



**E**UROPEAN  
**S**CIENCE  
**F**OUNDATION

## Setting Science Agendas for Europe

[www.esf.org](http://www.esf.org)



- Founded in 1974, ESF is an independent association representing the scientific community of more than 30 European nations
- The membership comprises 78 national funding agencies, research performing agencies and academies from these countries
- ESF represents all scientific disciplines – physical and engineering sciences; medical sciences; life, earth and environmental sciences; humanities; social sciences with expert committees on polar, marine, space, radio astronomy frequencies and nuclear physics
- Its mission is to provide a common platform for the scientific community to advance European research and explore new directions in science
- ESF keeps close track of scientific research throughout Europe through its relationships with its membership and with the scientific community
- Identifying and then capitalising on promising new areas of scientific advancement is a natural extension of ESF's mission
- Encouraging innovation and providing talented young researchers with outstanding opportunities to explore new directions in research is illustrated by ESF-managed award schemes like EURYI – the framework for the next generation of scientists
- ESF is funded through the contributions of its membership
- ESF's direct budget is approximately ? 40 million. However due to the scale and scope of the activities networked by ESF we turnover ? 1.3 billion. Added to this the resources leveraged through the COST system, estimated by COST to be ? 2 billion
- Headquartered in Strasbourg with offices in Brussels, ESF has 104 employees and 35 in the COST office representing 20 nationalities
- ESF provides administrative, technical, scientific secretariat and management for COST – an organisation designed to foster research collaboration in Europe

# Planning a Successful Future for European Science

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European science is set to change in a number of fundamental ways in the coming few years. ESF must position itself in this new environment in a different way than in the past. In this context, I think the strategic plan is a very useful device for reaching that new position, particularly with the Forward Looks and the emphasis on being involved in setting science strategy in Europe.

One particular area where Europe, as a whole, needs to improve is in its ability to paint pictures of future developments to guide and enable both decision makers and scientists: how should small scale individual funding using current techniques be balanced against investing in new technologies? How should this be balanced against larger scale efforts whether large instruments or large scale focused programmes? But, more importantly, how does Europe set out its actual vision for developing science and how do we use this to sell Europe to the global talent we should be attracting?

The Forward Looks are an important example of how the ESF is uniquely positioned to bring together the best minds in European science to formulate credible strategies, at arms length from the actual funding decisions, and draw up plans which should clearly guide the national bodies. This position will be reinforced with the help of our Member Organisations and other supporting European organisations. Such plans or visions could help set the research agenda and steer policy makers. One area where European agendas have clashed with national agendas is decision making about new facilities and infrastructure; with increased costs to European taxpayers and slow non-competitive delivery for European scientists.

■ Ian Halliday, President,  
European Science Foundation



# Science Needs Europe - Europe Needs Science

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We know that Europe needs science. Politics indicates that need all the time. We have Lisbon target and Barcelona target, which are very important single decisions but we also need to remember that science needs Europe and it's the job of the European Science Foundation to ensure that science can use Europe.

If we put scientific research on a relative scale; single, small, European countries cannot be expected to have the same influence as Japan or the USA. The ESF must act as a catalyst to ensure that science makes best use of the advantages that Europe provides.

We act as an arena for national funding, research performing organisations and academies to work together to use the collective brain power and funding from all 30 countries, which we need to compete on an international scale. Crucially, we are a membership organisation and, as our mission highlights, we are the platform for our Member Organisations (MO's) and all of the organisations who work with us, to work together and push forward for the benefit of the future of European science.

In order to be an efficient catalyst for our MOs, the European Science Foundation must listen to them and work with them. Our new MO Fora is an important additional activity, giving MOs the opportunity to voice their needs and concerns so that we can work effectively together. We need to be efficient, client orientated and to have an international profile. We have to work with quality assurance in a transparent way, with proposals that are evaluated via the best peer review. The winds are changing in the European Research Area and, in response, the ESF is evolving.

This brochure has been developed to present a clear vision of what the European Science Foundation is aiming to achieve over the coming years. Now is an exciting and dynamic time for European science and ESF will play a key role by stimulating and supporting vital multinational and multidisciplinary collaboration, to foster excellence in research.

■ Bertil Andersson,  
Chief Executive,  
European Science Foundation

The establishment of the European Science Foundation in 1974 was unique. For the first time, national research organisations in Europe created a common European platform for cross-border cooperation.

