

Euro-Mediterranean Scientific Cooperation: Facts, Obstacles and Solutions Using ICTs. Practical Cases

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Background

The Barcelona Declaration of 28/11/1995 marked a turning point in Euro-Mediterranean relations by creating a frame of reference for political, economic and social cooperation with a view to establishing a global Euro-Mediterranean association. It underlines the importance of scientific cooperation and establishing scientific cooperation networks between the European Union (EU) and Mediterranean Partner Countries (MPC) as a key source of support for economic development. In line with this perception, a Monitoring Committee of Euro-Mediterranean Scientific Cooperation (MoCo) was created formed by high-ranking officials from the 25 EU Member States and ten countries that form the Euro-Mediterranean association (Algeria, Egypt, Israel, Jordan, Lebanon, Morocco, Syria, Tunisia, Palestine and Turkey). Euro-Mediterranean scientific cooperation has two core components: bilateral cooperation activities between member countries and MPCs, and actions funded by the European Union through various means, mainly the MEDA programme, which was created as a result of the Barcelona Declaration and the EU Framework Programme (FP) for Research.

Scientific cooperation between the EU and MPCs with community funding has had its own identity since 1992 with the INCO programme, which was created during the 3rd Framework Programme (FP) and continued through successive FPs. So far, some 500 million euros have been spent on over 600 joint projects in areas dealing with issues of common

interest, from healthcare to the development of Information and Communication Technology (ICT).

Importance of Scientific Cooperation

The perception of citizens regarding the benefits of scientific research, its universal character, and its detachment from ideological models that cause conflicts between countries and religious communities enable cooperation models in this field to be seen as an experimental platform that issues recommendations on cooperation mechanisms contained in the Barcelona Declaration.

Moreover, the cosmopolitan, international nature of scientific relations turns them into a model based on mutual respect and recognition of the abilities of the collaborating parties, becoming a referent for other areas of cooperation defined in the Barcelona Declaration. However, scientific activity cannot be undertaken independently of each society's cultural models and specific circumstances, particularly in terms of their public administrations.

The development of Euro-Mediterranean scientific cooperation suffers from a shortage of appropriate infrastructures to channel its activities. Nevertheless, a number of cooperation networks have been created through programmes that are either bilateral (state-to-state) or multilateral (framework programme or major regional programmes), yielding significant achievements on which to build projects of mutual interest and Euro-Mediterranean integration plans (the ERA European Research Area, and EMIS Euro-Mediterranean Innovation Space).

Certain research fields offer real collaboration opportunities based on mutual interest, and a large part of the scientific community in MPCs has forged and maintains strong ties with universities and research centres in the EU. Indeed, many elements suggest that

this type of collaboration can be successfully set up. However, the reality is somewhat different, with levels of cooperation and strengthening of ties producing results that are worse than expected. There is a generalised view that the tools and resources available to scientific cooperation policies are not being efficiently used. It is worth determining where the fault lies.

The Impulse and Agents

During the 9th Meeting in El Cairo in 2003, MoCo looked at the obstacles hindering EU-MPC cooperation and suggested that the real state of cooperation be analysed to create or enhance support structures favouring cooperation and to identify scientific problems of common interest to EU-MPC. As a result of these recommendations, the EUROMEDANET, ESTIME, MED7 and ASBIMED projects have been conducted over the past four years, and their conclusions have led to a diagnosis of the deficiencies and obstacles, as well as the opportunities, of Euro-Mediterranean scientific and technological cooperation.

There is an absence of centralised information on Euro-Mediterranean scientific and technological cooperation not only in the MPCs, but also within the EU Member States, and difficulties have been encountered in accessing this information online. Although no doubt due to the spontaneous nature of scientific relations between people and institutions, this seriously hinders the definition of sustainable long-term strategies that can be included in the framework of the Barcelona objectives.

