2010.10-2 ICT for energy-efficient buildings and spaces of public use</td><td>14</td></tr>
<tr><td>EeB.ICT.2010.10-2 ICT for energy-efficient buildings and spaces of public use – Coordination Action</td><td>1</td><td>CSA</td></tr>
</table>

Note: This information is only indicative as the calls of WP 2010 had not yet been published at the time of preparation of this brochure.

Green Cars

A total funding of €5 billion, including €1 billion for research, is foreseen for the Green Cars (GC) initiative, a PPP to support the development of new and sustainable forms of road transport.

The scope of the European Green Cars initiative is broader than that of the other two PPPs included in the European Economic Recovery Plan in that it includes not only research but also a substantial package of financial and demand-side measures. Moreover, as well as passenger cars, it also embraces research on:

- greener internal combustion engines, in particular for trucks;
- bio-methane use;
- logistics and transport system optimisation;
- electric and hybrid vehicles – notably focussing on high-energy batteries, power electronics, electric components and motors;
- interfaces between vehicles and smart electricity grids.

Facts and figures

Road transport is one of the major sectors of European industry, generating 11% of EU GDP and contributing €33 billion of external trade. The automotive industry, in particular, employs 2.3 million people directly, plus over 12 million indirectly.

'Greening' is necessary to achieve EU and world targets for emissions reductions. In 2005, 19% of total EU greenhouse gas emissions and 28% of CO_2 emissions were linked to the transport sector. More than 90% of all EU transport emissions are due to road transport. And, while overall emissions declined, those from transport rose continuously between 1990 and 2005 due to high growth in both passenger (28%) and freight transport (62%). There is also the need to improve urban air quality in order to protect citizens from pollution.

Three streams

GC comprises three streams of action:

- Research and Technological Development, with €1 billion of support shared between FP7, Member States and private investment;
- Support to industrial research and innovation through EIB loans of up to €4 billion (in addition to existing loans);
- Public procurement and other demand-side measures to stimulate car purchases, such as scrapping and the reduction of circulation and registration taxes for low-CO_2 vehicles.

Besides the loans provided by the existing Risk-Sharing Finance Facility (RSFF) already mentioned in the introduction, the new European Clean Transport Facility (ECTF) has been created as a direct response to the effect of the downturn on the transport industry. The ECTF is aimed specifically at transport research, development and innovation, with the goal of lowering emissions and improving energy-efficiency and applies not only to road transport but also to other modes such as rail and inland and maritime navigation.

Range of measures

Under FP7, in the calls launched in 2009, the entire effort will concentrate on building a critical mass behind the electrification of road transport, and research into hybrid technologies. The Commission's Directorates-General for Research, Energy and Transport, and Information Society will launch cross-thematic coordinated calls for proposals on electrification of road transport, while a joint call will address electric batteries.

Subsequent calls opening in July 2010 are expected to broaden the coverage to other areas of the initiative, e.g. internal combustion engines for trucks, logistics, intelligent transport systems, eco-design and Life Cycle Assessment. Later on, there may also be a joint call between several services of the Commission on 'smart grids and their interfaces with vehicles'.

The main RTD priorities are:

- **Electrification of road and urban transport**, in particular developing efficient electrical components and their optimal integration within vehicles, along with vehicle-to-grid interfaces;
- **Improved energy efficiency for heavy-duty vehicles**, with particular focus on internal combustion engines and rolling resistance;
- **Logistics and co-modality** to optimise the performance of global transport systems and traffic flows.

FP7 Themes

GC involves financial support from the Sustainable Surface Transport, NMP (Nanotechnologies, Materials and Production technologies), ICT (Information and Communication Technologies), Environment (including Climate Change), and Energy Themes of FP7.

GC CROSS-THEMATIC JOINT AND COORDINATED CALLS IN JULY 2009

FP7 Theme	Topic	Budget (M€)	Funding scheme	Deadline
Joint Call NMP, Energy, Environment, Transport	**GC.NMP.2010-1, GC.ENERGY.2010.10.2-2, GC.ENV-2010.3.1.3-3, GC.SST.2010.7-9** Materials, technologies and processes for sustainable automotive electrochemical storage applications	25	Collaborative Projects	14 Jan 2010
Transport	**GC.SST.2010.7-1** Electrical machines	40		
	GC.SST.2010.7-2 Integrated electric auxiliaries and on-board systems			
	GC.SST.2010.7-3 Optimised thermal engine development and integration			
	GC.SST.2010.7-4 Smart storage integration			
	GC.SST.2010.7-5 Advanced electric vehicle concepts			
	GC.SST.2010.7-6 Implementing Public-Private Partnership in the European Green Cars initiative		CSA	
	GC.SST.2010.7-7 Raising awareness of potential job opportunities related to the electrification of road transport			
	GC.SST.2010.7-8 Green Cars – Integrated EU demonstration project on electromobility	23	Collaborative Projects	
ICT	**GC.ICT.2010.10-3** ICT for the fully electrical vehicle	19	Collaborative Projects	3 Nov 2009
	GC.ICT.2010.10-3 ICT for the fully electrical vehicle – Coordination Action	1	CSA	

Note: This information is only indicative as the calls of WP 2010 had not yet been published at the time of preparation of this brochure.

Further information

General

- FP7 Research Themes and Call information
  http:/cordis.europa.eu
- Information on the research PPPs
  http://ec.europa.eu/research/industrial_technologies/
- Joint Statement on the 3 PPPs and press package of March 2009
  http://ec.europa.eu/research/index.cfm?pg=newsalert&lg=en&year=2009&na=ppp-310309
- Risk-Sharing Finance Facility
  www.eib.org/products/loans/special/rsff/?lang=en

Industry websites

Factories of the Future

- European Factories of the Future Research Association (EFFRA)
  www.effra.eu
- Manufuture Technology Platform
  www.manufuture.org

Energy-efficient Buildings

- Energy-Efficient Buildings Association (E2BA)
  www.e2b-ei.eu
- European Construction Technology Platform
  www.ectp.org

Green Cars

- ERTRAC – Road Transport Technology Platform
  www.ertrac.org
- EPoSS – European Technology Platform on Smart Systems Integration
  www.smart-systems-integration.org
- SmartGrids – European Technology Platform for the Electricity Networks of the Future
  www.smartgrids.eu

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