

211359 MIRA Publishable Summary

Executive Summary

The INCO.Net MIRA Project (Mediterranean Innovation and Research Coordination Action, Grant FP7-211359), <http://www.miraproject.eu> was designed to create a dialogue and action platform to identify common interests in research areas, set-up S&T priorities, support the EU-MPC policy dialogue in RTD, support capacity building activities and strengthening of the participation of the targeted countries/regions to the Framework Programme, including the support for information points in the third countries. MIRA, along its life, has promoted actions in order to propose, monitor and develop actions aimed at the creation of synergies among the different cooperation S&T programs between the Mediterranean Partner Countries (MPCs) and the member states of the EU, and foster the participation of the MPC in the Framework Programme.

The foreseen activities of MIRA were : 1) creating a dialogue platform using the state of the art of the ICT technologies, 2) addressing training activities to improve the quality of the participation and management of the partners of FP7 from the MPC; 3) creating discussion platforms and organizing meetings to monitor and discuss the content of the Thematic priorities of FP7 in term of the common interest of the EU and MPC; 4) creating an Observatory of the EU-MPC S&T cooperation, which will agree indicators for the monitoring of RTD cooperation activities; 5) creating networks of research institutions and technological transfer services for the development of the Euro-Mediterranean Innovation Space (EMIS), and 6) the support to the functioning of the MoCo.

These activities were complemented with the development toward the common appropriation of the results of the current project in terms of initiating activities on Innovation, identification of common scientific priorities that could be as clustering glue around Projects already approved by the Union for the Mediterranean, such as the Programme “Horizon 2020:De-contamination of the Mediterranean”, http://ec.europa.eu/environment/enlarg/med/horizon_2020_en.htm where business development can be foreseen using the potential of research in both sides of the Mediterranean. A number of Working Groups to make the State of Art of the stock of scientific were created. Besides, the project partnership was enlarged to include those MPC, associated countries and other countries involved in the Union for the Mediterranean that accepted the invitation to join it. MIRA supported those activities of the MPC Programmes that needs the identification and development of a research agenda in support of its objectives, notably the Programme Horizon 2020 and the strengthening of the industrial cooperation by fostering the creation of the Euro-Mediterranean Innovation Space. All these activities are aimed at providing a strong institutional basis for the EU-MPC S&T cooperation.



The experience of MIRA provides some insights on the future of the EU-MPC scientific collaboration expectations and Lessons Learnt along the development of the Project:

- A fluid cooperation dynamic has produced a demand for moving from a, somehow, unidirectional setting of the scenario and decision-making process to a partnership with co-ownership of programmes on all aspect of this collaboration.
- This new scenario is being assumed by most of the MPC, but it is highly dependent on political difficulties, on both sides of the Mediterranean; Networking of thematic parties from the EU and the MPC, including Technological Platforms, must be promoted and maintained for the mutual interest. A structure providing a minimum management of these networks should be created and co-owned.
- The political debate structured by the MoCo and the Ministerial Conferences need to build a shared instrument in order to execute the actions needed to impulse and improve the quality and focus of the cooperation. This instrument must be co-owned by all parties.
- Innovation push needs a joint action plan for the creation of an international platform to cooperate on the technology transfer area. MoCo should support the constitution of this platform/network on technology transfer and innovation as a priority for achieving a Euro-Mediterranean Research and Innovation Space.
- Research needs a long term strategy, a continuous effort, with priorities linked to national and regional challenges on social, economic and environmental demands.
- The building of trust between cooperating parties results from the engagement in well drafted actions that engage all parties. Prejudices do not resist the proof of cooperation in topics of mutual interest.

Summary description of the project context and the main objectives

The Mediterranean region has traditionally been an area of interest for the external relations of the EU. Several cooperation initiatives have been addressed to this region, within the frame of a "Mediterranean dimension" encompassing security, economic, social and political aspects. In 1995, the Conference of Barcelona reinforced this frame in order to create a "shared peace, prosperity and security" area. The EU policy toward the Mediterranean Countries was defined in the so-called "Barcelona Process" launched in 1995, where the Members States of the EU and the Mediterranean Partners Countries (MPC) expressed a shared wish of a Mediterranean space of security, economic development and socio-cultural exchanges. The policy instruments were mainly the Association Agreements (AA) between the EU and each MPC. This ambitious goal, re-launched by the creation of the Union for the Mediterranean, has not been fully achieved yet. This was followed by some new policy instruments, with a regional scope which ended up in the European Neighborhood Policy (ENP) in 2003. These instruments had accompanying financial instruments: the MEDA and ENPI since 2004. More recently the



Union for the Mediterranean (UfM) was launched in the summer 2008, with the intention of rebuilding the EU-MPC partnership on the basis of a EU-MPC Co-Presidency.

With particular reference to Science, Technology and Innovation (STI), the EU cooperation policies with MPCs have not completely defined a harmonized institutional and regulatory co-ownership frame at multi-lateral level. 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.

The Euro-Mediterranean Ministerial Conference on Higher Education and Research held in Cairo in June 2007 (Euromed Ministers 2007) stressed the need to move toward the creation of a Euro-Mediterranean Research and Innovation Area, through, inter alia, modernizing R&D policies, promoting innovation and supporting institutional capacity building in the southern Mediterranean countries. The Declaration http://ec.europa.eu/research/iscp/pdf/cairo_declaration.pdf also called upon favoring the mobility of researchers and enhancing the participation of Mediterranean Partner Countries (MPC) in the EU Framework Programme for Research. It stressed the need to move toward the creation of an Euro-Mediterranean Research and Innovation Area, by promoting in Research and Innovation:

1. Modernizing Science and Technology, RD policies in the Mediterranean Partner Countries;
2. Supporting Institutional Capacity Building, including human and research infrastructure development;
3. Enhancing the participation of the Mediterranean Partner Countries in the Framework Programmes while taking into account their particular needs, as well as areas of mutual interest and benefit between EU and Mediterranean Partner Countries;
4. Promoting innovation in the Mediterranean Partner Countries and enhancing exploitation of the RTD outputs by society and industry;
5. Favouring mobility of researchers;
6. Enhancing participation of the Mediterranean Partner Countries in the "People" Specific Programme of FP7.