Furthermore, many bilateral cooperation programmes are the result of political agreements between governments that provide a simple frame of reference generally lacking specific contents that provide for common interests or demands of the RDI system (Research, Development and Innovation), with the exception of research grants and mobility policies along with other training tools of crucial importance to southern Mediterranean countries. There is also a predominance of academic initiatives in these relations over the almost non-existent industrial demand for scientific cooperation from southern countries, the opposite of what occurs in relations with China and India.

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genetic-blood related illnesses, etc), global climate change, water and agriculture management, renewable energies and ICT application, to name only some of the most significant fields. A clear illustration of this is the increased number of co-publications.

It is also worth noting the role played by major European institutions such as CNRS (France), CNR (Italy) and CSIC (Spain), which have bilateral projects with counterpart institutions in the MPCs, including the CNRST (Morocco), CNRSL (Lebanon), Science Academy of Egypt and TUBITAK in Turkey. As ongoing programmes, they can feature long-term objectives and guarantee stable relations, serving as a portal for MPCs in multilateral programmes funded by the successive EU Framework Programmes.

However, the relationship between bilateral state-to-state or institution-to-institution cooperation and multilateral cooperation co-funded by the EU, the Framework Programme and MEDA has not been clearly defined. The scientific community from southern countries is already familiar with bilateral cooperation programmes, given their long-standing tradition in the region, but perceives the instruments and opportunities of Framework Programmes as complex, with the exception of the INCO programme, which only covers issues of common interest.

Obstacles

Time Management

Time management is one of the greatest obstacles in organising Euro-Mediterranean scientific cooperation. The “time” of the cooperation is that of the participants’ slowest administration. This is a generalised phenomenon, but an efficient use of time is critical for research, and indeed for business. An idea is original when it first appears, but loses its novelty and impact

potential if its analysis and development is delayed. When scientific activity by public entities is seriously limited during the administrative process, there is a loss of leading activity referents, the results of which compete for global recognition.

Administrative and Financial Management

Broadly speaking, MPC structures are conceived for managing resources from national sources. Except in rare cases, there are no efficient procedures for handling international funds, whether due to the monetary precautions for controlling transfers and exchanges, or because treatment protocols for these funds excessively prolong their availability and/or cause considerable losses during the procedure. Some researchers even believe the money from the EU should be managed by institutions belonging to the EU itself to avoid delays in its use, which evidently does little to help transform the institutions. Therefore, it is a universal effort by the scientific community to gain autonomy and create management models that are adapted to research tasks while avoiding subordination of procedures and time and resource management typical of ordinary public administrations. The disconnection between management and function causes all kinds of serious problems in the development of international collaboration processes.

Innovative Activity and Knowledge Management

Another major issue is the analysis of the innovative function of cooperation, that is, its use as a source of knowledge that can be applied to the production system. With the exception of Israel, which has numerous bilateral and multilateral programmes focusing on innovation, collaboration projects in almost all MPCs appear more or less spontaneously in the academy, with low incidence of industrial sectors. This scenario is slowly changing with the creation of "Centres of Expertise" in Tunisia and Morocco and "Science Cities" and "Technology Parks" in Egypt and Jordan, where spaces shared by the industry and academy are being established and are beginning to gain relevance in the international cooperation arena. This trend should be encouraged and the EU can contribute to its consolidation by employing knowledge gained from national experience and the regional development policy defined by the European Commission REGIO general directorate.

Knowledge Management and the Role of ICTs in Euro-Mediterranean Scientific Cooperation

Nowadays, the role of Knowledge in organisations has changed due to the paradigms associated with the Information Society and new knowledge-based economy, which evidently also affects Euro-Mediterranean international cooperation in science and technology.

Its assets are chiefly the quality of the scientific community on both sides of the Mediterranean, the longstanding relationships that have yielded excellent results in terms of scientific publications and research personnel training programmes and, above all, the need to cooperate in solving problems of common interest.

Research generates a need for communication, exchange and debate that cannot be subordinated to administrative procedures. It is necessary to disseminate the results of these networks and initiatives using specific knowledge management methods and techniques, with a communication strategy geared toward agents who are involved at an educational, research and industrial activity level, as well as toward the various administrations and political decision-makers.

