



# Tackling major research themes, together

Cooperation  
Budget: €32 billion

Under the programme “Cooperation”, research support will be provided to international cooperation projects across the European Union and beyond. In 10 thematic areas, corresponding to major fields in science and research, the programme will promote the progress of knowledge and technology. Research will be supported and strengthened to address European social, economic, environmental, public health and industrial challenges, serve the public good and support developing countries.

“Cooperation” supports research actions in the following thematic areas:

- Health
- Food, Agriculture and Biotechnology
- Information and Communication Technologies
- Nanosciences, Nanotechnologies, Materials and new Production Technologies
- Energy
- Environment (including Climate Change)
- Transport (including Aeronautics)
- Socio-economic Sciences and Humanities
- Space
- Security

## ‘Cooperation’ in FP7

[www.ec.europa.eu/research](http://www.ec.europa.eu/research)



# HEALTH

**Budget: € 6 billion (2007 - 2013)**

The objective of the health research programme is to improve the health of European citizens, and increase and strengthen the competitiveness and innovative capacity of European health-related industries and businesses. Global health issues, like emerging epidemics, will also be addressed. European collaboration with developing countries will allow those countries to develop research capacities.

## *What's the benefit for citizens:*

Citizens will benefit from European health research since its emphasis will be put on: translational research (i.e. the translation of basic discoveries in clinical applications), the development and validation of new therapies, methods for health promotion and prevention including the promotion of healthy ageing, diagnostic tools and medical technologies, and sustainable and efficient healthcare systems.

**Clinical research** will tackle a number of diseases such as cancer, cardiovascular, infectious, mental and neurological diseases, and in particular those linked with ageing, such as Alzheimer's and Parkinson's diseases. Through international multi-centre trials involving the required number of patients, new drugs and treatments would be developed in a shorter time frame.

## *What's the benefit for researchers:*

European-funded health research will focus on:

- **Biotechnology, generic tools and medical technologies for human health**
  - High-throughput research
  - Detection, diagnosis and monitoring
  - Prediction of suitability, safety and efficacy of therapies
  - Innovative therapeutic approaches and intervention
- **Translating research for human health**
  - Integration of biological data and processes
  - Research on the brain and related diseases, human development and ageing
  - Translational research in infectious diseases (HIV/AIDS, malaria, tuberculosis, SARS, avian influenza)
  - Translational research in major diseases: cancer, cardiovascular disease, diabetes/obesity, rare diseases, other chronic diseases including rheumatoid diseases, arthritis and musculoskeletal diseases
- **Optimising the delivery of healthcare to European citizens**
  - Translation of clinical outcome into clinical practice
  - Quality, efficiency and solidarity of health care systems including transitional health care systems and home care strategies
  - Enhanced disease prevention and better use of medicines
  - Appropriate use of new health therapies and technologies

## *What's the benefit for industry and SMEs:*

Research-based SMEs are the main economic drivers of healthcare, biotechnology and medical technologies. Strong EU-based biomedical research will enhance competitiveness of the European pharmaceutical and healthcare industries. It is therefore imperative that the EU creates an environment conducive to innovation in the public and private sectors.

# FOOD, AGRICULTURE AND BIOTECHNOLOGY

**Budget: €1.9 billion (2007 - 2013)**

The advancement of knowledge in the sustainable management, production and use of biological resources (microbial, plant and animal) will provide the basis for safer, eco-efficient and competitive products and services for agriculture, fisheries, feed, food, health, forest-based and related industries. Important contributions to the implementation of existing and prospective policies and regulations in the area of public, animal and plant health and consumer protection are anticipated. New renewable energy sources will be supported under the concept of a European knowledge-based bio-economy.

## *What's the benefit for citizens:*

Science, industry and society will come together to address the social, economic and environmental challenges of sustainable management of biological resources. They will also exploit advances in microbial, plant and animal biotechnologies to develop new, healthier, eco-efficient and competitive products and services. Rural and coastal development will be addressed by boosting local economies whilst preserving our heritage and variety of cultures.

## *What's the benefit for researchers:*

Research will be carried out on the safety of food and feed chains, diet-related diseases, consumer food choices and the impact of food and nutrition on health.