ESF is unique even today despite the changing political climate in Europe during the past 30 years and despite the establishment of new European research organisations, including a substantial EU framework programme for scientific research.

As an independent non-governmental European organisation, ESF is responsible for promoting science, scientific research and policy education across:

1. Physical and Engineering Sciences
2. Medical Sciences
3. Life, Earth and Environmental Sciences
4. Humanities
5. Social Sciences
6. Polar
7. Marine
8. Space

Working on behalf of its principal stakeholders – the Member Organisations and Europe's scientific community – ESF considers hundreds of research proposals for grants and awards each year; publishes a wide range of position papers and briefings; and organises workshops, conferences and symposia as key elements of its role in ensuring that the voice of European science is heard on major policy and other issues affecting Europe's scientific community.

## **Mission Statement**

The ESF provides a common platform for its Member Organisations in order to:

- Advance European research
- Explore new directions for research at the European level

Through its activities, the ESF serves the needs of the European research community in a global context

## **ESF Values**

ESF's mission is guided by shared values which characterise ESF's specific organisational culture. These values are:

- Excellence: will be the gatekeeper criterion for all scientific activities; it will also drive the management philosophy and operating procedures;
- Openness: to all scientists and disciplines; no barriers between disciplines; open sharing of results; transparency to stakeholders and partners;
- Responsiveness: in its procedures and structure;
- Pan-European: rising above national interests to the benefit of science in the whole of Europe;
- Ethical awareness and human values: sensitive to societal and ethical considerations in all its activities; attention to gender aspects.

## How European Science Foundation Works

Headquartered in Strasbourg with offices in Brussels, ESF is an organisation which determines the direction of its evolution by listening to/working with its members. The ultimate decision-making body is the General Assembly in which all Member Organisations are represented. It meets annually.

The Assembly elects the President, the members of the Executive Board, and appoints the Chief Executive. It approves the budget and the accounts, statute changes, and admits new members.

The Governing Council is composed of members nominated by the Member Organisations. It is responsible for setting, directing and monitoring the overall strategic direction of ESF. It is chaired by the ESF President. The Governing

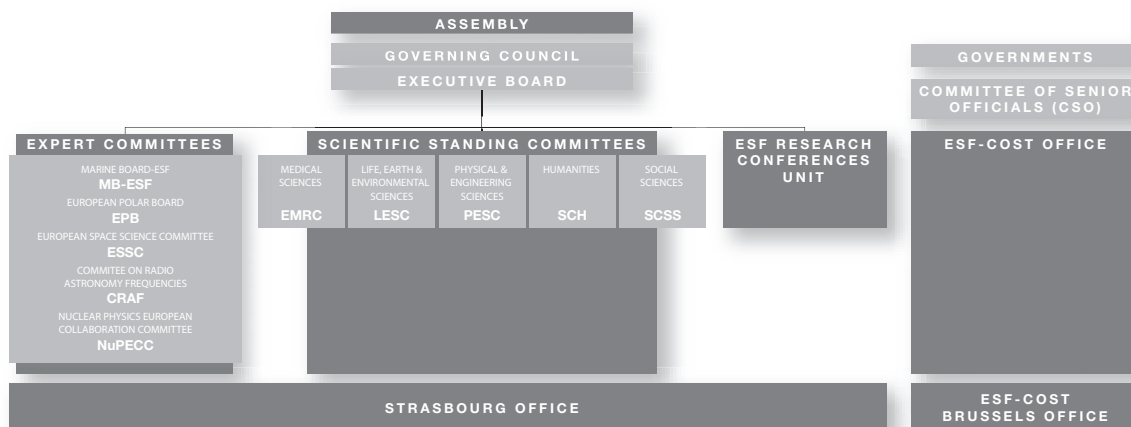
Council plays a key part in the process of selecting the President, Chief Executive and in the budget and accounting process by making recommendations to the Assembly. It appoints chairs of Scientific Standing Committees and receives reviews of these Committees.

The Executive Board is constituted by the President, two Vice-Presidents, up to five members elected by the Assembly on the advice of the Governing Council, and the Chief Executive. The Executive Board is responsible for implementing the strategy and policy set by the Governing Council and the development of ESF's science policy activities.

The ESF office in Strasbourg is directed by the Chief Executive, who is assisted by an international, multilingual staff. The office has excellent meeting facilities for use by ESF.


