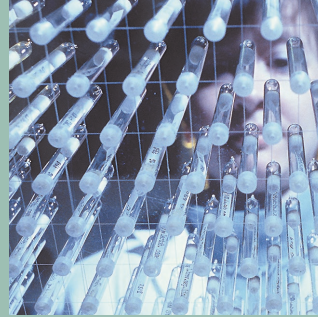
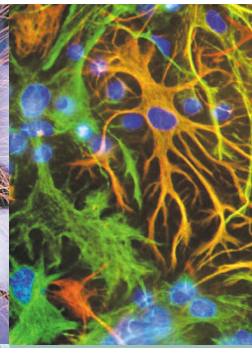
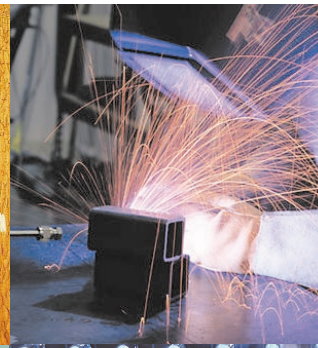
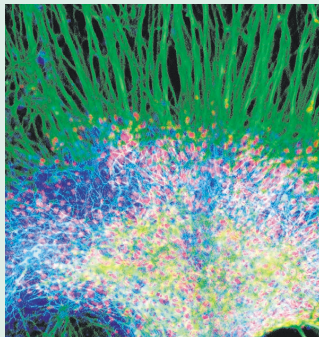


Es tiempo de investigación,  
es tiempo de vida...  
es tiempo CSIC





The Spanish National Research Council (CSIC) Position Paper on the  
7th Research Framework Programme (2007-2013)





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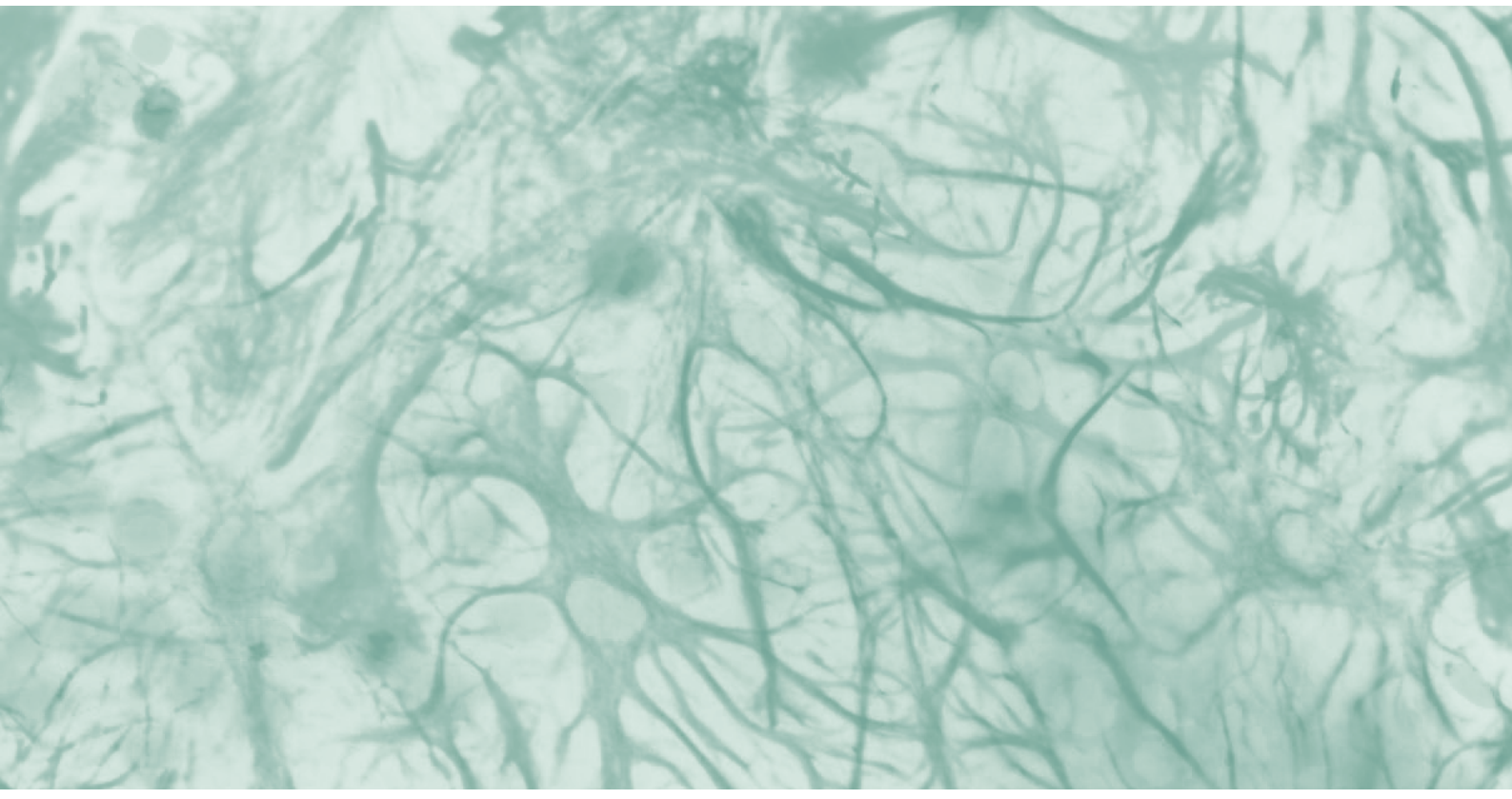
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## CSIC highlights on the FP7 programmes and the ERA

