

COST – European Cooperation in Science and Technology

[link: <http://www.cost.esf.org>]

In June 2009, South Africa concluded an agreement with COST (*European Cooperation in Science and Technology*), which is one of the longest-running European instruments supporting cooperation among scientists and researchers. This agreement allows South African researchers to participate in COST *Actions*, which are networks of research and which could be within any one of the nine COST **KEY SCIENTIFIC DOMAINS** – see **SECTION 1** for an outline of these.

The Department of Science and Technology (DST) is able to provide seed funding for the travel costs of South African researchers traveling to Europe to participate in COST Action activities. The visit must contribute or enhance South Africa's Science & Technology knowledgebase and human capital. The applicant should have been accepted by the COST Action Chair – **SEE SECTION 2: HOW TO JOIN A COST ACTION** – to be part of the projects before applying to DST for funding to attend the COST Action activities. A once off payment of R100 000.00 is made available per annum per South African COST participant.

1. KEY SCIENTIFIC DOMAINS

1.1 BIOMEDICINE AND MOLECULAR BIOSCIENCES (BMBS)

The following examples illustrate actual research within this Domain. However, the scope of the Domain is not restricted to these activities.

- *Molecular Biosciences* encompass all areas of genomics, proteomics and metabolomics. They are not limited to research in humans, but may also concern research in plants, viruses, micro-organisms, and animals. Basic and applied biomolecular research is addressed, issues connected with forestry and agriculture included.
- *Micro and Nanomedicine* (including nanotechnologies), biomedicine/molecular bioscience and pharmacology in extreme conditions such as climate change, and outer space conditions.
- *Interdisciplinary issues* includes research in fields such as bioinformatics, biomedical engineering, medical physics and chemistry, mathematical models in medicine. Therefore, new ideas and initiatives are welcome as well as those with high interdisciplinary elements, high degree of innovation and close links and overlaps with other domains.

1.2 FOOD AND AGRICULTURE (FA)

The following examples illustrate actual research within this Domain. However, the scope of the Domain is not restricted to these activities.

- *The Biological Functions of Organisms*: to advance understanding of the functions of organisms relevant to agriculture, food and nutrition, the domain will welcome proposals where fundamental science is an essential component of the topic. This will include biological science, animal science, veterinary science, plant science, microbiological science, soil science, genetics and breeding, agricultural system science or any other fundamental discipline related to food, agriculture & fisheries. Biotechnology - the use of the most recent techniques and applications that spring from their use - is also addressed.
- *Human Nutrition and the Food Chain* covers the entire food chain leading to non-processed, semi-processed and processed foods and encompasses food and feed quality, food safety, functional foods, nutritional and consumer issues. It includes all the processes and techniques used in food technology that are needed to bring food to the consumer's fork.
- Since food and agriculture involve so many scientific disciplines, it is anticipated that successful proposals will vary widely in nature from closely focussed topics of a fundamental nature using the most innovative and up-to-date techniques (such as tools for genomics, proteomics and

metabolomics) to *multidisciplinary projects* having a more holistic approach (such as new farming systems for the production of quality food).

1.3 FORESTS, THEIR PRODUCTS AND SERVICES (FPS)

The following examples illustrate the kind of research conducted in this domain. However, these are not exhaustive.

- *Forestry Research* supports activities aiming at meeting the social, economic, ecological, cultural, health-bringing and spiritual needs of present and future generations. In the light of the current international forest dialogue the DC FPS offers a forum for encouraging a scientific debate on ensuring a sustainable provision of forest products and services, such as wood and wood products, water, bio-energy, rural development, recreation and public health, habitats for wildlife, landscape diversity, carbon sinks and reservoirs.
- *Forests and Environment research* activities are fostered focusing on the protection of forests against harmful effects of pollution, including air-borne pollution, fires, pests and diseases, in order to maintain their full multiple values. In this context adequate importance is attached to the provision of timely, reliable and accurate information on forests and forest ecosystems as they are essential for public understanding and knowledge-based decision-making.
- At a *cross-sector* level FPS addresses issues as life-cycle analysis, tourism, energy production and recycling being of great importance for the achievement of a sustainable development. Therefore, new ideas and initiatives are welcome as well as those with high interdisciplinary elements and close links and overlaps with other domains.

1.4 MATERIALS, PHYSICAL AND NANOSCIENCES (MPNS)

The following examples illustrate the kind of research conducted in this domain.

- *New developments in industrial technology and technology driven projects*: requiring the synthesis of new material. In this context, materials science, physics and nanoscience 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 bio-technology 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.
- By recognising the huge potential of nanosciences 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.

1.5 CHEMISTRY AND MOLECULAR SCIENCES AND TECHNOLOGIES (CMST)

The following examples illustrate the kind of research conducted in this domain.

- *Energy production*: shifting from oil, natural gas and coal consumption to more efficient ways of using combustible fuels and investigate technologies based on renewable resources, in particular sunlight.
- *Caring for the planet*: continuous improvement of the standards of living by reducing the environmental impact of technology in order to establish a sustainable growth, develop clean technology for innovative production, ensure increasingly accurate means for quality control, mastering ground remediation, hazard control, preserving and maintaining cultural heritage.
- *Manipulating molecular matter*: learn how to handle, synthesise and manipulate matter at the molecular level, understand and control its reactivity and function, develop new catalysts to control the shape, size and properties of the product molecules; move from single molecule chemistry to supra- and macromolecular chemistry, producing smart materials tailored for specific applications

- *New ideas and initiatives* are welcome as well as those with high interdisciplinary elements and close links and overlaps with other domains.