Scientific Standing Committees cover broad scientific disciplines. Their members are nominated by the Member Organisations. Each committee is responsible for identifying scientific priorities, formulating strategies and developing research agendas. Standing Committees cooperate in supporting interdisciplinary studies and in tackling issues of general interest in science and science policy. The work is then taken forward by the five units and the different Standing Committees.

Expert Committees are established as necessary. At present these cover the domains of marine, polar, space, nuclear physics and radio astronomy. They address strategy development for the domains concerned, deal with issues related to research infrastructure and give advice on strategic and science policy issues at the European level.



# Strategic plan 2006-2010

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The European Science Foundation Strategic plan covers a dynamic period for European science. Exciting developments in many fields of endeavour will require European cooperation on an increasingly large scale and across a wider scope of disciplines.

The primary goals of the Strategic plan are to promote science strategy, synergy and management in Europe, paving the way for initiatives across disciplinary and geographic boundaries in the European Research Area (ERA):

- **Science Strategy:** The activities to promote science strategy, Forward Looks, Member Organisation Fora, Exploratory Workshops.
- **Science Synergy:** The activities to promote science synergy, EUROCORES, ESF Research Networking Programmes and ESF Research Conferences.
- **Science Management:** ESF can accept the management of third party programmes if they strengthen its Mission, fit the expertise of ESF and are fully funded such as EURYI, EuroBioFund and COST.

## **Cooperation, Partnership and Building Relationships**

Underpinning the plan and every action proposed by ESF's mission is to provide a common platform for its MOs in order to advance European research and explore new directions for research at the European level.

The plan envisions a collaborative approach to ESF's activities, taking into account the distinct and often-differing views and needs of the MOs:

- Together with the MOs, ESF will develop partnerships with other organisations in Europe and the rest of the world in order to promote cooperation for the benefit of the European scientific community
- By working closely with its MOs, ESF can play a unique role with considerable impact at the European level.

ESF will proactively promote and foster scientific cooperation across national boundaries. A major goal is to develop ESF's optimal role and unique place in the ERA as the only organisation in Europe which brings together nearly all national research organisations, which extends beyond the current EU membership.

ESF's role will be clearly complementary to that of the European Research Council (ERC) by its focus on cooperation and coordination between its MOs to promote researcher-led science in Europe.



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## Meeting the Challenges

These activities comprise of:

### Forward Looks

Forward Looks enable Europe's scientific community, in interaction with policy makers, to develop analyses of future research developments with the aim of defining research agendas. The goal is to bring together scientific foresight and priority setting for the future of European research. They help to develop future research and pan-European approaches and to support progressive science policy, to keep Europe at the forefront of research.

Forward Looks are driven by the research community. European scientists are invited to produce recommendations for Forward Look topics. Each Forward Look for the next 5-10 years should provide a guide for everyone concerned for the continual monitoring of the status and health of European science.

### Member Organisation Fora

Member Organisation Fora is a new ESF activity which has been developed in response to clear demand from the Member Organisations. MO Fora can and will address a range of both strategic and procedural issues which are of interest to a significant number of MO's. Examples already in development include a forum on best practices in peer review, and a forum on coordination of medium sized infrastructures. Additional topics under discussion include collaboration with non European research organisations; the harmonization of cooperation between national programmes; and common approaches to the preparation of strategic plans, including the use of ESF's Forward Look instrument.

### Exploratory Workshops

Exploratory Workshops are small, interactive group sessions which open up new

directions in research or to explore new research fields with potential impact on developments in science. Workshops are normally 1-3 days in duration, focus on one topic and should aim to initiate follow-up research activities and/or develop future collaborative work. Interdisciplinary workshops are encouraged.

### Policy Briefings

Playing a distinctive and increasingly significant role in science policy development, the ESF provides expert and objective advice on a wide range of issues. Through its series of position papers and briefings, workshops and symposia, the Foundation aims to ensure that the voice of European science is heard on major policy issues affecting Europe's scientific community.

### European Collaborative Research Programmes EUROCORES

The aim of the European Collaborative Research programmes is to enable researchers in different European countries to develop cooperation and scientific synergy in areas where European scale and scope are required for leading-edge science in a global context and in this way create the critical mass necessary for scientific excellence.

Themes for EUROCORES programmes will be selected on quality, their specific European scientific added value and their unique character compared to themes supported under other schemes, for example, those funded under the framework programme.