The current status of science transcends economic interests and **new knowledge** is widely recognised as essential for the improvement of **quality of life** and **sustainable development**. Science and technology thus become important instruments for finding effective solutions to many societal problems; in line with the rich European cultural tradition, Europe should assume a leading position in facing these challenges, which requires the effective integration of its research capacities. The idea of the ERA created considerable expectation within the scientific community. The possibility of accessing national programmes of MS by researchers from other countries, the stimulation of networks and Centres of Excellence, and the implementation and building of European research infrastructures to target large-scale trans-national projects create new scenarios for unfolding the multifaceted potential of European science. Implementation of measures and instruments **to meet the Lisbon objective** of 3% of the GDP in 2010 is therefore essential for achieving these goals, not only by increasing the budget sufficiently within FP7, but also by stimulating the MS to increase their respective investments in science and technology.

It is the CSIC's view that FP7 should focus its efforts on strengthening the quality of research, the competitiveness of the productive sector, and coordination of the national programmes. The ERC is seen as an excellent tool for **strengthening the quality of research** in Europe whenever this new initiative has adequate funds allocated and is driven by excellence. The ERC should be at the very core of FP7, rather than being a minor appendix. **Strengthening competitiveness of the productive sector** requires seeking greater involvement with public and private partnerships to bridge the innovation gap. FP7 has an important role in **coordinating national programmes** to help make the overall investment in Europe more efficient by avoiding duplication and fragmentation, and by promoting programmes or initiatives that exceed single MS interests. The European FP should be seen as the appropriate instrument to ensure that national and local authorities coordinate their R&D policies and programming. The allocation of

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priorities is of great importance for European and global RTD policies, as –reflecting the consensus among European MS– it does set the tendency many national programmes follow.

To succeed in enhancing the competitiveness of European research at any level, FP7 must enhance the synergy and seek a better balance **between oriented** (user-driven) and **basic/frontier** (science-driven) research. To achieve this goal, it is essential to foster participation of the industrial sector in all FP7 instruments and programmes (i.e., the ERC or Marie Curie actions). Similarly, user-driven initiatives such as the TP should be designed and implemented in conjunction with research centres and universities. Instruments to promote collaborative research in cross-themes and border areas essential for breaking barriers or stepping through boundaries of knowledge might be at a disadvantage if synergy between oriented and basic research is not correctly addressed.

The Commission plans to implement FP7 within four basic programmes and 10 high level themes, showing clear continuity with respect to FP6. Substantial changes in funding instruments and conditions might not be desirable to encourage participation of the scientific community, although some instruments should be adapted to provide more user-friendly management. The CSIC welcomes the new theme on Security whenever a multidisciplinary approach is guaranteed, and the development of knowledge and technologies for civilian purposes is highlighted. In addition, the CSIC would like to stress the importance of research on **Heritage and Cultural Landscape**, to prevent Europe's becoming a "theme park" in the long term, and on **Marine Sciences** due to their great scientific, social and economic relevance, as Europe shares one of the longest margin systems in the world, extending from the North Atlantic to the Mediterranean seas.