Following this declaration, the process of S&T agreements has been accelerated and the Commission has created a series of types of "instruments" for project funding that address the institutional and capacity issues. A series of specific instruments specifically designed for international cooperation in science (INCONET, BILAT, ERAWIDE, SICA) were introduced in this last period of the 7th Framework Programme. The network of National Contact Points for EU-MPC scientific collaboration and in Egypt and Tunisia specific co-funding mechanisms has been created.



In May 2011, addressing the ongoing transformation in the Mediterranean, the EU issued a Joint Communication "A new response to a changing Neighborhood" http://ec.europa.eu/world/enp/pdf/com_11_303_en.pdf stressing the need for a new approach to strengthen the partnership between the EU and the ENP countries. Working towards the development of a "common knowledge and innovation space" is underlined as a cooperation priority. Science and Technology were included in the Association Agreements after 1999 (the Egyptian agreement was the first to have a part on science and technology).

The aspirations of the MPCs were also highlighted in the 15th meeting of the Euro-Mediterranean Monitoring Committee for RTD (MoCo) in June 2011 in Szeged, Hungary, where the principles of demand-driven and impact-driven EU-MPC cooperation based on co-ownership and co-funding were outlined. As a result of these evolutions, the EC now underlines the new for a "renewed partnership" in science, technology and innovation. It was fully addressed in the Euro-Mediterranean Conference on Research and Innovation held in Barcelona on April 2012, http://ec.europa.eu/research/conferences/2012/euro-mediterranean/index_en.cfm?pg=outcome which proposes a new frame of cooperation based on a renewed partnership according with the principles mentioned above. These recent developments within the regional S&T policy dialogue confirmed the will of further shaping a Euro-Mediterranean Research and Innovation Area, based on the principles of co-ownership, co-design, co-funding, mutual interest and shared benefits. In this perspective, the modernization, governance and reforms of the S&T National Systems remain far from the most challenging objectives already highlighted in 2007 in the Cairo Declaration.

The Europe2020 strategy also mentions the cooperation with neighborhood countries on societal challenges as a key issue. It is worth mentioning that a recent expert group, Euro-Med 2030 (2010) http://ec.europa.eu/research/social-sciences/pdf/euromed-2030-rapport-annex2_en.pdf also points out to science and innovation as a critical resource to address social and political challenges as well as the needs of industry and the transformation of the production methods, even if the perception of research as a need is not yet fully perceived by the industry in the MPC.

In the aftermath of the Arab Spring events, the Southern Mediterranean region has reached a turning point in its history, presenting as many opportunities as challenges for the EU. The EU recognizes the need to offer more assistance to its neighbors, ranging from more financial benefits to more targeted help in developing and sustaining political parties (through the Endowment for Democracy) and civil society (through the Civil Society Facility). The main challenge looking ahead to the 2030 horizon, will be the EU's response to the scenarios of transitions affecting the Mediterranean region, that could be desirables "green" transition (Rym Ayadi) toward an "EU-MED Union" <http://om.ciheam.org/article.php?IDPDF=00006766> based in a shared sustainable development, or a "blue" transition toward a Co-development of the EU & Med sub-regions



through differentiated multilateral agreements, as alternatives to a “red” transition produced by the weakening and failure of the cooperation schemes. “Business as usual” scenario while the region is moving towards further polarization and the involvement of other external players is not a desirable situation.

The experience of the last 20 years clearly shows that the Agenda defined in Barcelona in 1995, for the Euro-Mediterranean partnership, cannot be attained due to the huge political and social constrains (EUROMED Expert Group 2010, cited above). On the contrary, scientific cooperation, being driven by curiosity and sharing a common language and long terms interests, has always been maintained, even between hostile countries, and has considerably improve along these years reaching an stage where further developments are blocked mainly by procedural obstacles.

In its Vienna meeting of 28-30/06/06, the Monitoring Committee for the Euro-Mediterranean S&T Cooperation in RTD, also named the Barcelona RTD Committee (MoCo), created in the wake of the Conference of Barcelona of 1995, supported the proposal of the European Commission to include as an activity of the INCO Program within the Capacities program of FP7 an INCO-Net coordination platform for selected target areas, including the Mediterranean Partners Countries (MPC). These coordination platforms aim to bring together policy makers and stakeholders of MPCs and EU countries in the framework of the dialogue structured through the MoCo. The INCO.Net MIRA Project (Mediterranean Innovation and Research Coordination Action, Grant FP7-211359), <http://www.miraproject.eu> was designed to create a dialogue and action platform to identify common interests in research areas, set-up S&T priorities, support the EU-MPC policy dialogue in RTD, support capacity building activities and strengthening of the participation of the targeted countries/regions to the Framework Programme, including the support for information points in the third countries. MIRA, along its life, has promoted actions in order to propose, monitor and develop actions aimed at the creation of synergies among the different cooperation S&T programs between the Mediterranean Partner Countries (MPCs) and the member states of the EU, and foster the participation of the MPC in the Framework Programme.

EU common actions are subject to the legal imperatives shared by the member states, and building a shared vision for partnership needs to tackle the even more difficult issue of including the non-EU member states into common decision-making and management structures. It is necessary to identify a legal structure where common priorities and funding mechanisms can find a practical expression, independent of the national frames but respecting the national legislation in international cooperation mechanisms, the expenses control, and the auditing requirements. Proposals have been made in the Barcelona Conference in April 2012 as well as inside the MoCo (the same year).

Moreover, recent surveys on industrial innovation in Morocco and Tunisia show that some industry is knowledgeable about innovation and sustainability issues. More generally Maghreb countries have been very actively engaged in testing these policy measures that support networking of competences. But the most important reason why research and



innovation should be developed jointly in a long-term strategy relies on the specialization patterns of MPC countries which are very much oriented toward engineering and applied sciences. A regional strategy needs to build on these capabilities and not only on those developed by European countries.

The Euro-Mediterranean Research and Innovation Space (EMIS) should thus create shared research oriented activities on both sides of the basin. Whatever its actual name, or political backing, hope should be put in creating such a regional initiative that could play an important role in addressing the urgent demands of the population, youth and the aspirations for more democratic societies on all sides of the Basin.

The dynamics of R&I cooperation in the Euro-Med region has been increasing in recent years. There is evidence that this trend will continue to increase in coming years and it will be based on a strong demand for more integration and coordination of single state national R&I policies coming from both EU Member States and Mediterranean Partner Countries. This is an additional challenge that the MoCo will face in short and medium term.

Innovation strategies and policies need to be taken more into account by the MoCo, as well as the interfaces with the Higher Education area.