## **Research activities will include:**

- Sustainable production and management of biological resources from land, forest, and aquatic environments: enabling research on sustainable production systems; plant and animal production and health; animal welfare; fisheries and aquaculture, including exploitation and sustainable use of their biodiversity.
- Tools to implement relevant strategies, policies and legislation supporting the European knowledge based bio-economy.
- The integrity and control of the food chain ("fork to farm") will be subject to research, addressing food, health and well-being.
- Life sciences and biotechnology for sustainable non-food products and processes will develop improved crops and forest resources, feed-stocks, marine products and biomass technologies for energy, environment, and high added value products such as materials and chemicals.

Several European Technology Platforms contribute to setting common research priorities in various fields, like food technologies and processes, plant genomics, forestry and forest-based industries, global animal health, and animal farm breeding.

## *What's the benefit for industry and SMEs:*

The creation of a European Bio-Economy is expected to open the way for innovations and effective technology transfer, aiming to include all industries and economic sectors that produce, manage and otherwise exploit biological resources as well as related services from the supply or consumer industries. These activities are in line with the European strategy on life sciences and biotechnology and is expected to promote competitiveness of European agriculture and biotechnology, seed and food companies and in particular high-tech SMEs, while improving social welfare and well-being.

# INFORMATION AND COMMUNICATION TECHNOLOGIES (ICTs)

**Budget: € 9.1 billion (2007 - 2013)**

ICTs play a crucial role in boosting innovation, creativity and competitiveness of all industry and service sectors. We are entering a new phase of development that will drive growth and sustainable development for the coming decades; however, this growth will only be captured if we invest now in research and innovation for the next generation of technologies.

## *What's the benefit for citizens:*

ICTs are opening up many new opportunities for European citizens and consumers. There is a wide range of applications including healthcare provision, transport systems, as well as innovative interactive systems for entertainment and learning. Innovation in ICT can help improve illness prevention and safety of care, facilitate active participation of patients and enable personalisation of care and can also tackle problems associated with the ageing population.

## *What's the benefit for researchers:*

Under FP7, ICT research activities will cover strategic priorities in areas of European industrial and technological leadership, such as communication networks, embedded computing, nano-electronics and technologies for audiovisual content.

## **Research areas will include:**

- Network and service infrastructure stability and security;
- Performance and reliability of electronic systems and components;
- Personalised ICT systems;
- Digital content management.

## *What's the benefit for industry and SMEs:*

ICTs account for nearly half of the productivity gains in our economies today. The gains stem both from the production of innovative high value ICT-based goods and services and from improvements in business processes through the diffusion, adoption and use of ICTs across the economy.

ICT-intensive sectors include manufacturing, automotive, aerospace, pharmaceuticals, medical equipment and agro-food, as well as financial services, media and retail. Benefits reported by firms, as a result of increased use of ICTs, include faster product development, cost and overhead reductions, faster and more reliable transactions, better relationships with customers and suppliers, improved levels of customer service and support, and enhanced collaboration opportunities.

FP7 will facilitate the creation of new forms of networked business processes and applications, as well as new engineering approaches for the application of ICT in manufacturing.

# NANOSCIENCES, NANOTECHNOLOGIES, MATERIALS AND NEW PRODUCTION TECHNOLOGIES

**Budget: € 3.5 billion (2007 - 2013)**

The activity of Nanotechnologies, Materials and Production Technologies has a strong socio-economic relevance. Nanotechnologies enable novel solutions and could result in improved performance in the entire production sector as well as in the health/medicine/agriculture domains.

## *What's the benefit for citizens:*

The design of new production processes could signal a reduction of pollutant emissions and a more rational use of natural resources. At the same time product innovation, with safer and more reliable consumer products, and cleaner vehicles, combined with innovation in the construction industry aim to meet people's needs and improve their quality of life, by lowering risks and bettering health and welfare. Promotion of more sustainable consumption patterns leads to improvements in health, personal awareness and behavioural change of citizens.

The introduction of nanotechnology results also present a new spectrum of risks and issues of an ethical nature, which are being tackled. Ethical issues refer to human integrity and dignity (e.g. "chips" to monitor or control behaviour of humans), risks linked to health and environmental hazards.

## *What's the benefit for researchers:*

### **Nanosciences and Nanotechnologies**

The objective is to create materials and systems with predefined properties and behaviour, based on increased knowledge and experience at the nano scale. This will lead to a new generation of products and services across a range of applications, while minimising any potential adverse environmental and health impacts.