Initiatives of "Poles of Excellence" in sectors that are strategic or require a strong multidisciplinary approach such as Nanotechnologies, Energy, Environment or Security are seen as important by the CSIC for the success of FP7.

## 1. Comments on budget allocations

FP7 (2007-2013) has been designed with great ambition, to revitalize and implement the “Lisbon Agenda”, but is at the same time presented as a continuation of its predecessor, FP6 (2002-2006). The CSIC supports increasing the budget allocated to research by a factor of at least two as a necessary condition to reduce the gap with the USA and Japan, and to increase the excellence and competitiveness of European research. Appropriate allocation of funds is also seen as essential to achieving the declared objectives, since a reduced budget in specific areas or themes has the undesired effect of discouraging the scientific community. The CSIC thus considers that doubling the budget is not, in itself, a sufficient condition for success, as the **budget breakdown** among the different programmes, themes and instruments is also an essential ingredient.

FP7 introduces the **Joint Technology Initiatives** and the CSIC considers that the additional funding they require should not compete with the main financial scheme of FP7, in particular with the budgetary allocations to Frontier Research. The JTI should therefore be considered **exploratory actions**, to be led by industry and SME, and open to any institution that can contribute to their success. The use of other instruments (for example, article 171) should be examined on a case-by-case basis, as pilot projects with additional channels of financing, and coordination with contributions from the Structural Funds and loans from the European Investment Bank (EIB) can help to promote development of demonstrators and exploitation of results.

**Frontier Research** to be overseen by an ERC is essential for building the science and technology needed in the future, as well as for leading to innovative ideas and breakthroughs generating



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cascading spin offs and applications. To be successful, the CSIC thinks it must be **sufficiently funded** rather than being considered a pilot scheme. Administrative and budgetary flexibility of the grant-funding system are also crucial ingredients for ERC success.

The instruments proposed for FP7 are a clear continuation of those used in FP6. Although FP6 has not yet concluded, it has already become evident that some of these instruments have not achieved their expected efficiency level, as is the case of NoE. The budgetary allocation for STREP with regard to other instruments should be **strengthened**, as these are simple instruments for research and development that have successfully promoted top quality basic, frontier, applied and technological research throughout the EU.



## 2. Views on the organization of FP7 in four basic PROGRAMMES

### 2.1. Cooperation

Trans national collaborative research is seen as the **main added value** of the FP, and as the key instrument to **increase investment by the private sector** in R&D. Collaborative research initiatives have proved to be very effective in emerging areas, although researchers have been discouraged by the complexity of the prioritised instruments involving large consortia (IP and NoE) to the detriment of the STREPS and traditional network schemes; the latter two represent more suitable instruments for highly innovative projects, since real breakthroughs cannot be shared by many partners.

**Priorities** should be clearly defined to make FP7 sufficiently attractive to both private and public sectors. Clear measures are also to be taken to improve the **synergy between private and public sectors** that ease knowledge transfer. In this respect, it is essential that **industry be allowed to participate** in all FP7 instruments, to allow for the necessary interaction between academia and industry. Stronger, more effective coordination between the FP and EUREKA is foreseen as an additional means to improve this synergy.

The FP7 intends to develop a world-class competitive R&D infrastructure in Europe through “poles of excellence” that should promote interdisciplinary education and training for research personnel,

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and favourable conditions for technology transfer and industrial innovation. The poles of excellence are seen by the CSIC as a powerful strategic tool to promote cross-theme activities and to develop new research avenues in the middle term. **Research centres, universities, large industries and SME–spin-offs** should have a key role to preserve the necessary proportion of frontier and applied research.

The **Joint Technological Initiatives** are a very important new tool of FP7, and the CSIC shares the view that this tool can be an excellent form of integrating public and private resources, and of promoting European growth and competitiveness as well as effective knowledge transfer. The JTI should be promoted whenever there are industries with a real commitment, both economically and in leadership. For the success of this new instrument, the CSIC considers it important that **all research centres**, independently of their economic funding capabilities, technological background or research skills, **participate in defining JTI** to ensure the subsidiary principle and the implementation of the ERA. Furthermore, it is important to guarantee that SME and start-up/spin-off companies are included in this structuring process, as well as in management of the JTI; otherwise, the integrative spirit that should govern these new structures and their capability for highly innovative research might not be achieved.