Finally, it should be stressed that no cooperation can really cope with the challenges of future if there is no shift from a vision based on competitiveness to an approach towards the well being. Unless RDI competitiveness and industrial competition will be not combined with social and employment-creating benefits, the social malaise, both in EU and MPCs will increase, creating a gap between research and innovation activities and social expectations.

The foreseen activities of MIRA were : 1) creating a dialogue platform using the state of the art of the ICT technologies, 2) addressing training activities to improve the quality of the participation and management of the partners of FP7 from the MPC; 3) creating discussion platforms and organizing meetings to monitor and discuss the content of the Thematic priorities of FP7 in term of the common interest of the EU and MPC; 4) creating an Observatory of the EU-MPC S&T cooperation, which will agree indicators for the monitoring of RTD cooperation activities; 5) creating networks of research institutions and technological transfer services for the development of the Euro-Mediterranean Innovation Space (EMIS), and 6) the support to the functioning of the MoCo. These activities were complemented with the development toward the common appropriation of the results of the current project in terms of initiating activities on Innovation, identification of common scientific priorities that could be as clustering glue around Projects already approved by the Union for the Mediterranean, such as the Programme “Horizon 2020:De-contamination of the Mediterranean”, http://ec.europa.eu/environment/enlarg/med/horizon_2020_en.htm where business development can be foreseen using the potential of research in both sides of the



Mediterranean. A number of Working Groups to make the State of Art of the stock of scientific were created. Besides, the project partnership was enlarged to include those MPC, associated countries and other countries involved in the Union for the Mediterranean that accepted the invitation to join it. MIRA supported those activities of the MPC Programmes that needs the identification and development of a research agenda in support of its objectives, notably the Programme Horizon 2020 and the strengthening of the industrial cooperation by fostering the creation of the Euro-Mediterranean Innovation Space. All these activities are aimed at providing a strong institutional basis for the EU-MPC S&T cooperation.

The MIRA consortium was composed by groups that have worked in the last years in several actions aimed at analyzing and supporting the EU-MPC scientific cooperation. It worth mention the participation of some of these groups in projects such as ESTIME and ASBIMED aiming at characterizing the RTD system in the MPC and the EU-MPC bilateral scientific cooperation, as well as supporting the creation of the Information Points in the MPC, projects EUROMEDANET and ERAMED, and identifying the topics of common interest between EU-MPCs for the priorities of FP7, project MED7. The Consortium built on these experiences and developed a dense work programme aimed at: “Promote, organise and contribute to the participation of third countries in the activities of FP7. Promote regional integration and facilitate the uptake and use of common identified research areas and the monitoring of performance and impacts of international S&T cooperation across the Specific Programmes of FP7.”

The main objective of INCO.Net Project MIRA was to promote the participation of the Mediterranean Partners Countries in the building of the Euro-Mediterranean Research Space, notably by increasing their participation in the Framework Programme, and to create a coordination instrument between activities of different EU and EU-MPC COUNTRIES institutions and a promotion instrument that would contribute to the implementation of the European Neighbourhood Policy http://eeas.europa.eu/enp/index_en.htm and the development of the Union for the Mediterranean (UfM) <http://ufmsecretariat.org> objectives. In doing so, it is expected that this instrument would permit to gradually enhance the UfM countries cooperation and thus follow the MoCo recommendations. The technical content of MIRA was structured in 9 Work Packages including activities such as: Creation of a knowledge management web site based in a Community of Practice (CoP) model to foster the dialogues between stakeholders from different horizons; creation of an Observatory of UfM scientific and innovation cooperation, based on a set of indicators previously identified, and aiming at follow up of the different aspects of this activity; support the capacities building activities in the MPC to improve their participation in FP7, and support to the Information Points created in the MPC, including the organizing of training workshops and dissemination of the opportunities offered by FP7 among interested parties; support to the functioning of the MoCo, as well as the monitoring of the ongoing cooperation and the search of interaction of this political dialogue body with other Commission programmes dealing with Euro-Mediterranean cooperation in S&T and other activities described in the WP is



part of the activities of MIRA. Moreover, following the evolution of the new frame of EU-MPC scientific cooperation with the creation of the Union for the Mediterranean, the INCO.Net MIRA Project modified its work program incorporating new activities on top of the foreseen activities, to cope with some of the challenges defined in the scope of the UfM. Notably, the programmed Tasks were complemented with new task (WP 7) aimed at defining a research agenda to support the Program “Horizon 2020. Decontamination of the Mediterranean”, the support to the building of the Euro-Mediterranean Innovation Space (EMIS) (WP8) and, after the Barcelona Conference of 2012 and on the demand of the MoCo, the proposal of a “Common Research and Innovation Agenda” (CRIA) for the EU-MPC cooperation (organized by WP 1) <http://www.miraproject.eu> (moco-area/euro-med-research-agenda) aimed at promoting regional integration lead by the identification and the prioritisation of common research areas of mutual interest and benefit. Another important task was to secure the participation of the remaining Mediterranean Partner Countries (MPC) in the consortium; this objective was attained by the incorporation of Bosnia-Herzegovina and Montenegro to the Consortium, but failed to incorporate Libya for internal reasons. In the latest stages of the project life Syria, lamentably, stop participating in the activities for political mandate.

Description of main S & T results/foregrounds

- *The political frame of MIRA*

The EU policy toward the Mediterranean Countries defined in the so-called "Barcelona Process" launched in 1995, where the Members States of the EU and the Mediterranean Partners Countries (MPC) expressed a shared wish of a Mediterranean space of security, economic development and socio-cultural exchanges. The policy instruments were mainly the Association Agreements (AA) between the EU and each MPC. This was followed by some new policy instruments, with a regional scope which ended up in the European Neighborhood Policy (ENP) in 2003. 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.

These instruments had accompanying financial instruments: the MEDA and ENPI since 2004. More recently the Union for the Mediterranean (UfM) was launched in the summer 2008, with the intention of rebuilding the EU-MPC partnership on the basis of a EU-MPC Co-Presidency.

As mentioned in the “Summary description of Project Context”, the Euro-Mediterranean Ministerial Conference on Higher Education and Research held in Cairo in June 2007 (Euromed Ministers 2007) stressed the need to move toward the creation of a Euro-Mediterranean Research and Innovation Area, through, inter alia, modernizing R&D policies, promoting innovation and supporting institutional capacity building in the



southern Mediterranean countries. This was the political frame where Project MIRA developed its activities.