### ESF Research Networking Programmes

Often long term, Research Networking Programmes bring together substantive research projects carried out by multi national teams of scientists, and may include workshops, summer schools and fellowship schemes.

### European Young Investigator Awards (EURYI) scheme

The EURYI Awards are offered by 20 European national research organisations in an open competition, with candidates selected on the basis of their academic and research excellence and their future potential. Candidates are chosen in a two-stage process: firstly at the national level by the relevant participating organisation, and secondly at the international level by high-level scientists and scholars in panels managed by ESF. Each winner receives up to €1,250,000 over a five-year period in an award that is comparable in scope to the Nobel Prize.

### ESF Research Conferences

ESF runs high-level, high-profile conferences addressing state-of-the-art science in all disciplines, including interdisciplinary where appropriate. Conferences could also pave the way for collaborative efforts. Topics will come from top down initiatives but will mainly be selected from responses to bottom-up annual calls.

### EuroBioFund

EuroBioFund is a new strategic initiative to enable greater interaction between European life sciences funders and researchers. Life sciences have undergone a revolution in terms of research approaches, infrastructure needs, technology developments and costs. Addressing these challenges requires the involvement of those planning and funding research to provide the necessary critical mass of expertise and resources. The first EuroBioForum is being organised in collaboration with the Academy of Finland for 14-15 December 2006 in Helsinki. At EuroBioForum, teams of scientists will present their research ideas to a variety of funding bodies through posters and presentations.

# Making It Happen

The Strategic plan 2006-2010 is a work-in-progress, a blueprint for how ESF will provide a common platform for the Member Organisations and deliver on its mission to advance European research. As such, it is a living document for ongoing consultation and collaboration between ESF and the Member Organisations.

Among the challenges facing European science is the efficient and prudent use of scarce resources. There are natural tensions between the desires of scientists to be well-funded and to be left in peace, and the pressures on the funding agencies to raise standards.

## Physical and Engineering Sciences (PESC)

Physical and Engineering Sciences are key drivers of research and innovation, providing fundamental insights and creating new applications. Such topics include dark energy and dark matter in our universe, quantum entanglement, processes in biological cells and modelling large biological systems.

Engineering is particularly pioneering new information technologies, new materials and intelligent systems. Nanosciences and technologies are converging physical sciences with medical research and cognitive sciences. Refinement of methods will increase applications in areas like food sciences, earth and space sciences, energy and engineering.

Scientific research at future research infrastructures imply a similar trans-disciplinary convergence. Increased computational power is effecting all scientific communities. Computational sciences provide new methods in ever more fields. More coordination efforts are needed.

The scientific community is aware that innovation in the 21st century must also address societal issues to be effective and sustainable.

*“ PESC is a pan-European platform for transformative research and competitive new ideas. Our goal is to provide a stage for effective debate and communication, a trigger on a European scale. We are a unique cross-disciplinary group, with networking activities comprising a good mix of mathematical and theoretical approaches. We're distinguished by being about fundamental research and engineering, the only part of ESF with engineering as a remit. PESC has a long tradition of well-established links with our Member Organisations; it's very important for us to provide our members with a transparent and trustworthy entry point to physics and engineering in Europe through the Standing Committee. This is a high priority for the success of ESF's strategic plan. ”*

**Dr. Patrick Bressler,**  
Head of Unit.  
■ [www.esf.org/pesc](http://www.esf.org/pesc)





### **Medical Sciences (EMRC)**

The scientific developments that we expect to become important for innovative medical research towards improved human health in the coming years include a better understanding of the causes and essential pathways responsible for the manifestation of complex diseases.

This understanding should be achieved through molecular medicine, which is the integration of the knowledge produced by systems biology to the level of the whole body through comparative phenotypes studies. Pro-active risk management at the earliest stage of new nanomedicines discovery and modelling of human diseases are mandatory steps in the discovery and development of innovative medicines. Likewise, the development of the personalised diagnosis, treatment and monitoring of diseases in a patient-centred process will be at the forefront of medical developments.

This should be achieved with an interdisciplinary team made up of researchers, care providers and actors of the social security and solidarity system. It will be mandatory to investigate the ethical and legal implications underlying these scientific developments.