### 2.2. Ideas

The long-awaited ERC, managed mostly by scientists and able to fund ambitious projects on the sole basis of merit and excellence, is seen by the CSIC as a pivotal opportunity to develop **policies and strategies to improve the quality** of European research and to enhance its **competitiveness** with respect to the USA and Japan. The ERC principles should be established along the following lines: a) support of investigator-driven research and actions based only on quality, b) no secondary

criteria on components of the selection process, c) funding should be centralized and open, d) it should have freedom of action and involve the scientific community; and e) it should be characterized by a rapid, lean administrative process. The ERC is essential for stimulating competition among groups and to identify the best scientists in Europe, not only established researchers with a long record of scientific output, but also younger, emerging teams able to undertake high-risk endeavours. The CSIC also thinks that the ERC is a great opportunity for funding **high-risk and/or cross-disciplinary initiatives** that are essential for new discoveries, breakthroughs and disruptive technologies; consequently, this type of research should also be highlighted within the ERC. Furthermore, basic/frontier funding should also be accessible to projects presented in collaboration with **industries** that aim to carry out excellent research, since the synergy between these two sectors is essential for future innovation and technological development.

### 2.3. People

The Marie Curie Actions have been a successful, long-lasting instrument of preceding FP for **strengthening human potential in science and technology** in Europe, by stimulating research careers, encouraging researchers to remain in Europe (avoiding brain-drain), and attracting researchers from the entire world (promoting brain-gain). The emphasis of Marie Curie Actions on the different stages of research careers has evolved with time, and the CSIC shares the view that these actions should address all stages of the research careers, **from the undergraduate level to life-long development**. In this regard, stronger measures are needed to make the research career attractive at early stages, at the undergraduate level or even earlier. The **research career** itself **needs a clearer definition**, not only to promote vocations among young people, but also to preserve a high quality profile/performance.

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The CSIC considers that the **participation of industry** in all Marie Curie Actions is of paramount importance, with training focused on development of both scientific and management skills. This industry involvement has been one of the weaknesses, evidenced by the fact that the specific actions for industry have not utilized the targeted budgets; this low level of industry participation is more dramatic in the case of SME. Industry participation both by hosting researchers and participating in mobility becomes a strong tool for **enhancing knowledge transfer** from academia to industry.

### 2.4. Capacities

Support for **research infrastructure**, both for creation of new ones of pan-European interest including data bases and collections that due to their “**singularity**” were not considered in the past, and to further develop existing ones, is extremely important to maintain Europe at the forefront of the advancement of research and to help industry to strengthen its base of knowledge and technological know-how.

The CSIC welcomes **science in society** actions to stimulate the harmonious integration of scientific and technological endeavour, and for society to perceive the need for a large investment in science. At the same time, it should be stressed that science has an important role in overcoming the gap between technology and culture that characterizes western society at present. It also considers **specific international co-operation activities** of paramount importance for scientific and technological development, which must have its own visibility and space **outside the thematic areas** since developing countries cannot compete with strong countries and organizations. It is the CSIC’s view that this activity should be maintained and even **expanded in certain domains** to show that European research can be an instrument for global research.

The horizontal activities for **co-ordination of national programmes** are essential for European progress and development of the ERA, since these national programmes manage more than 90% of the funds available, especially in areas of general interest to the different MS. These initiatives should be linked to collaborative actions, to develop the necessary critical mass to become competitive with respect to the USA and Asia. To date, public research organizations and universities could not participate straightforwardly in the ERA-NET initiatives, although entities with R&D programmes of very little significance were allowed to take part. The CSIC would like to stress that **research centre and university participation** in these ERA-NET or ERA-NET+ activities is essential to achieve the ERA goals, since research is performed at these institutions and thus they are key actors in contrasting the research policies.



## ■ Position of the CSIC in respect of FP7



### 3. CSIC views on the implementation of FP7

#### 3.1. Review Process

Peer review starts at the level of the establishment of evaluation criteria. The CSIC would like to stress that **priority should be given to the scientific and technological excellence** of a proposal, rather than to the fact that it fits within the themes. The latter should be understood as a necessary condition to be evaluated, but not as means for achieving extra marks independently of the scientific/technical value of a proposal. This practise also provides consistency with the peer review procedure for proposals under the ERC, which should be evaluated only on their excellence.