- *Promoting the EU-MPC dialogue in S&T*

The main objective of INCO.Net Project MIRA was to promote the participation of the Mediterranean Partners Countries in the building of the Euro-Mediterranean Research Space, notably by increasing their participation in the Framework Programme, and to create a coordination instrument between activities of different EU and EU-MPC COUNTRIES institutions and a promotion instrument that would contribute to the implementation of the European Neighborhood Policy and the development of the UfM objectives, following the instructions of the MoCo, Steering Committee of MIRA. In doing so, it is expected that this instrument would permit to gradually enhance the UfM countries cooperation and thus follow the MoCo recommendations. The technical content of MIRA was structured in 9 Work Packages including activities such as: Creation of a knowledge management web site based in a Community of Practice (CoP) model to foster the dialogues between stakeholders from different horizons; creation of an Observatory of UfM scientific and innovation cooperation, based on a set of indicators previously identified, and aiming at follow up of the different aspects of this activity; support the capacities building activities in the MPC to improve their participation in FP7, and support to the Information Points created in the MPC, including the organizing of training workshops and dissemination of the opportunities offered by FP7 among interested parties; support to the functioning of the MoCo, as well as the monitoring of the ongoing cooperation and the search of interaction of this political dialogue body with other Commission programmes dealing with Euro-Mediterranean cooperation in S&T and other activities described in the WP is part of the activities of MIRA.

Following the evolution of the new frame of EU-MPC scientific cooperation with the creation of the Union for the Mediterranean, the INCO.Net MIRA Project modified its work program incorporating new activities on top of the foreseen activities, to cope with some of the challenges defined in the scope of the UfM. Notably, the programmed Tasks were complemented with new task (WP 7) aimed at defining a research agenda to support the Program “Horizon 2020. Decontamination of the Mediterranean”, the support to the building of the Euro-Mediterranean Innovation Space (EMIS) (WP8) and, after the Barcelona Conference of 2012 and on the demand of the MoCo, the proposal of a “Common Research and Innovation Agenda” (CRIIA) for the EU-MPC cooperation (organized by WP 1) aimed at promoting regional integration lead by the identification and the prioritisation of common research areas of mutual interest and benefit. Another important task was to secure the participation of the remaining Mediterranean Partner Countries (MPC) in the consortium; this objective was attained by the incorporation of Bosnia-Herzegovina and Montenegro to the Consortium, but failed to incorporate Libya for internal reasons. In the



latest stages of the project life Syria, lamentably, stop participating in the activities for political mandate.

- ***Coordination with other EU Projects dealing with the EU-MPC Cooperation***

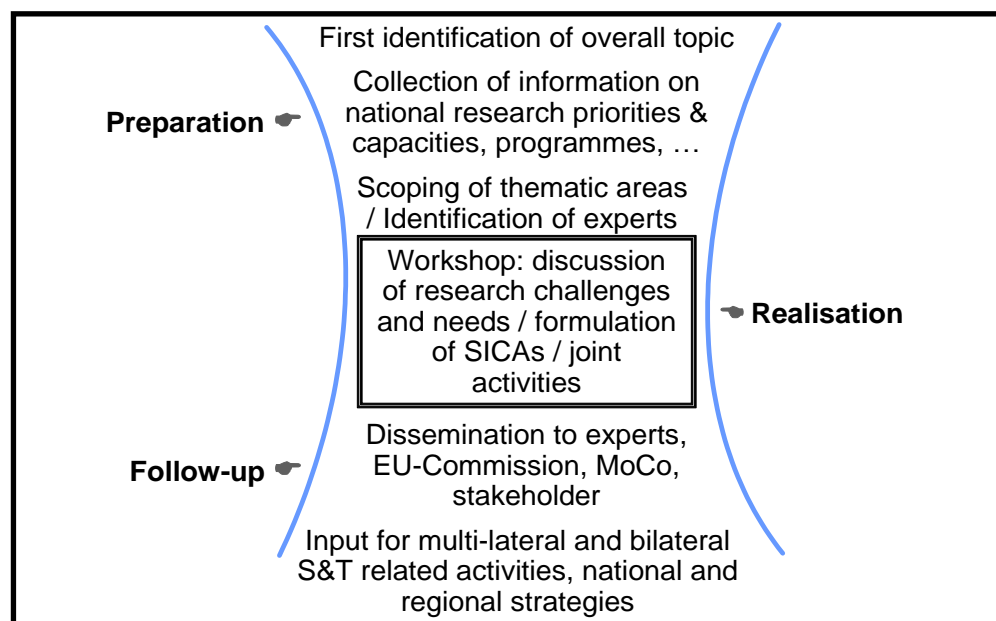
One of the mandates of the FP7 INCO.Nets new instrument was to build a strong coordination with other INCO.Net Projects and other types of instruments of scientific cooperation, such as BILAT Projects or ERAWIDE project, with the Mediterranean Countries or other projects supported by Thematic DGs, such as DG Environment or Enterprise, to align activities and avoid the duplication of efforts. This coordination was organized through the International learning Platform (ILN) created by Directorate INCO which is resulting in mutual learning and the planning of common activities. Several activities were jointly organized with the INCO.Nets WBC (West Balkan Countries) and CAAST.Net (Sub-Saharan Africa). The MIRA activities matched demands of better participation of non-EU countries in the FP, targeted by the Training Seminars organized by WP. 3, coordinating its calendar and content with similar activities realized locally by the BILAT Projects. Other activities, such as the launching of EMIS and the identification of Mediterranean-wide Innovation cooperation sectors, will integrate an action of setting and managing "Research Driven Clusters" on Water Waste Management in the Mediterranean Countries or Renewables Energies. These activity represents a qualitative jump in the implication of FP7 in structuring the EU-MPC collaboration addressing the transfer of research results to the Administration and Business level, in full agreement with the objectives of the Euro-Mediterranean Partnership, the Neighborhood Policy and the UfM Projects. It worth mention that the Working Groups organized to support "Horizon 2020 Program of De-contamination of the Mediterranean", in full coordination with the Steering Committee of this program, approved by Mediterranean Partnership, and adopted also as an UfM Priority Project, incorporated relevant scientist belonging to research centers from the MPC beneficiaries of some of the grants of the Program ERA-WIDE, they were also leading participants in the EMIS "clustering" initiatives launched by MIRA. The channels of communication through the ERA-Wide Projects between the MPC scientific community and its political rulers in their interaction with the EU, could be further recognized and used through the BILAT and INCONET schemes, acting as "transmission belts" between the research fields and the policy.