1.6 EARTH SYSTEM SCIENCE AND ENVIRONMENT MANAGEMENT (ESSEM)

The following examples illustrate the kind of research conducted in this domain.

- *Modelling and observing of Earth systems:* Based on improving our understanding of physical and biogeochemical principles through new and integrated observing and modelling capacities, this will enable predicting global and regional environmental changes.
- *Prediction and mitigation of hydro-meteorological and other hazards:* This will require developing advanced modelling and warning systems integrated with upgraded in-situ, remote sensing and satellite technologies and observing networks.
- The *Environmental Management* aspects will include strong emphasis on science and technology related to managing natural resources and minimising environmental degradation.
- Strong interactions with international initiatives, programmes or organisations would be welcome. ESSEM is likely to have strong links with other COST Domains addressing issues where there is a strong interaction between human activities, the Earth system and environmental conditions

1.7 INFORMATION AND COMMUNICATION TECHNOLOGIES (ICT)

The following examples illustrate the kind of research conducted in this domain. For a complete list, please see

- *Information science and technologies:* the area covers all the aspects related with the foundations, design, analysis, development, and application of hardware and software systems. Related areas are foundations of computer science, software development technologies, software engineering, intelligent systems, advanced interfaces, user aspects, information management, high performance computing, and open, embedded, and distributed systems.
- *Communication technologies:* research in this area concentrates on the transfer of information from source to sink. Fundamental aspects cover physical, electromagnetic and functional modelling of all elements of information and communication systems such as terminals, antennas, transmission channels, networks, devices, components and materials. Research concerning photonic devices and the modelling and synthesis of electromagnetic meta-materials involves materials research, both in the optical and the submillimeterwave region. Here, cross-border interaction with Materials, Physical, and Nanosciences is required.
- *Societal aspects of ICT:* research in this area covers both the influence of ICT on society and the requirements imposed by society on the ICT infrastructure. Interdisciplinary cooperation with disciplines dealing with societal needs is essential for the development of this research area.
- An important area for this domain is *multidisciplinary research* – with an ICT core – in fields like sustainable development, health, attention to the elderly and the disabled, culture, learning, bioinformatics, and many others, performed in cooperation with the corresponding COST domains.

1.8 TRANSPORT AND URBAN DEVELOPMENT (TUD)

The following examples illustrate the kind of research conducted in this domain.

- *Sustainable transport and urban planning policy:* addressing issues of both sustainable transport and urban development. The focus is on the environmental and socio-economic impacts of transport, traffic safety, security and energy consumption, as well as modal diversion and modal re-equilibrium, intermodal solutions and interoperability among the different systems. The integrated spatial and land-use planning, environmental and transport planning and modelling will focus on recommendations for sustainable and interdisciplinary policy and planning concerning transport issues and urban development, solutions for a safer mobility of people and goods, securing living conditions, including psychological issues of these problems.

- *Design of transport systems and development of urban infrastructures*: addressing issues related to transport infrastructures (building, development, maintenance, rehabilitation), the development of new technologies both for infrastructures (materials etc.) and the vehicles (alternative fuels etc.) and encompassing issues related to the construction and management of networks and utilities, urban safety, security and disaster management.
- *Urban architecture and civil constructions*: planning and design, covering urban design and architecture, urban constructions, reconstruction and rehabilitation of structures and buildings, including cultural heritage areas, green structures as well as issues of quality of life.

1.9 INDIVIDUALS, SOCIETIES, CULTURES AND HEALTH (ISCH)

The following examples illustrate the kind of research conducted in this domain.

- *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.
- *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.

In terms of the South Africa-COST reciprocal agreement South African researchers could participate in any of the approximate 200 current *Actions* in the above-mentioned nine scientific domains. Please note that it is not research *per se* which is supported, but cooperative activities which could include meetings, workshops, short-term scientific missions etc. A specific *Action* will determine the nature of cooperative activities. The main benefit of participating in COST is that effective networks are built which are often maintained beyond the normal four-year duration of a COST *Action*. These could result in joint projects under the EU Seventh Framework Programme (FP7).

SECTION 2: HOW TO JOIN A COST ACTION

PLEASE NOTE THAT THERE ARE NO DUE DATES FOR APPLICATIONS TO JOIN AN ACTION FOR AS LONG AS AN ACTION IS CURRENT.

Step 1: Choose a COST *Action*

Use the COST pocket guide [About COST 2011](#) for a list of all the *Actions* (new list for 2012 not yet available).

Step 2: Contact the [Chair](#) and the [COST Science Officer](#) of the domain under which the specific *Action* in which you are interested falls

- The contact details of Chairs and COST Science Officers are listed in the *Fact Sheet* of each of the [nine domains](#).
- Explain your interest to the Chair for a specific *Action* and request a **non-COST country application template** from the COST Science Officer for that particular domain.

Step 3: Send the completed application template and a letter of motivation to both the Chair and the COST Science Officer

Step 4: The *Action's* Management Committee, the relevant Domain Committee, and the executive group of the COST Committee of Senior Officials each will evaluate your application.

a What happens when your application has been approved?

- You receive confirmation by email
- You are asked to create an *online e-COST registration*
- You appear on the COST website as a non-COST country *Action* participant

b Where do you seek funds to attend COST action meetings?

Once you have been notified of your application having been approved, please complete the COST seed funding application on the [ESASTAP website](#) and forward the application to DST at contact@esastap.org.za

c How much funding is available?

- An amount of R100 000.00 is available per annum and will be transferred as a once off payment upon receipt of the first application during any particular year in which the funds are required. The funds are to be used for the COST Action activities of the year of application. Applicants will be required to report to the DST on each activity strictly 30 days upon its execution.
- For an application form for seed funding from DST, [click here](#)