Within this context, ICTs are an essential solution, since they:

- Detect the existence of "Communities of Practice" (CoP) (Wenger et al, 2002) in the scientific and technical field: groups of individuals (scientists, technicians, industrialists, etc) not necessarily structured around a formal nucleus who show an interest in a certain field or discipline area either individually or collectively.
- Strengthen these CoPs in Science and Technology by implementing a series of infrastructures that guarantee connectivity by means of Technology Platforms (points of access to Broadband Networks, Internet, Semantic Web, etc.), an essential requirement for adjusting cooperation time to that of their contents.

The EUMEDIS and CULTNAT initiatives are examples of a successful implementation of this type of "complementary duality" between Platform and Contents. It is clear that the resolution of problems and their global dimension on the international arena calls for communication tools that facilitate effective dialogue and ongoing updates of the most diverse content, allowing access to these tools regardless of the geographical location, time zones or organisational

borders. In other words, far from posing problems, the heterogeneity of organisational cultures in the Euro-Mediterranean Area actually enrich these types of structures.

In recent years, there has been a noticeable increase in the inception of virtual cooperation networks in the form of CoPs, which experience an ongoing transformation process from the moment they are created. At the same time, they unfold in a political, environmental and socioeconomic context that largely determines their evolution and, thus, their sustainability. The latter will depend on the impact of the results achieved, measured by indicators such as the day-to-day motivation of its members within the network, their “flexibility” and a somewhat informal knowledge exchange on an inter-organisational level. Trust is another important factor of ICT tools and depends largely on the users’ training during the initial launch. There is no “road map” setting the phases for the ideal articulation of these types of networks from a governance point of view. It is clear from experience that if they are managed by people and/or institutions

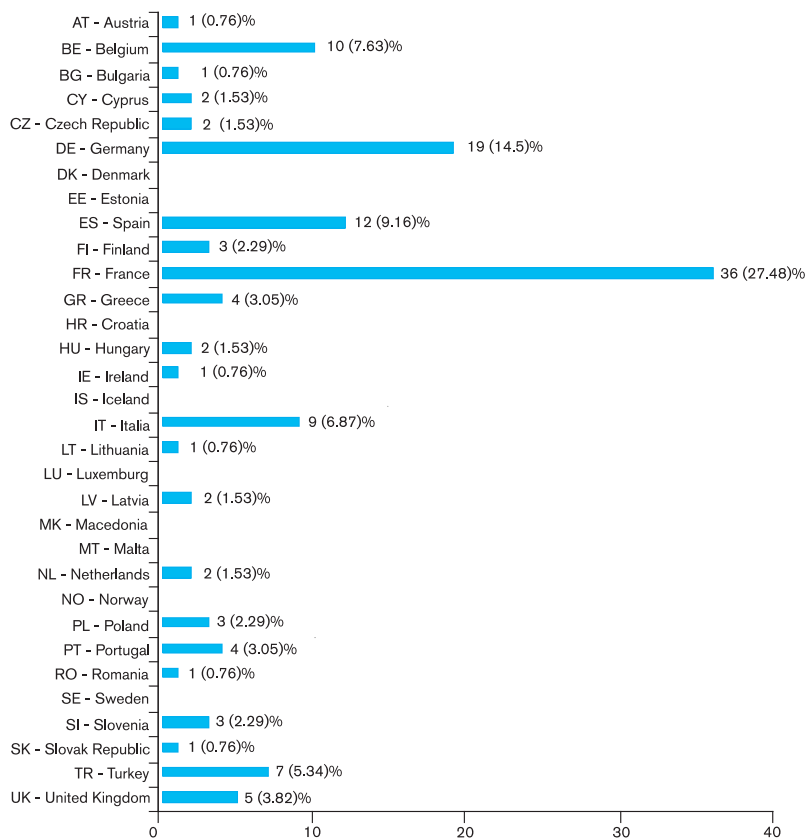
with accredited reputations in the scientific and technological fields and assisted by an advisory committee of experts and suitable agents, the Governance and, as a possible consequence, the Sustainability of this kind of networks (CoPs) will be guaranteed.