- ***Common EU-MPC Priorities in R&D+I***

During the MIRA Screening Conference, held Cairo in April 2008, the process and methodology for the identification of the regional research priorities of mutual regional interest was discussed and agreed by MIRA project partners. MIRA realized a strong effort to identify the regional common research priorities setting, implemented through a



multidisciplinary and participatory approach organized by means of 5 Thematic Workshops with participation of experts from the EU and the MPC and a strong involvement of the EC services and taking into account the MPC national research priorities. The proposed methodology was further elaborated and presented for endorsement to the Monitoring Committee for the Euro-Mediterranean Cooperation in RTD (MoCo) in ad hoc meeting in Cairo in April 2008, and the plenary MoCo meeting in Istanbul in November 2008. The following graph described the methodology used:



The workshops were designed for being an opportunity for researchers, stakeholders and international experts to debate main issues relating to euro-mediterranean research area, and they focused on challenges and strategies of common interest to the EU and Mediterranean partner countries, capitalizing on previous experiences and research results. Researchers, observers, decision makers, stakeholders have been involved to actively contribute to the achievement of the workshops objectives.

The following thematic workshops have been carried out:

- *Environment*: 26-27 January 2009, Cairo, Egypt;
- *Energy*: 23-24 March 2009, Cairo, Egypt;
- *Health*: 04.-05. June 2009, Malta;
- *ICT*: 18-19 June 2009, Istanbul, Turkey;
- *Agriculture, Food, Fisheries & Biotechnology*: 13-14 July 2009, Bari, Italy;
- *Social Sciences and Humanities*: 6-7 July, 2011, El-Gouna, Egypt.

• *Capacity building*

It was acknowledge that cooperation between the EU and the MPC also needs a strong effort in Capacity Building Activities (CBA) of MPC possible beneficiaries, as competences development in international cooperation in research and innovation are at the heart of tomorrow regional employment, innovation, stability and prosperity. Capacity building means to develop human, scientific and technological capacities and it is an approach toward development, which may be adopted by each Nation to respond to the multidimensional process of changing societies. It is not a series of events, training and workshops with default results and options. Therefore, any initiative, as also those promoted in the MIRA project, could produce a relevant result if it is part of a larger and wider process aimed at facing the main challenges of international cooperation with the full involvement of national stakeholders. It may likely fill some of the main gaps and needs, while being related to other key projects and processes in the Mediterranean region.

All the Mediterranean countries benefit for this activity addressed to individuals, research institutes, universities and companies. Any obstacle to the cross-border flow of people, ideas and funding needs to be removed. Mutual benefits will emerge from an increased and efficient cooperation between North and South Mediterranean, between academia and industry, between national and European initiatives, between European programmes and activities such as Structural Funds, Horizon 2020, EU neighboring policy and so on.

Capacity-building activities for the MPC institutions (National Contact Points, Ministries, national research centers, etc.) could contribute to improved economic, environmental and social outcomes through some main pathways:

- Individual human capital that raises the productivity and hence the earning capacity of the individual, reflected in higher lifetime income.
- The efficiency of the institution, as it captures part of the returns from the individual improvement in productivity and, due to the “echo effect”, it could improve the productivity
- of other workers, e.g. extension of their learning and adding to the local stock of knowledge.
- This is reflected in improved levels and/or reduced cost of services or outputs delivered by the institutions to local/national stakeholders.
- Innovation in the institution, as the culture and mindset changes, new and better ways of doing things are introduced and new services are developed. This is reflected in the changes in the services or outputs the institution delivers to local/national stakeholders.
- Effectiveness of the institution that interacts with the policy environment, targeting more to areas of need, attracting more resources and engaging more effectively in policy.



These pathways leading to ‘*changes in practice or behaviour*’ reflect the capableness of the individuals and the institution they work for. The potentiality to utilize such capableness depends both on the quality of training activities (or any other capacity building action) and the degree to which the institution uses the skills, knowledge, networks and other capacities developed by the specific activities implemented.

Generally speaking, MIRA Capacity Building Activities may be divided into:

- Training actions (on-the-job training, workshops and seminars);
- Technical assistance and advice (e.g. on improving standards and standard operating procedures);
- Development and dissemination of tools (manuals, guidelines, training materials, etc.);
- Support to networking of NCPs.

Among other things, some significant MIRA activities implemented for promoting capacity building were the following: Training seminar for officers of MPC-NCPs (Egypt, 2009) and for NCPs on Financial and Legal Issues (Beirut, 17-18/01/2013), organized to handle financial rules and IPR issues while fostering a regional network of the NCPs in the Mediterranean; Training course on auditing (Tunis, 2010), Training seminars for local scientists and administrative officers from the MPCs, to improve the quantity and quality of participation in FP7 projects and raise awareness of FP7 opportunities (Bari, 2009 and 2011).

After all the CBA, a questionnaire was proposed to the beneficiaries for the evaluation of the activity and the collection of their own recommendations. The results of the Questionnaire emphasized that participants appreciated the training activities that allowed them to get a good grasp of FP7 and its rules, and to be aware of EU strategies and activities. Many of the participants were very pro-active and asked for further training activities in their Countries. They also pointed out difficulties and suggestions to improve cooperation with the MPCs. As a general suggestion, they asked for training modules more linked to thematic workshops and other activities in their countries in order to avoid fragmentation of efforts and gain from synergies.

Problems and suggestions from the questionnaire.

Partnership building for participating in FP7

- It is not easy for the MPCs to identify project partners, especially because it is not evident to find common interests in research areas of mutual interest and benefit;
- Information on Cordis partner service is not continuously updated;
- Lack of confidence when a non-European country tries to build a consortium and act as a coordinator to set up projects on specific themes (e.g. migration);



- It is difficult to build a strong partnership without mutual trust, and sometimes partnerships are based only on personal relations;
- Lack of awareness on common interest research topics for the Mediterranean region.
- List of partners categorized according to their specialities. These partners should be from the EU or associated countries;
- To organize meetings with researchers experienced in participation in FP6 and FP7.
- Participation in info-days;
- More specific actions to foster the participation of the MPCs in the FP.