Ideally, reviewers should be selected according to **personal relevance and performance**, and from the EU own experience and know-how, rather than from a list of self-proposed individuals. Measures to achieve more transparent, efficient and shorter procedure as well as the extensive use of remote evaluation will indeed help to overcome some of the current problems.

### 3.2. Management of FP7

The CSIC supports **considerable simplification** of the management of all instruments, to make them attractive rather than discouraging. This simplification becomes even more critical in the case of the ERC, which will otherwise fail to attract the best researchers in Europe. The CSIC considers it essential that the **cost system be simplified** and, in the case of the ERC, **successful proposals should be funded 100%**. Whatever cost system is eventually selected, the **contract should enter into force on the day of its signing by the Commission**, rather than at a fixed time that is currently often before the Commission's signature. This is a great problem for many public institutions, especially for personnel hiring, due to legal regulations in the different MS.

The CSIC sees that **all legal concerns** of project development should be included in the model contract, rather than being left to a consortium agreement. In the current situation, consortium agreements do not guarantee that any **contracting party has equal rights and obligations**, as there is a growing trend toward using **non-negotiable documents** in which participants must declare their **unconditional adhesion** or risk being excluded from the project. This practice can lead to consortia with privileged partners and partners with limited ability to make decisions on important aspects such as the internal organisation of the consortium, budget breakdown, or intellectual property rights.



## 4. CSIC highlights on High Level Themes

### 4.1. Health

The FP7 recognises the need for strengthening European biomedical research. Tools for integrating the vast amount of data generated by post-genomic research, for and together with better diagnostic and experimental treatment trials, will indeed contribute to increasing the well-being of European citizens, growth of the European pharmaceutical industry, and creation of spin-off companies.

The inclusion of *systems biology* under “Translating research for human health” is welcomed by the CSIC, although there are two topics highly relevant to human health that are not covered by the present definition. First, research in **developmental biology** will help make sense of the biological mechanisms underlying tissue regeneration and other functions that guarantee the stability of organisms throughout their lives. In addition, this research will provide clues to fully develop emerging technologies such as the use of **stem cells** that will be able to mitigate some of the most important and complex diseases that affect mankind. Second, improved knowledge at **the molecular level as to how different pathogens evolve** is essential for the design of new drugs, vaccines, and models for interfering with host-parasite interaction. In this context, making use of genomic technologies to understand the physiological processes in microbe-host interactions becomes an invaluable tool. Imaginative experimentation merging non-invasive diagnosis methods and **animal models** needs to be encouraged.



## 4.2. Food, agriculture and biotechnology

It is the CSIC's view that this theme addresses research in most of the scientific areas required for food and agricultural applications. It nonetheless neglects other possible fields, such as **the use of microbes, both wild-type and genetically modified, in the food and feed technology sector**, that are equally important although their relevance may be less evident.

Genetically modified (GM) crops still seem to be the centre of turmoil. There remains a need for development of more sophisticated, molecularly-advanced technologies to assess the **environmental risk** (or its absence) posed by these crops. Implementation of current legislation and the provision of protocols and standards for **monitoring** their use, especially at the molecular level, is also needed to fulfil the social demand that food chain safety be properly guaranteed. Another important aspect is that agricultural soil exhaustion resulting from continued poor agricultural practises, cumulative climate changes, or continued and prolonged contamination needs an important research effort. The CSIC believes that this kind of research should be piloted and funded under FP7, promoting the use of GM plants as models for crop protection and production, aiming at more **environmentally friendly agricultural practices**, and providing the means to face challenges such as the replacement of existing agrochemical treatments that are to be discontinued in the near future, the scarcity of water or fertilizers, and soil contamination. Finally, extensive European research to characterise the **microbial components of the rhizosphere** will contribute to further improving current knowledge