In this particular case, the main aim of these ubiquitous, secure collaboration mechanisms is to generate an intellectual and knowledge base using the definition and identification of a series of indicators that may subsequently enable benchmarking and assessment of the science and technology policies of these networks, one of the main aims of the ASBIMED and MED 7 Projects described below.

ASBIMED Project

The members of organisations that form the International Science and Technology Cooperation Networks use collaboration that is generally based on bilateral and/or multilateral cooperation programmes

GRAPHIC 7 Programmes of Bilateral Cooperation in Science and Technology*



* Distribution in number and percentage of programmes of bilateral cooperation in Science and Technology (over a total of 124 identified by 22nd June 2006) by EU countries and other European countries including Croatia, Macedonia, Norway and Iceland. Turkey is also included as a Candidate Country for incorporation in the EU

that are subdivided into projects under the umbrella of a common knowledge management strategy applied to a certain scientific and technological theme.

The ASBIMED Project, coordinated by the Spanish National Research Council (CSIC), aims to assess the topics and instruments of bilateral scientific and technological cooperation between the 25 EU Member States plus Romania and Bulgaria (which joined the European club in January 2007), and Turkey (viewed collectively with other countries including Croatia, Macedonia, Norway and Iceland), with the Mediterranean Partner Countries (MPC). The purpose was to identify the bilateral science and technology cooperation activities of Member States and determine the activities that may overlap and/or complement the strategic objectives of the European Research Area (ERA) in the field of Euro-Mediterranean cooperation and the MEDA Agenda for Cooperation in Research, Development and Innovation.

Although at the beginning the period of study was 1998-2003, it has been extended to include Programmes and Projects of International Cooperation in Science and Technology outside this period given their interest. ASBIMED aimed to analyse and identify:

- The thematic priorities developed by bilateral cooperation, as well as its intensity, expressed as the number of joint publications, student exchanges, projects and funding. In addition, joint participation in projects of the EU Fifth Framework Program

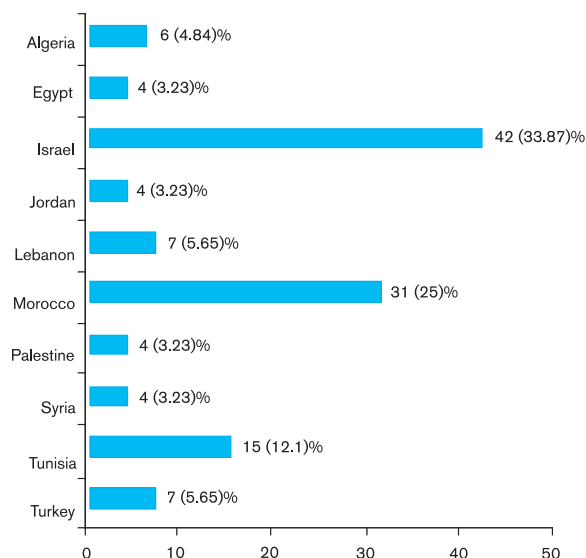
was analysed as a preliminary indicator of traditional cooperation.

- The instruments used include travel grants, student exchange, joint projects, access to infrastructures and seminars, as well as their performance and relevance.
- The budget for bilateral cooperation and its distribution according to priorities and instruments.
- The industrial or social sectors that benefit from bilateral cooperation. The degree of innovation introduced in the socioeconomic fabric by bilateral science and development cooperation.
- The institutions, their character (universities, hospitals, research centres, companies, etc), personalities and experts involved in bilateral cooperation.

The ASBIMED Project has provided information for defining a "state of the art" of existing bilateral international cooperation in science and technology between EU Member States plus Turkey and the MPCs, and the cooperation between the latter (MPC-MPC), which can be used to guarantee increased effectiveness in terms of resource mobility to support, among other objectives, the participation of MPCs with possibilities of success in the Seventh EU Framework Programme and, at the same time, to refine the criteria for implementing the MEDA programme.