Writing a project proposal

- - Overload of administrative tasks;
- - Often administrative staff are not well informed on how to fill European projects forms;
- - Lack of experience in writing a project and lack of knowledge of project evaluation process by the EC;
- - The time granted for drafting the projects is usually short, and it is then difficult to respond in time especially when the partnership has been recently established;
- - A gap in scientific interest between Northern and Southern countries.
- - Support from organizations specialized in project management;
- - To provide some templates of projects already accepted, and also assistance to researchers during the planning phase;
- - More training courses for improving MPC capacity building
- - Exchange of experience with persons who have managed and written projects;
- - Specific courses for project coordinators.

Managing a project under FP7

- - Difficulties in financial issues and in technical reporting;
- - Misunderstanding of the EU rules. Lack of experienced administrators for managing this kind of projects;
- - Lack of competence for financial management;
- - Complexity in project management and inadequacy in complying with the national regulations.
- - To adopt a more streamlined and clear procedure;
- - To enhance trustful relations between the coordinator and partners to get guidance in any financial issue;
- - Organization of training seminars and workshops concerning FP7 project management;
- - To consider the specific institutional system of each country and identify and agree upon applicable rules, especially for the financial process, since the beginning;
- - Tutoring support to benefit from experts' or officers' experiences.



From these suggestions emerge the urgent need to capitalize what done so far. Capacity building also facilitates the construction and use of critical mass of competences and stimulating cross fertilization among national and international research teams. To facilitate capacity building and empowerment of transformative networks, major recommendations concern also the need for a well-articulated approach of both "capacity" and "power" building.

Both dimensions - capacity building and empowerment - are key. While it is necessary to strengthen project and institutional management capabilities, it is also necessary to facilitate the building up of efficient transformative networks and coalitions of change. These networks and coalitions, operating as bridge between the Southern and the Northern rims, include many different types of people, beyond the scientific communities. Particularly important are: the business sector (that needs to be involved as much as possible in project design and implementation, by means of matching funds and appropriate public/private partnership mechanisms); the civil society and the young researchers. Thus Capacity building should be the interface of Research and Innovation systems, which, in general, have only random contacts as they fit different demands and expectations.

The new schemes of R&D cooperation and new rules of management require to prepare a plan of training the trainers. Moreover, training seminars could be followed by twinning activities in order to extend the scope of cooperation while putting Capacity Building at the core of new regional strategic Research Agenda. In a time of increased global competition, it is urgent that Europe and southern Mediterranean countries pool their resources of talent and knowledge for a better and shared future.

• *The EU-MPC Observatory on Scientific Cooperation*

One of the most important foreseen activities of MIRA was the analysis of the options to create an Observatory of the EU-MPC ST cooperation, geared toward understanding the state of research and technological cooperation between the EU and the MPCs. A first challenge was to establish a standard set of indicators to be used by the MoCo for:

1. Monitoring the state of research and technological cooperation between the EU and the MPCs;
2. Making recommendations based on evidence in order to improve the patterns of the Euro-Mediterranean ST cooperation.

Ideally, the Observatory should be in charge of maintaining a database on the scientific production of the co-operation engaged between European and Mediterranean Partners. It will engage in the analysis of the research system dynamics. Ultimately, this Observatory



should promote the establishment of observatories for science and technology among the Partner countries and be in co-ordination with these observatories.

The evaluation, or assessment, of the performances of international scientific co-operations can be performed at three levels of assessment, which call for different methodologies:

1. The most natural reference framework for a scientist is his academic discipline – usually also corresponding to some organizational structure: department or faculty. For this type of assessments, bibliometric indicators, closely related to the production of science, are the preferred instruments of analysis. It corresponds to a first level of analysis. Thus all scientific collaboration analysis performed on the basis of co-authorships systematically refer to this first level.
2. Funding agencies –such as the Framework Programme of the EU– do not adopt the same organization of knowledge: they would go along programmes. Programme managers would refer to this framework as the pertinent level of reference of any assessment of the scientific activity, as is usually the case in any evaluation report funded by the EU. This programme level assessment is the second level, and probably the most usual one.
3. Policy (its stakes and implementation) is defined at “higher” level. Indicators in this case need to be related to the policy framework and to its implementation.

In brief, we can conclude by stressing:

- The necessity to define the level of assessment needed in order to use appropriate indicators for the international scientific collaboration;
- The necessity to highlight the target and reference of the assessment exercise;
- The necessity to draw on information and knowledge about the RD systems of the partner countries.

The policy objectives of the Cairo Declaration need feasible indicators to measure progress. In the light of the previous studies initiatives we can draw the following conclusions:

1. There is a clear willingness to shape indicators, and design indicators fitted for specific needs. The need is rather felt at the international level, mainly through multilateral organizations, and at the national level through some Ministries - usually in S&T or higher education - that want to design tools that permit an evaluation of the research potential in their countries and need "positioning" indicators (Where do we stand?).
2. The need for indicators is not evenly distributed in all countries; some countries have been forging the adequate infrastructure; others have been rather unwilling to feed these indicators as well as any other data on their potential. Moreover inside countries, different public institutions have different needs. Finally,



- countries with a more decentralized research system or with a research system that is more open to international competition, indicators seem to be easier to accept.
3. Reliable data are difficult to obtain. The UIS exercise showed clearly that the effort is difficult for many reasons that have to do with the inability of national statistical offices to procure data for S&T. Partly this has to do with the inadequacy of the statistical administration as far as research is concerned. It is also partly because of lack of experience in the field of S&T statistics. Moreover, inside a same administration, one can find offices in charge of strategic studies stating the need for indicators and a rather opposite attitude from the potential suppliers of data.
 4. Although bibliometrics is at the very heart of all indicators on performance, there is still a very low capability in using and creating bibliometric indicators. International organizations have favored general statistics and economic analysis, but rarely has bibliometrics been an issue at all. The exceptions here are Turkey and Morocco - which created a team on bibliometrics in IMIST. Tunisia made an extensive use of bibliometrics in the 2007 report on the research system, as given to ESTIME, but no other uses were signaled since then.
 5. The abundance of initiatives in the last four years has been creating expectations that are not met and a certain dispersion of efforts. This is particularly true of the EU exercises. Too little funding has been oriented in the Mediterranean region in creating an analytical capacity for indicators. As always, policymakers want immediate results and figures they can use immediately to feed/legitimate their own discourse and policies. The main drawbacks are known and an Observatory on science and technology will always be a difficult, although necessary, task.
 6. In the case of impact measures, an analytical effort is needed that goes beyond the production of data. As has been mentioned in Europe, there is a strong analytical need that is still not covered. MIRA could partly respond to this analytical need and WP2 should really try to build bridges with other initiatives that define methodologies and look at the design, production, and use of indicators. It might also be that MIRA is not the right framework for such an analytical effort: in this case, it should be necessary that MIRA envisages the possibility to promote the formulation (and funding?) of a proposal that aims at gathering the experience in indicators design and production.
 7. Creating an observatory seems to be possible only by enlarging the interested parties beyond the usual Ministries and national Councils for research.