### **Materials**

Research will focus on developing new multifunctional surfaces and materials with tailored properties and predictable performance for new products and processes as well as for their repair.

### **New production**

The basis for innovation in this area will be new knowledge and its application towards sustainable production and consumption patterns. This entails the appropriate conditions for continuous innovation (in industrial activities and production systems, including design, construction, devices, and services) and for developing generic production "assets" (technologies, organisation and production facilities as well as human resources) while also meeting safety and environmental requirements.

### **Integration of technologies for industrial applications**

The integration of knowledge and technologies of the three areas of research above is essential in order to speed up the transformation of the European industry and economy, while adopting a safe, socially responsible and sustainable approach. The research will focus on new applications and novel solutions responding to major challenges as well as to the RTD needs identified by different European Technology Platforms mentioned above.

## *What's the benefit for industry and SMEs:*

Increased industrial competitiveness and high quality products would protect European jobs and therefore promote social and economic cohesion. Emerging Technological Platforms will also emphasize social aspects through their pan-European strategies. The overall aim will be to maximise added value for Europe. New regulations and standards have always been a by-product of industrial technology progress and these "platforms" will now certainly modernise and consolidate them in several areas of human activity.

# ENERGY

**Budget: € 2.3 billion (2007 - 2013)**

Energy systems are confronted with major challenges. The urgency to identify and develop adequate and timely solutions is justified by the alarming trends in global energy demand, the finite nature of conventional oil and natural gas reserves, and the need to dramatically curb greenhouse gas emissions. These actions would effectively mitigate the devastating consequences of climate change, the damaging volatility of oil prices (in particular for the heavily oil-dependent transport sector) and geopolitical instability in supplier regions.

## *What's the benefit for citizens:*

Citizens will benefit from energy research through more affordable energy costs and through more efficient use of energies provided by different sources. Consequently, this will help reduce the causes of climate change, which will benefit everyone directly.

## *What's the benefit for researchers:*

Researchers will help transform the current energy system into a more sustainable one, making it less dependent on imported fuels. The end result will be a diverse mix of energy sources, in particular renewable ones, energy carriers and non-polluting sources. Energy efficiency, which includes rationalising use and storage of energy, will be enhanced, thus addressing the pressing challenges of security of supply and climate change.

Activities in the energy area include:

- Hydrogen and fuel cells
- Renewable electricity generation
- Renewable fuel production
- Renewables for heating and cooling
- CO<sub>2</sub> capture and storage technologies for zero emission power generation
- Clean coal technologies
- Smart energy networks
- Energy efficiency and savings
- Knowledge for energy policy making

## *What's the benefit for industry and SMEs:*

Europe's industry has developed world leadership in a number of energy generation and energy efficiency technologies. It is the pioneer in modern renewable energy technologies, such as solar energy, bio- and wind energy. The EU is also a global competitor in power generation and distribution technologies and has a strong research capacity in the area of carbon capture and sequestration. In order to maintain this position, Europe's industries must continue their efforts through international collaboration.

# ENVIRONMENT (including Climate Change)

Budget: € 1.8 billion (2007 - 2013)

The challenges posed by the increasing natural and man-made pressures on the environment and its resources require a coordinated approach at pan-European and international levels.

## *What's the benefit for citizens:*

We need to better understand and cope with issues such as climate change and identify environmentally friendly technologies in order to improve our management of both natural and man-made resources. The activities will address policy needs such as the sustainability impact assessments of EU policies and the follow up to the Kyoto and post-Kyoto actions on climate change.

## *What's the benefit for researchers:*

Sustainable management of the environment and its resources requires multidisciplinary and integrated research in order to advance our knowledge on the interactions between the climate, biosphere, ecosystems and human activities. This will help us to develop new environmental technologies, tools and services.