*“ A large part of our activities are focused on what will be important in medical science ten years from now. During the coming year, a key priority for us is continuing dialogue with our members and the scientific community on major issues in medical science that we must address now. We will continue working closely with the scientific community in raising awareness and increasing knowledge which will enable all of us to better understand risks and how we effectively assess them. We want to gain more information and in-depth knowledge to help us develop science policies on the major issues, taking into close account the ethical and legal implications. Our over-riding goal is to help everyone better understand the causes of disease to help us determine how to combat them. ”*

**Dr. Carole Moquin-Patthey,**

Head of Unit.

■ [www.esf.org/emrc](http://www.esf.org/emrc)



## **Life, Earth and Environmental Sciences (LESC)**

The 21st century will witness a growing impact of the biosciences as a major contributor to the sustainable development of our world. Insights into genomics and other “omics” are accelerating at an impressive rate. The new opportunities that these tools provide for medicine, food production, and management of natural resources, including genetic resources, have grown and will continue to expand.

Our planet has benefited from advancements in technology, although some negative impacts may be irreversible. Fortunately, our efforts to understand the terrestrial, aquatic and atmospheric components of our planet have also advanced at an unprecedented pace.

The geosciences will continue to play a crucial role in the understanding of critical environmental issues such as the global circulation of carbon, nitrogen and water, climate change, soil erosion, geological resources including energy, and not forgetting the natural cycles of the planet that can have a catastrophic effect on the lives of many.

*“Biology, agriculture, earth sciences, glaciology, oceanography and other environmental sciences make up LESCS – quite a broad remit. Within this broad field of science, we have 12 Research Networking Programmes and four Scientific Networks – resources that will help us continue our work in identifying emerging scientific topics deserving special attention in Europe, proposing programmes or projects for adoption and examining and reporting on issues of strategic scientific importance.”*

**Dr. Arja Kallio,**  
Head of Unit.

■ [www.esf.org/lesc](http://www.esf.org/lesc)



### **Humanities (SCH)**

Humanities explore the origins and products of the human capacity for creativity and communication. Trans-disciplinary research programmes will generate new knowledge, in fields such as consciousness research, cognitive sciences, human dignity, health and disease, cultural diversity, technological innovation and sustainability.

Comparative studies of trans-cultural issues such as science, values and religion or migration, integration and identity, will shed light on the complex inner workings of past and contemporary societies.

Trans-national research infrastructures will facilitate the exchange between distinct traditions of European Humanities research and will stimulate new questions. Humanities will engage with societies needs for targeted foresight activities: better methodologies and practices will allow the integration of Humanities research into such future-oriented exercises.

*“The Humanities encompass a broad spectrum of disciplines all pertaining to human consciousness, perception and interpretation of the world, and communication: anthropology, archaeology, history, linguistics, literature, philosophy, musicology, religion and theology, just to name a few. The Standing Committee for the Humanities is dedicated to supporting networking activities within and across these disciplines. Working closely with our Member Organisations, we will soon have a new position paper that will enable us to put our initiatives and activities into a clearer focus, in alignment with the primary goals of the ESF strategic plan. We strongly believe that two-way collaboration with the Standing Committee and our Member Organisations is essential in achieving an effective communication and an open dialogue.”*

**Dr. Monique van Donzel,**

Head of Unit.

■ [www.esf.org/sch](http://www.esf.org/sch)





## **Social Sciences (SCSS)**

The social sciences examine the rich manifestations of what is meant to be a social being, ranging from the minutiae of human behaviour and brain functions, to large scale social movements, demographics, economics and politics.

The social sciences in Europe have matured to a point where, despite differences of culture, history and language, it has become feasible and desirable to develop excellence and ambition at the international level. All research funded by or through the agency of ESF should satisfy the generic criteria of excellence, ambition, curiosity and openness to society.

International peer review is the norm to identify excellent collaborative research in two or more countries. Ambition refers to creating high-quality research resources and creating multi-national and cross-disciplinary collaborations whenever needed. The key to excellence is curiosity-driven research, thus leaving behind the distinction between basic and applied research. Research, especially in the social sciences, must also be open to society, recognizing that knowledge is increasingly co-produced through interactions between scientists and those who use research findings.

Expanding the frontiers of knowledge in the social science fields requires most importantly productive collaboration by building bridges across national boundaries. This is precisely one of the central pillars of the ESF mission.

*“Social sciences comprise a wide range of disciplines. In our support for the ESF strategic plan, the Standing Committee is essential to ensuring we have the right balance of disciplines and expertise. We have set up advisory groups to help us more effectively address all the proposals we consider; for peer review; and debates on, for example, honesty and integrity in science. Instruments such as Forward Looks are especially important; developing new instruments such as these, as well as a Member Organisation Forum, are our first layer of support for those Member Organisations.”*

**Dr. Henk Stronkhorst,**

Head of Unit.