The Cairo declaration objectives can be used as the general policy level to define the possible indicators that could be used for the Observatory to foster:

Integration of the Mediterranean Partner Countries in the European Research Area.

This could be achieved through the following actions:

- a. Promotion of links between centres of excellence in the Euromed region;
 - Mapping of institutions having common projects on both sides of EU and MPCs



- Evolution over time
 - Co-publication mapping EU-MPCs
 - List of agreements at the level of institutions for research
- b. Promotion of joint networks of excellence in the fields of mutual interest, e.g. renewable energy, biotechnology, environment, etc.;
- Participations in the FP projects of Med partners
 - Participations in programmes under other DGs involving research and technological development
 - Participations in other programmes (bilateral or international funding agencies)
- c. Promotion of regional initiatives in RTDI;
- Number of SICA / ERAWIDE / FP7 participations
 - Number of funds / programmes
 - Specific measures, programmes (e.g. BILAT)
- d. Promotion of contact points in Mediterranean Partner Countries' Universities and research institutes to disseminate information and promote participation in FP7;
- List of Technology transfer units in MCPs
 - List of institutions that benefit from Technology transfer units and NCPs in MPCs
 - List of already constituted networks of NCPs by domain of activity (biotechnology, energy, water, social sciences, etc.)
- e. Promotion of National funds in Mediterranean Partner Countries for Scientific Research and Development;
- List of funding structures with EU support / outcome report of these funding programmes
 - List of non-EU funding structures active in the region
 - Compare the National funding / Non-national funds
- f. Explore the possibility of co-finance by Mediterranean Partner Countries in FP7 for coordinated activities;
- Number of co-funded programmes
 - Evolution over time
- g. Enhance the participation of Mediterranean Partner Countries in FP7;
- Assessment of participations
 - Dynamic of international collaborations; motivations, drivers, difficulties, obstacles
 - List of institutions in MPCs and effort of collaboration identified through bibliometric or general purpose indicators
- h. Cooperation in capacity building in:
- Formulating research projects;
 - Capacity building projects funded by EU (ERAWIDE, others)
 - Particular areas of mutual interest.



- Topics/objectives with mutual interests (or thematic clusters): sustainable development, coastal areas management, marine resources, water management, forest management, waste management, farming systems, monitoring of environmental change, climate change, seismic risk and geological resources, business enhancement and entrepreneurial initiatives, innovation promotion, economic and financial risks, economic policies, industrial and agricultural policies, ICTs, nanotechnology networks, public health, endemic diseases, epidemiological networks, vaccines, genetic services, biomedical research capacities, food and agro-industry, cultural heritage, social and cultural identity, linguistic issues, science in society, scientific awareness, migration issues, legal and social gender issues, political sciences issues...
- Priority lists funded by EU multilateral, bi-lateral and non-EU programmes;
- Identification of institutions on similar topics or priorities
- General macro-indicators on collaborations (general purpose indicators)

Promote innovation, knowledge sharing and its return on the industry and economy in Mediterranean Partner Countries.

This could be achieved through the following actions:

- a. Promotion of the creation of national and regional innovation funds within the Mediterranean Partner Countries to support innovation and exploitation of research outputs by industry;
 - Funding oriented toward innovation
 - Listing of programmes promoting innovation (not necessarily research)
- b. Implementation of the 'Euromed Innovation & Technology Programme', which aims at developing innovativeness in Business firms (esp. SMEs);
 - Programmes and beneficiaries
 - Mapping of innovation-related measures
 - Infrastructures for monitoring of research and innovation in MPCs
- c. Promote the participation of Mediterranean Partner Countries in activities related to innovation, including the EU Competitiveness and Innovation Programme (CIP);
 - Med Participations to the EU CIP programme
 - List of measures developed to promote RD in the region (see b above)
 - Economic studies specifically intended to support businesses in MPCs
- d. Develop Capacity building in RD and innovation management.
 - Innovation surveys
 - Information on promotion of Monitoring innovation & research (EMIS framework).

Objective 8 of Cairo Declaration. Enhance Effective Mobility in the Euromed region. This could be achieved through the following actions:

- a. Establishing Mobility Centres and Portals as well as promoting mobility contact points in the Mediterranean Partner countries;



- Number of centres/portals created
- b. Establishing national programmes of mobility and open access to incoming mobility from EU Member States to Mediterranean Partner Countries.
 - List of programmes at national level
Moving forward in the Euro-Mediterranean Research and Innovation partnership
 - Statistics on foreign research personnel from MPCs in EU Member states (students, invited researchers,...)

Attain Brain Circulation and Knowledge Dissemination.

This could be achieved through the following actions:

- a. Support to expatriate researchers through networking opportunities and allowing periodic research sabbaticals to countries of origin;
 - List of existing opportunities for EU-Member countries + EU initiatives (eg. THETYS): programmes devoted to “return” activities
 - Statistics on researchers in foreign countries / Surveys by fields of activity and countries
 - Mapping of expatriate researchers
 - Promotion of web-connected collaborative communities
- b. Promotion of a regional network of Institutes for Advanced Studies & Research, through which European Academic Institutions cooperate with selected Mediterranean Partner Countries’ Universities to form the best human capital;
 - Policy measures promoted by EU member countries / EU Commission /partner countries specifically oriented toward mobility + training between EU member countries + MPCs
 - A new initiative is called in by this objective/measure.
- c. Address the issues linked to brain circulation, notably through strengthening the return phase in the different mobility programmes.
 - Study the mobility issue ‘brain drain’ vs. ‘brain gain’
 - List of ‘return’ programmes: TOKTEN, national programmes...
 - Study support of high-level competence diasporas by computer-mediated networking.