The "Environment" programme will be implemented under the following activities and areas:

### **Climate change, pollution and risks**

- Pressures on environment and climate
- Environment and health
- Natural hazards

### **Sustainable Management of Resources**

- Conservation and sustainable management of natural and man-made resources and biodiversity
- Management of marine environment

### **Environmental Technologies**

- Environmental technologies for observation, simulation, prevention, mitigation, adaptation, remediation and restoration of the natural and man-made environment
- Protection, conservation and enhancement of cultural heritage
- Technology assessment, verification and testing

### **Earth observation and assessment tools**

- Earth and ocean observation systems, monitoring methods for the environment and sustainable development
- Forecasting methods and assessment tools for sustainable development

## *What's the benefit for industry and SMEs:*

Strengthening the EU position in world markets for environmental technologies will contribute to sustainable consumption, production, delivering sustainable growth through business opportunities and improved competitiveness, while protecting our cultural and natural heritage. Special attention will be given to technologies on water supply and sanitation, on sustainable chemistry, on construction and on forestry, in association with the respective European Technology Platforms. The socio-economic dimension will influence their development and introduction to the market and their subsequent application.

# TRANSPORT

**Budget: €4.1 billion (2007 - 2013)**

Transport is one of Europe's strengths - the air transport sector contributes to 2.6% of the EU GDP with 3.1 million jobs and the surface transport field generates 11% of the EU GDP employing some 16 million persons. But, transport is also responsible for 25% of all the EU emissions of CO<sub>2</sub>.

## *What's the benefit for citizens:*

During FP7 at least €4 billion will be allocated to fund EU research in order to develop safer, "greener" and "smarter" European transport systems for the benefit of all citizens. Research on transport will also have a direct impact on other major areas such as trade, competition, employment, environment, cohesion, energy, security and the internal market.

## *What's the benefit for researchers:*

The need for new transport networks and infrastructures in Europe is growing and development costs are increasing. Their development at the European level can become a reality only through the collaborative activities of the various RTD providers.

It is imperative to address the different political, technological and socio-economic challenges in a cost-effective manner on issues such as the "clean and safe vehicle" of the future, interoperability and intermodality especially with respect to waterborne and rail transport. Also, developing technologies in support of the Galileo system and its applications will be essential in implementing European policies.

The activities envisaged to be addressed during the lifetime of FP7 will be:

- Aeronautics and air transport (reduction of emissions, work on engines and alternative fuels, air traffic management, safety aspects of air transport, environmentally efficient aviation)
- Sustainable surface transport- rail, road and waterborne (development of clean and efficient engines and power trains, reducing the impact of transport on climate change, intermodal regional and national transport, clean and safe vehicles, infrastructure construction and maintenance, integrative architectures)
- Support to the European global satellite navigation system –Galileo and EGNOS (navigation and timing services, efficient use of satellite navigation)

## *What's the benefit for industry and SMEs:*

Investment in transport research is needed to ensure that European transport industries have a technological advantage allowing them to be competitive globally. In addition, FP7 Transport Research activities will also provide SMEs at the cutting edge of innovation with improved access to pan-European research programmes and their related benefits.

# SOCIO-ECONOMIC SCIENCES AND THE HUMANITIES

**Budget: €610 million (2007 - 2013)**

Europe is confronted with a series of social and economic challenges, it is therefore important to better understand them and tackle them effectively by designing suitable policies. Europe's long tradition in this area of research together with the different social, economic and cultural approaches, offers a unique opportunity for carrying out this type of research at the EU level.

## *What's the benefit for citizens:*

During FP7, EU research in Socio-economic Sciences and the Humanities promises to study and offer answers to questions regarding the demographic change and quality of life; education and employment in view of the current economic trends; global interdependence and the transfer of knowledge; the well-being of democracies and political participation; cultural diversity and the values.

## *What's the benefit for researchers:*

The link between research and policy is safeguarded by ensuring that the issues examined are of high priority at the European level and are addressed by Community policies. In fact, research at the EU level has particular advantages; it can develop European-wide data which are needed to heighten our awareness of complex issues.

The research questions to be addressed within the timeframe of the FP7 will be drawn from the following areas:

- Growth, employment and competitiveness in a knowledge society (innovation, competitiveness and labour market policies; education and life-long learning; and economic structures and productivity)
- A combination of economic, social and environmental objectives in a European perspective (socio-economic models within Europe and across the world; economic and social and cohesion across regions, the social and economic dimensions of environmental policy)
- Major trends in society and their implications (demographic change, reconciling family and work, health and quality of life, youth policies, social exclusion and discrimination)
- Europe in the world (trade, migration, poverty, crime, conflict and resolution)
- The citizen in the European Union (political participation, citizenship and rights, democracy and accountability, the media, cultural diversity and heritage, religions, attitudes and values)
- Socio-economic and scientific indicators (the use and value of indicators in policy-making at macro and micro levels)
- Foresight activities (the future implications of global knowledge, migration, ageing, risk and the emerging domains in research and science).