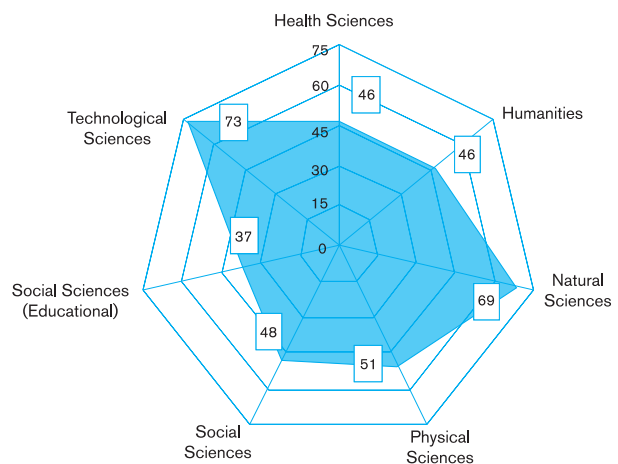
The consortium that constituted the Project used this information to draw up a report on each Mediterranean

GRAPHIC 8 Programmes of Bilateral Cooperation in Science and Technology by Mediterranean Partner Countries



Distribution in number and percentage of the Bilateral Cooperation Programmes in Science and Technology (over a total of 124 identified by 22nd June 2006) by Mediterranean Partner Countries (MPCs). Also includes Turkey as an MPC.

GRAPHIC 9 Relative Importance between Thematic Areas of Bilateral EU-MPC Cooperation in Science and Technology



Radial of the relative importance between Thematic Areas of Bilateral EU-MPC Cooperation in Science and Technology, following the adoption of codes defined by the EU Syllabus. Most notable are those that include all fields of technological research (73 Programmes – 19.73%), immediately followed by Natural Sciences (69 Programmes – 18.65%). The remaining Thematic Areas follow a similar distribution. Sample carried out on 22nd June 2006.

country and a global overview on the assets, obstacles and opportunities in bilateral science and technology cooperation between the EU and MPCs.

The identification and awareness of the aforementioned cooperation mechanisms is a prerequisite for tackling the objectives defined:

- To support external relations, including those related to the Euro-Mediterranean Community's development policy.
- To enhance coordination and complementarity with activities based on Community foreign policy instruments (MEDA and its MoCo, inter alia).
- To support joint efforts by the Community and EU Member States to open the European Research Area (ERA) to the rest of the Euro-Mediterranean Area.

Bilateral cooperation between EU Member States and MPCs has a longer standing tradition than actions carried out since the founding of the Directorate-General for International Cooperation in Science and Technology (DG-RTD). However, there has been almost no coordination between these national and European actions. The participation of MPCs in the Framework Programme should not ignore existing networks and areas of expertise created under bilateral cooperation prior to the INCO Programme within the Framework Programmes.

Various cooperation schemes between Member States, or even some of its regions, with a certain MPC have been shown to duplicate a similar effort by another Member State. This situation in itself reflects

the urgent need for Member States to coordinate scientific and technological cooperation policies. Some graphics from the study are particularly representative of the degree and intensity of this cooperation. Other graphics, tables and maps belonging to general and specific reports by Mediterranean Partner Country (MPC) can be found on the Project's Intranet website and on a Multimedia compilation CD that has been published for dissemination.

MED 7 Project

The main objective of the MED 7 Project, organised under the auspices of MoCo and coordinated by CSIC, was to identify the most relevant topics, priorities and technical instruments to promote Euro-Mediterranean scientific and technological cooperation during the Seventh Framework Programme-FP7 (2007-2013).

Technically, the MED 7 Project consisted of six thematic workshops (plus an assessment workshop) that sought the opinions of prestigious experts in topics of interest in the Euro-Mediterranean area, from both EU Member States and MPCs. Representatives and personalities from MoCo and the European Commission also attended.

These meetings were held in various Mediterranean locations, as shown in the following table (Table 22).