■ [www.esf.org/scss](http://www.esf.org/scss)



### **Marine Board**

Established in 1995, the Marine Board facilitates: the development of scientific strategies, enhanced access to infrastructure and the shared use of equipment; advise on strategic and scientific policy issues at the European level, and publishes position papers on key topics.

With its current membership of 25 marine research organisations from 17 European countries, the Marine Board has the appropriate representation to provide a unique forum for marine science in Europe and world-wide. This forum nurtures an enhanced synergy amongst the marine science community in Europe, reducing fragmentation and duplication of effort and resources.

*“ A fundamental priority for the Marine Board is the continuing implementation of our initiatives in support of marine science for the next decade. This includes identifying the key scientific issues and integrating relevant dimensions of the natural and social sciences in Europe, highlighting the role of marine science in relation to European development. It involves enhancing our understanding and ability to predict the impacts of ocean climate change, to ultimately help us determine scientific and socio-economic bases for sustainable development of European seas and their resources. ”*

**Dr. Niamh Connolly,**

Head of Unit.

■ [www.esf.org/marineboard](http://www.esf.org/marineboard)



### **European Polar Board (EPB)**

EPB is Europe's strategic advisory body on science policy in the polar regions. It acts as a voice and high-level facilitator of cooperation between European national funding agencies, national polar institutes and research organisations.

The European Polar Board is concerned with major strategic priorities in the Arctic and Antarctic and has members from national operators and research institutes in 20 countries. The Board is taking a central role in the coordination of European agencies and infrastructure managers in the strategic issues of the International Polar year 2007-2008.

*“As Europe's only forum for science policy issues in the Arctic and Antarctic, we are working closely with other members of the research community to help ensure the success of the International Polar Year 2007-2008. This is a significant event of international cooperation and provides us with enormous opportunities to increase our understanding and scientific knowledge of polar systems and the many geophysical phenomena that influence nature's global systems.”*

**Dr. Paul Egerton,**  
Head of Unit.  
■ [www.esf.org/epb](http://www.esf.org/epb)



### **European Space Science Committee (ESSC)**

Created in 1975, the ESSC is ESF's expert committee on space research. It is the ESF interface with the European Space Agency (ESA), the European Commission and national space agencies on space-related aspects. It investigates and presents the views of the European scientific community on space research issues and provides an independent voice on Europe's space policy.

*“ Today we are an integral part of ESF. Although our role as an advisory body has not led us to make use of many ESF instruments in the past, we plan to as part of our awareness-building activities. Space researchers can make good use of ESF resources as part of their work in space science research. One key role for us is to deliver advice and counsel on how best to coordinate all those activities, national and pan-European. Our structure enables us to integrate all the different disciplines of space research, and create a dynamic environment for focused debate and discussion. We interface with space-related organisations and communities on issues that are not regularly managed through research councils, thus providing a unified approach to multi-disciplinary research into space – a unique aspect of this unit, and also unique in Europe. ”*

**Dr. Jean-Claude Worms,**  
Head of Unit.

■ [www.esf.org/essc](http://www.esf.org/essc)



# Making It Happen

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## European Cooperation in the field of Scientific and Technical Research (COST)

COST is an intergovernmental European framework for international cooperation between nationally funded research activities. COST creates scientific networks and enables scientists to collaborate in a wide spectrum of activities in research and technology. COST networks called "Actions" are covering basic and pre-competitive research for peaceful purposes as well as activities of public utility. Scientists themselves propose new Actions making COST an attractive forum for new and emerging topics. The concept of COST meets the growing demand for international cooperation, multidisciplinary research, complements the European Union RTD Programmes. Today, COST has more than 200 Actions and involves more than 30,000 scientists from 34 member countries throughout Europe and one cooperating state and more than 80 participating institutions from 11 non-member countries and Non Governmental Organisations.

COST is now organised in 9 scientific domains:

- Biomedicine and Molecular Biosciences
- Food and Agriculture
- Forests, their Products and Services
- Materials, Physics and Nanosciences
- Chemistry and Molecular Sciences and Technologies
- Earth System Science and Environmental Management
- Information and Communication Technologies
- Transport and Urban Development
- Individuals, Society, Culture and Health