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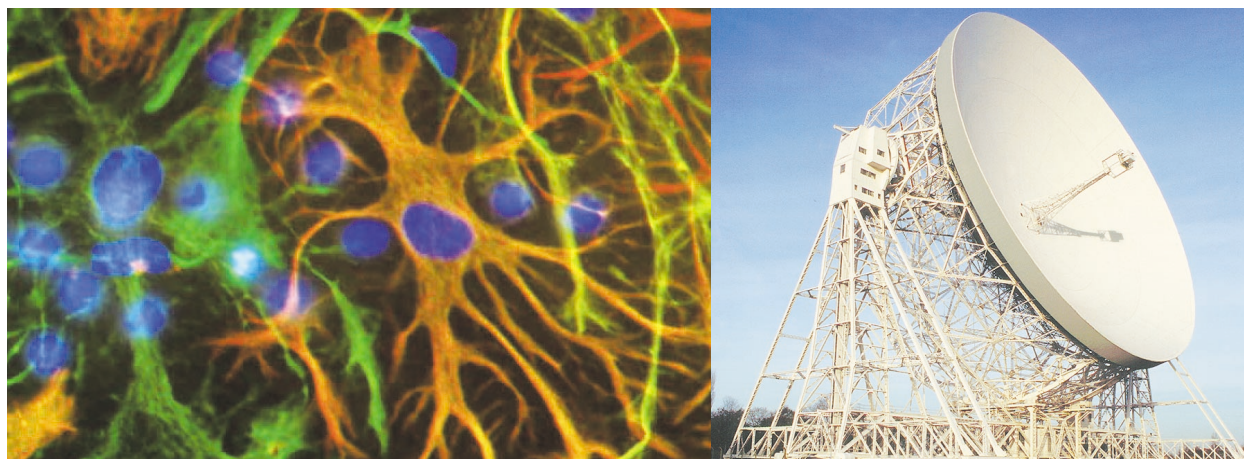
of microbial biodiversity, and pave the way to assessing the eventual release of GM organisms and/or their products with potential benefits for plant growth or use as bio-control agents.

The inclusion of these topics and measures for the monitoring proposed will with no doubt increase our knowledge of any risks associated to the use of GM plants as a complement to the exploitation of biodiversity to develop new plant varieties. Public awareness and the formation of an educated opinion will eventually help the European SME in this sector to remain competitive in a world inclined toward domination by large multinational companies, based mainly outside Europe.

### 4.3. Information and communication technologies (ICT)

ICT are considered within the FP7 as enabling technologies for many fields of interest within the other high level themes, making it evident that results are expected not only in the electronics and communications sectors, but also in many others such as health, space, transport, environment, energy, human cultures, archives, etc. The CSIC welcomes the multidisciplinary approach of this theme and considers that **interaction with other themes should be strengthened** to guarantee that multi-technology and multidisciplinary system integration can eventually be achieved. Support actions are needed on the design of methodologies and test tools to fully exploit the potential of new technologies developed: they will otherwise remain as an interesting research result rather than finding their way to commercialisation.

For the specific case of the *nanoelectronics, photonics and integrated micro/nano-systems*, the CSIC thinks that pursuing an **increase in speed** (making faster devices) and **functions** (integrating various functions in a single system) should be highlighted in addition to the reduction in dimensions. In the case of *ICT for the environment*, the focus should be on the **detection and prevention** of



natural disasters, in addition to reducing vulnerability to them and mitigating their consequences. To finally achieve the goal of offering technological solutions to citizens' problems, it is essential to include **cognitive technologies** as tools to approach human behaviour to technology.

#### **4.4. Nanosciences and nanotechnologies, materials and new production technologies**

Nanosciences and nanotechnology research aiming to control the fundamental structure and behaviour of matter at the atomic and molecular levels, as well as to improve performance and added value of existing products and processes, must be the other **fundamental axis of FP7** (together with theme 3), in the view of the CSIC. This is not only because the market is estimated to be very high, but mainly because Europe has an excellent scientific and technological position in the global context and should **capitalize its knowledge** not only by searching for further progress of knowledge, but also by transforming R&D into applications and products.

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The CSIC welcomes the incorporation of nanosciences in addition to nanotechnologies into FP7, but finds the **definition of the theme somewhat vague**, as happened in FP6. As opposed to ICT, the **"nano" concept as an enabling science and technology tool** for a large number of scientific and technology areas is not correctly highlighted. Measures are essential to connect the "nano" world to the "real" world, that now can only be done through the "micro" world. To make this concept effective, **focused areas** linked to sectors in which SMEs may play a significant role need to be listed to promote further development required to convert knowledge into products. Finally, it is the view of the CSIC that research in **advanced engineering materials** should be highlighted; otherwise Europe will lose positions with respect to the US and Japan.