TABLE 22 Summary of the Thematic Workshops Organised under the MED 7 Project

Thematic Workshops	Place and Date	Organising institutions belonging to the member consortium of the MED 7 Project
Innovative Production Systems and Processes	(Casablanca, Morocco, 6-7 May 2005)	Technology Directorate – Ministry of Science and Higher Education of Morocco
Water Risk Management and Renewable Energies	(Athens, Greece, 16-17 May 2005)	National Hellenic Research Foundation (NHRF)
Public Health	(Tel-Aviv, Israel, 25-26 May 2005)	Israel Directorate for Scientific and Technical Cooperation between Israel-Europe for the EU Framework Programmes (ISERD)
Agro-Food and Industrial Agriculture	(Montpellier, France, 9-10 June 2005)	Centre for International Cooperation of Agro-Food Research for Development (CIRAD) – France
Cultural Heritage	(St. George's Bay, Malta, 16-17 June 2005)	Malta Council for Science and Technology (MSCT)
Synthesis/Assessment Conference	(Naples, Italy, 25-26 June 2005)	Department of International Activities – Third Division – Mediterranean and Middle East (CNR)-Italy
Information and Communication Technologies	(Brussels, Belgium, 15 September 2005)	Consejo Superior de Investigaciones Científicas (CSIC, Spanish Council for Scientific Research) - Spain
Socioeconomic Research and Humanities		

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Among other recommendations, it acknowledged that the transition towards a knowledge-based economy in Mediterranean Partner Countries (MPC) requires:

- An economic and institutional framework capable of promoting the efficient use of knowledge and innovative forms of entrepreneurship.
- Education for the population to create, share and use knowledge.
- Investment in dynamic information infrastructures and systems.
- Setting up national research and innovation systems to generate synergies with the industrial sector, research centres and, in general, the socioeconomic apparatus in MPCs.

The results of the MED 7 Project are compiled in a series of reports that include the remaining recommendations on the thematic areas considered and other areas that are summarised. These reports can be found on the Intranet of the MED 7 Project Website or on the Multimedia CD published for dissemination.

Conclusions

It is necessary to create management models that are adapted to research while avoiding subordination of procedures and time and resource management that mark ordinary public administrations in the Euro-Mediterranean Area. The disconnection between management and function has already caused serious problems in the development of international science and technology collaboration processes.

There is a need to increase the use of Euro-Mediterranean tools and mechanisms for cooperation in science and technology as a source of knowledge that is useful for the production system.

Management and dissemination of knowledge obtained by Communities of Practice (CoP) working in science

and technology in the Euro-Mediterranean context should be undertaken using specific methods and techniques, with a communication strategy geared toward agents involved at an educational, research and industrial activity level, as well as toward the administrations and political decision-makers.

All of the above justifies the need to support the design, implementation and maintenance of ICT tools that enable the strengthening and emergence of new cooperation networks and are essential for the process of assessing the associated policies of cooperation in science and technology.

References and Links

Barcelona Declaration:

<http://europa.eu/scadplus/leg/es/lvb/r15001.htm>

11th MoCo Meeting: Vienna, 28th-30th June 2006

www.bmbwk.gv.at/moco

CORDIS - <http://cordis.europa.eu/>

EU International Science and Technology Policy (RTD-INCO) http://ec.europa.eu/research/iscpl/index_en.cfm

European Research Area (ERA)

http://ec.europa.eu/research/era/index_en.html

EUROMEDANET Project: www.euromedanet.gr

ESTIME Project: www.estimate.ird.fr

ASBIMED Project: "Assessment of the bilateral scientific co-operation between the European Union Member States, Accession Countries, Candidate Countries and the Mediterranean Partner Countries". Funded by the Sixth EU Framework Programme, identifier FP6-INCO-CT-2004-510659

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WENGER, Etienne, McDERMOTT, Richard and SNYDER, William M. *Cultivating Communities of Practice*, Harvard Business School Press, 2002.

EUMEDIS Initiative: www.eumedis.net

CULTNAT Initiative: www.cultnat.org

EU Research DG (DG-RTD)

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