## *What's the benefit for industry and SMEs:*

Throughout FP7, industry and SMEs will actively be encouraged to participate in all themes, especially those under the Cooperation programme. The themes tackled by the SSH offers them the dual opportunity to operate as participants in knowledge creation as members of teams but also as recipients of knowledge putting it in application.

# SPACE

**Budget: €1.4 billion (2007 - 2013)**

In the last 20 years, Europe has become a technology pioneer through applications such as the Earth Observation and Galileo. Europe has invested in the exploration of space with cost-effective missions and supported collaborative initiatives with the European Space Agency securing its strategic role in this domain.

## *What's the benefit for citizens:*

Recently, the European Union decided to invest in GMES (Global Monitoring for Environment and Security) which will be instrumental in managing the consequences of natural disasters and climate change. Galileo, amongst other applications, will aid the development of the search and rescue mechanism (SAR).

The EU funded research will contribute to the development of a European Space Policy. This in turn, will support Community policies in the areas of agriculture, environment, fisheries, transport and telecommunication either through space-observation tools or space-based solutions.

## *What's the benefit for researchers:*

Space-based science is an important driving force for new technological developments that have an impact on our daily lives.

Research activities during the lifetime of FP7 will be drawn from the following areas:

- Space-based application at the service of European society (developing satellite observation systems and the GMES services for the management of the environment, security, agriculture, forestry and meteorology, civil protection and risk management)
- Exploration of space (the provision of support for collaborative initiatives between ESA or national space agencies, co-ordinate efforts for the development of space-borne telescopes)
- Research and Technological Development for strengthening Space foundations (support research for long term needs such as space transportation, bio-medicine, life and physical sciences in space)

## *What's the benefit for industry and SMEs:*

Space is a strategic industrial sector for growth and its applications underpin economic activity and government services. European companies, with SMEs being the overwhelming majority, are key actors in the worldwide commercial market of satellite manufacturing, launch services, satellite operations and downstream service providers. In order to sustain a competitive industry new research and technologies are required and the support offered through FP7 promises to create these opportunities.

# SECURITY

**Budget: €1.3 billion (2007 - 2013)**

European security is a precondition for prosperity and freedom. The need for a comprehensive security strategy encompassing both civil and defence security measures must be addressed.

## *What's the benefit for citizens:*

We need to invest in knowledge and develop further technologies in order to protect our citizens from threats such as terrorism, natural disasters and crime while respecting privacy and safeguarding fundamental rights.

During FP7, EU funded research will tackle themes linked to civil security (anti-terrorism and crisis management) and will contribute to a whole range of Community policies such as transport, mobility, civil protection, energy, environment and health. By co-operating and coordinating efforts on a Europe-wide scale, the EU can better understand and respond to risks in a constantly changing world.

## *What's the benefit for researchers:*

Security related research is expected to generate new knowledge and promote the application of new technologies in the field of civil security.

Research in the timeframe of the FP7 will address the following areas:

- Security of citizens (technology solutions for civil protection, bio-security, protection against crime and terrorism)
- Security of infrastructures and utilities (examining and securing infrastructures in areas such as ICT, transport, energy and services in the financial and administrative domain)
- Intelligent surveillance and border security (technologies, equipment, tools and methods for protecting Europe's border controls such as land and coastal borders)
- Restoring security and safety in case of crisis (technologies and communication, co-ordination in support for civil, humanitarian and rescue tasks)
- Security systems integration, interconnectivity and interoperability (information gathering for civil security, protection of confidentiality and traceability of transactions)
- Security and society (acceptance of security solutions, socio-economic, political and cultural aspects of security, ethics and values, social environment and perceptions of security)
- Security research co-ordination and structuring (co-ordination between European and international security research efforts in the areas of civil, security and defence research)

## *What's the benefit for industry and SMEs:*

Security research will reinforce the competitiveness of the European security industry by stimulating the cooperation of providers and users for civil security solutions. It will also draw the best intellectual and technological skills across Europe through the active involvement of SMEs.