### 4.5. Energy

The CSIC welcomes the subjects proposed in FP7 as essential for the development of environmentally friendly and cost-effective technologies. Accepting that fossil fuels will play an important role in guaranteeing future energy supply, transformation of current fossil fuel-based energy systems into more sustainable systems is required. To achieve this goal, both the **quality of the fuel and the conversion efficiency** of the process must be enhanced, the latter necessarily requiring new technologies adapted to the characteristics of fuels, in power plants and in large industries. **Carbon capture and sequestration** represent the last step in achieving zero emission power generation. Co-utilization of fossil fuels with biomass and wastes can also be considered an intermediate alternative in this cycle. To mitigate the effects of fossil fuel use, **hydrogen and fuel cells** have an important role, through joint research in the interface between Physical Sciences and Biology for the design of new, efficient processes and materials. Since reducing greenhouse effects requires joint efforts between academia and industry, the CSIC strongly supports and encourages the idea of a **TP dealing with "zero emission power generation"**.





In all cases, the CSIC thinks that **horizontal actions to encourage inter-thematic collaborative research with themes 3 and 4** should be undertaken, to promote research at the interface of these new energy sources and technologies within the “electric” world. Improvement of conversion efficiencies between energy sources of different nature remains a challenge. Power Electronics (PE) equipment based on novel materials could have a critical role in the connection of Distributed Generation (DG) and Renewable Energy Sources (RES), as well as in grid management for improved security of supply and for the dynamic regulation of active power flows. The future state of the art in FACTS (Flexible AC Transmission Systems) will be dramatically enhanced with the emergence of power semiconductor devices and deep penetration of DG and RES will then become affordable. Although some of these aspects are addressed under ICT, they are not linked directly to energy, possibly discouraging these essential **joint initiatives**.

#### 4.6. Environment and climate change

The research objective of this priority is seen as scientifically sound and well addressed to tackle the environmental problems, although **Marine Sciences** research should be further emphasized due to their considerable environmental, climate, social and economic relevance in Europe. The intrinsic **trans-disciplinary nature** of research on the environment, which relies on strong interaction with other disciplines, should nonetheless be **highlighted**. In this respect, the CSIC would like that **actions to support** projects that cut across the high level teams be highlighted. The specific mention of ICT for environment under theme 3 is welcome, with the expectation that this will contribute to development of large-scale facilities to allow the combination of sophisticated data acquisition systems (from both remote and ground observation) and to develop consolidated and high quality databases and information systems to support current innovative research. Compared to other economic sectors in the world, both aspects are gaps in current European research capacity on the environment.

The CSIC would like to see a strengthening of the potential impact of **biodiversity** for the generation of new products and processes. For instance, the role of microbial biodiversity and the interface between genomics and the environment (including exploration and exploitation of microbial reactions for environmental purposes) stands out as a major area of growth in the life sciences, with evident economic interest. The factual monopoly of the exploration of the global genetic content of the biosphere (which yields  $\geq 1$  million new genes per year) by the USA is being left unchecked by Europe.

It is well established that most present-day large-scale disturbances with impact on the environment are anthropogenic; **economic and cultural factors thus** require explicit mention under this theme. This becomes essential, since according to the wording of theme 8, 'Socio-economic sciences and



the Humanities', the main concern for sustainability refers to economic models rather than to the environment, and no explicit need for interaction with theme 6 is thus given. Most public decisions on environmental management concern governmental rather than individual stakeholders or industry. The experience of previous FP nonetheless shows that establishing links with policy makers has not in general been successful, since policy and scientific perspectives of the same problem often differ substantially. To prevent this dissociation, the CSIC would like to see highlighting of the need to develop research at the interface of both themes.

#### 4.7. Transport

The CSIC sees the search for new alternatives that make transport "green" as the main goal to achieve under this theme, by including a broad range of activities from technological (i.e., improvements to the vehicles themselves) to socio-economic (improvement of mobility, time and cost efficiency, customer satisfaction). It is thus perceived as a horizontal activity with links to many other themes. The fact that aspects related to **building the infrastructures** (airport buildings, harbours, roads, bridges, etc) are not specifically mentioned is seen by the CSIC as a weakness, since the socio-economic goals cannot be achieved if infrastructures are not properly designed and built.

