
ABOUT COST

THE SAFE GUARD OF CULTURAL HERITAGE

COST- the acronym for European **CO**operation in **S**cience and **T**echnology- is the oldest and widest European intergovernmental network for cooperation in research. Established by the Ministerial Conference in November 1971, COST is presently used by the scientific communities of 35 European countries to cooperate in common research projects supported by national funds.

COST supports COST cooperation networks (COST Actions) with EUR 30 million per year and brings together more than 30 000 European scientists involved in research with a total value exceeding EUR 2 billion per year. This is the financial worth of the European added value which COST achieves.

A “bottom up approach” (the initiative of launching a COST Action comes from the European scientists themselves), “à la carte participation” (only countries interested in the Action participate), “equality of access” (participation is open also to the scientific communities of countries not belonging to the European Union) and “flexible structure” (easy implementation and light management of the research initiatives) are the main characteristics of COST.

As precursor of advanced multidisciplinary research COST has a very important role for the realisation of the European Research Area (ERA) anticipating and complementing the activities of the Framework Programmes, constituting a “bridge” towards the scientific communities of emerging countries, increasing the mobility of researchers across Europe and fostering the establishment of “Networks of Excellence” in many key scientific domains such as: Biomedicine and Molecular Biosciences; Food and Agriculture; Forests, their Products and Services; Materials, Physical and Nanosciences; Chemistry and Molecular Sciences and Technologies; Earth System Science and Environmental Management; Information and Communication Technologies; Transport and Urban Development; Individuals, Societies, Cultures and Health. It covers basic and more applied research and also addresses issues of pre-normative nature or of societal importance.

Chemistry and Molecular Sciences and Technologies

COST Chemistry aims at coordinating research in molecular sciences and related technologies in Europe. Using COST, European chemists have developed the largest framework for European co-operation for this central basic science that links to physics, material science and biology for the benefit of industries, universities and society.

The COST Chemistry Molecular Sciences and Technologies Domain, created in 1992 as the Chemistry Domain, has been developed around the following key areas:

- Coordination chemistry oriented especially towards biological and environmental effects
- Chemistry for new medicinal applications (new metal complexes, contrast agents, natural compounds diagnostics and therapies)

- New molecules, materials and processes based on catalysis and biocatalysis
- Supramolecular chemistry and biochemistry (nano chemistry, nanomaterials and membranes)
- Chemistry under particular and extreme conditions (surfaces and interfaces, high pressure chemistry, supercritical fluids, microwave chemistry)
- Theoretical and computational chemistry
- Prebiotic chemistry and chemistry of the origin of life
- Sustainable/green chemistry

At the beginning of 2006, 20 COST Chemistry Actions with their 113 Working Group projects were operational involving some 3500 scientists working in 1100 research teams from 31 COST countries.

Materials, Physics and Nano-Sciences

The Domain is home to material science, covering from conception through production, characterization, examination, evaluation, fabrication, joining to actual application and service, including related databases, simulation tools, standards and inspections. The Domain covers the full range of materials on length scales down to the nano-meter and atomic range, including surface modifications and the corresponding change in physical properties. The Domain supports exploratory basic research as well as applied research in physics as a key to understanding the laws governing the behaviour of matter and energy. The following examples illustrate aspects of research in this Domain. The scope of the Domain is not restricted to these activities but will adjust to changes arising from novel ideas within European research community.

New developments in industrial technology and technology driven projects requiring the synthesis of new material. In this context, materials science, physics and nano-science or combinations thereof will be supported from this domain. Especially physics underpins many industries and technological processes; it contributes to the synthesis of new materials and to a broad variety of new devices based on the progress made in areas such as optics, plasma physics, surface physics, materials simulation and others.

Emerging Technologies for energy supply, telecommunication biotechnology and related sectors which trigger innovative progress in conventional sectors such as power technology, transport, aerospace, lighting, and monitoring or the establishment of completely new technology areas. Cultural Heritage: The sciences contributing to this Domain are part of Cultural Heritage as they answer the most fundamental scientific questions related to the ageing of various kinds of objects of art. Therefore the Domain is also responsible for Actions in Cultural Heritage focusing on restoration and conservation of ancient architecture, built environment and artefacts. Multidisciplinary Research: Materials science and, to an even larger extent, nano-science are multidisciplinary research fields, therefore this Domain maintains active interaction with other COST domains on all relevant issues such as, for example, environment, global warming and social aspects of nanotechnology. By recognizing the huge potential of nano-sciences in such different areas the Domain encourages multidisciplinary actions and cooperates closely with the other Domains. Therefore, new ideas and initiatives are welcome as well as all ideas with high interdisciplinary elements and close links and overlaps with other Domains.

Individuals, Societies, Cultures and Health

This Domain supports the development of knowledge and insights for citizens, democratic debate and decision-making in the public, private and voluntary spheres. The following examples illustrate aspects of potential research topics in this Domain. The scope of the Domain is not restricted to these activities.

The development and behaviour of individuals and groups: Mind, cognition and complexity; Language development; Learning; Creativity; Socialisation; Identities and Attitudes; Gender; Vulnerability and resilience; Decision-making and risk-taking, etc.

Social, Economic, Political, Cultural, Historical and Technological Structures and Processes, and how these persist and/or change: Economic development; Governance and citizenship; Social cohesion; Poverty and inequality; Health and wellbeing; Public safety and security; Human impacts on the environment; War and conflict; International and inter-group relations; Risk and regulation; Institutional and organisational frameworks; management; Health systems and policies; Families and parenting; Inter-generational relations; Education and skills development; Labour markets; Work and Leisure; Welfare regimes; Demographic change and migration etc.

Cultural Diversity and a Common European Future: Languages, literatures, music and art; Regional/national histories and European history; Media and communication; Values continuity and change; People and landscapes/cityscapes; Locational and spatial variation; Cultural heritage; Cultures of food and drink; Philosophies of humans, nature, science and society; Everyday cultures, etc.

Inter-disciplinary topics linking social science/humanities perspectives with the natural, medical and engineering sciences are particularly welcomed by this Domain, provided that the social science/humanities aspect is predominant.

Transport and Urban Development

The Domain aims at fostering international research networking activities of scientists and experts dealing with transport systems and infrastructures, urban land use and development, architecture and design, and civil engineering issues. The focus is on multi- and interdisciplinary approaches and the aim is to cover both basic and applied research activities including technical and technological developments and their changeovers that are relevant to policy and decision making processes. A significant concern is devoted to activities exploring new research needs and developments.

The domain is by definition cross-sectoral and multidisciplinary, encompassing a wide range of scientific expertises within the transport and land use planning, design, and management activities with a special emphasis on the strong interrelationships among the relevant policy fields as well on all aspects related to sustainable development. The domain activities should be innovative and complementary to other European programmes in the relevant fields.

The following non-exclusive examples illustrate aspects of actual research in this Domain. The scope of the Domain is not restricted to these activities.

- Sustainable transport and urban planning policy
- Design of transport systems and development of urban infrastructure
- Urban architecture and civil constructions: planning and design
- The management of the transport systems, infrastructures and urban structures