#### 4.8. Socio-economic sciences and humanities

The CSIC welcomes the inclusion of a high level theme on Social Sciences and Humanities, but would like to see the term "**socio-cultural**" widely used to replace "socio-economic", since non-economic cultural aspects are equally important for understanding and planning of society, and might be considered to be excluded by the present wording.



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The CSIC thinks that this theme should also aim for **strength of the critical mass** of European Research Groups in these fields, and promote RTD, JTI and RI that are essential for providing support to socio-economic sectors. In the description of theme content, the CSIC would like to see highlighted economic, social and sustainability objectives on **environment and cultural landscape** (including review of changing attitudes towards nature), **urban and rural development**, as well as issues related to **identity** (individual or social) and **emotions and values** (as constitutive elements of European individuals). Since one of the main concerns in the development of the ERA is knowledge development and application, the CSIC would like to see **the spread and development of new employment opportunities** as one of the epigraphs in this theme, linked to technology transfer and knowledge application, and involving sectors such as social employment, cultural heritage, transformation of agrarian economies, cultural industries, and others. The development of **new indicators for innovation** should be included, in addition to those for the evaluation of research programmes.

#### 4.9. Space

FP7 highlights two main activities, namely space-based applications at the service of European society and RTD for strengthening space foundations. The CSIC finds that the subject definition is somewhat vague, and overlaps significantly with ESA activities. For instance, "space exploration activities" clearly involve aspects mentioned in "Space Sciences", such as structure of the universe or improved understanding of the planet Earth. A **better definition should be sought, to avoid duplication** of funding in some areas while leaving others unfunded, in addition to avoiding **fragmentation** of efforts.

#### 4.10. Security

This new subject in FP7 is expected to become more important in the future, as security aspects are horizontal and have impact not only in other fields of research but also in the quality of life of citizens. Security is becoming essential in sectors such as computer networks, infrastructures, food, biological and information systems (hardware and software), etc. The CSIC would like to see these **security-related civil aspects highlighted**. As drafted in the document, this theme is perceived more as a tool to drive coordinated actions than as a means to promote real scientific research projects. The CSIC sees that coordination activities on communication and exchange of information issues, or the management of natural disasters are urgent needs of current society. Research effort is needed to a greater extent in fields dealing with **detection and monitoring**, both on long (even satellite surveillance) and short distance ranges. To achieve this, there is high demand for a series of aspects such as development or further improvement of existing sensors for faster and more reliable *in situ* detection and continuous monitoring, reproducible sampling and identification methodologies, different types of unmanned vehicles and robots that could help to

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collect, transport and eventually test potentially dangerous samples in a secure manner, or appropriate chains of custody for dangerous materials. Since most of these examples can also fit under theme 3, the CSIC would like to see a **better definition of the nature** of the projects expected under this theme, and how coordination to other themes will be made effective to avoid duplication or fragmentation.

The CSIC considers civil decontamination as a major challenge compared to other decontamination approaches, due to the large number of individuals potentially involved. The CSIC therefore considers that the **optimisation of decontamination strategies** should be included under this theme. Similarly, strong research effort is needed on the **security of access to dangerous materials or agents**, as the first and most precautionary step forward to prevent potential terrorist attacks, particularly in the biological and chemical fields. Implementing internal security at private and public institutions is a major issue that will require considerable research and budgetary efforts. **Social and natural sciences research should be linked** to this theme in order to develop and establish conduct codes for the European scientific community in the near future if this is considered relevant in the prevention of terrorism and social or environmental risks.

## ACRONYMS used in the document

ERA	European Research Area
ERC	European Research Council
ESA	European Space Agency
EU	European Union
FP6	6 <sup>th</sup> Framework Programme
FP7	7 <sup>th</sup> Framework Programme
GDP	gross domestic product
ICT	Information and communication technologies
IP	integrated project
JTI	Joint Technological Initiatives
MS	Member states
NoE	networks of excellence
RI	Research infrastructure
RTD	Research and technological development
SME	small and medium enterprise
STREP	Strategy-targeted research projects
TP	technology platform