The enlargement of competences of the Observatory of UfM RTD cooperation to Innovation marks also a turning point in the search of increasing the impact of research in the development of the UfM countries and the setting of a mechanism to promote others “Research Driven Clusters”.

To define a baseline of the EU-MPC scientific cooperation, a questionnaire survey was conducted in 2011 by MIRA and addressed to a population of researchers, from both European countries and EU Mediterranean Partner Countries (referred in this text as MPCs) whose international collaborations / co-publications linked the two geographical regions during 2005-2010.



4.340 scientists fulfilled the questionnaire in altogether 38 countries (27 in Europe and 11 MPCs) with a balanced distribution of responses, i.e 48% of the respondents are working in Europe and 52% in MPCs. The response rate (17%) is considered as satisfactory.

Responses are heavily concentrated in the larger countries: five countries, i.e. France, Italy, Spain, Germany and United Kingdom counted for 3/4 of the responses in Europe (74.7%) while in the MPCs the first five countries namely Turkey, Israel, Tunisia, Algeria and Egypt counted for 82.6% of the responses.

One of the main findings of the survey was the discovery that the asymmetry of collaborations, which was recognized as a source of tension and a burning issue in the 1970s and 1980s, has developed into a more equal partnership and that international collaboration is a win-win process that benefits all partners with very significant declared derived outcomes in both regions. International collaboration addresses and involves very dedicated and goal-oriented individual scientists who seek to increase and improve their scientific capacities and develop greater international recognition (GAILLARD, Anne-Marie et al., 2013).

The main findings of this survey on international collaboration between the Mediterranean partner's countries and EU countries are summarized below and developed more extensively in this concluding section:

- The asymmetry of collaborations, which was recognized as a source of tension and a burning issue in the 1970s and 1980s, has developed into a more equal partnership.
- The surveyed population is older than the overall population of scientists in both the MPCs and Europe. This would tend to confirm that researchers in their mid career stages (40 years and above) are more likely to collaborate internationally than those who are in their early or late career stage.
- The International collaboration is a win-win process that benefits all the partners.
- The motivations and expectations related to participation in international calls for proposals involving scientific collaboration are very high, and the declared derived outcomes are very significant in both regions.
- International collaboration addresses and involves very dedicated and goal-oriented individual scientists in all countries, scientists who seek to increase and improve their scientific capacities and develop greater international recognition.

The 4340 scientists who answered the survey belong to quite homogeneous categories in the two regions. There are no marked differences in age and gender repartition between respondents from the MPCs and EU countries: in the two regions, the surveyed group is older than the overall scientific population and women represent close to one-fourth of the respondents. The respondents work mainly in universities, in the public sector and research is their main activity, i.e. they spend more time on research than on teaching and other activities such as administration and consulting.



The survey confirms the great mobility of scientists even prior to international collaboration, although with differences depending on the country and the region. At the time of the survey, between 7.6% and 11.5% of the surveyed population could be considered as being part of the S&T diaspora (meaning that they are living in a country other than their country of nationality).

The prime reasons to collaborate internationally are directly linked to advanced scientific interests: "Access to new and interesting scientific topics" for 80.2% of the entire group (79.4% in Europe and 81% in the MPCs), followed by the "Necessity to improve the impact and visibility of one's research" for 67% of the group (61.5% in Europe, 72.5% in the MPCs). While quite homogeneous between the two groups, the expectations are higher in the MPCs and more tangible effects are expected as "Access to better equipment and working conditions" that motivates 74.5% of the MPCs scientists against 54.9% of their European colleagues.

On the other side, the lack of collaborative programmes is perceived as the major constraint in the two regions to collaborate internationally (more than 80% in the two regions). The outcomes of collaborations are also many, not different in the two regions and directly linked to the professional improvement in knowledge and recognition of the respondents. They are, for the most important and by decreasing order: "increase in the total amount of their publications" (EU 66.4%, MPCs 62.8%), "increased international scientific recognition", (EU 64.6%, MPCs 62.6%), "participation in new scientific projects" (EU 64.2%, MPCs 61.9%) and "greater recognition in their scientific fields" (EU 60.7%, MPCs 61.6%).

Nevertheless some more tangible outcomes are more prized among the MPCs scientists like "learning new techniques" (EU 47.4% MPCs 65.1%) and "access to equipments not available in their country" (EU 28%, MPCs 49.9%). While a majority (55%) of scientists in the overall surveyed population responded to calls for proposals involving international scientific collaboration, the extent of this participation differed clearly between the two regions: 61% for scientists working in EU countries, 49.4% for those working in the MPCs. However, analyzing the scientists' participation in calls for proposals gives a very balanced picture of the two country groupings.

The responses indicate that for approximately two-thirds of the scientists (MPCs 66.1%, EU 64.2%) the project was initiated by their laboratory or institution alone or together with one or more partner laboratories. A large proportion of the respondents (EU 38.7%, MPCs 41.9%) reported that they were project coordinators. The large majority of the scientists in both regions were directly involved in budget allocation (EU 64.7%, MPCs 51.7%) and task assignment EU 91.7%, MPCs 66.1%).

The leading reason for scientists to participate in such international schemes in both regions was money, i.e. "access to international funding" (Europe 80.1%, MPCs 79.7%). Globally, the proposed motivations are more explicitly acknowledged in MPCs (between 52% and 79.7% of positive opinions expressed for all proposed motivations) nevertheless



motivations linked to visibility, mobility and networking rank very high in both regions. Although many scientists are highly motivated to respond to calls for proposals involving international collaboration, their participation is often restricted by a number of difficulties.

The limiting factors are not the same in nature or scope in the two continents, but at least four reasons received over 50% agreement on both continents: "too much bureaucracy" gathering between 70% of opinions in MPCs and 83% in Europe, followed by "difficulties in finding partners / building consortium", slightly more often expressed in the MPCs (60%) than in Europe (52%). Amazingly, except for the "lack of time", which seems to be a more important limitation in Europe than in MPCs, the two regional subsamples declare being affected in almost the same proportion by the different limitations or constraints proposed to them.

- ***The question of valorization of research in the MPC: the Euro-Mediterranean Innovation Space (EMIS) action***

Collaboration between academia and industry at both national and international level is a pivotal issue to enhance competitiveness of countries and face main challenges of future.

One of the main objectives of the INCO-Net Project MIRA is promoting stronger interaction between the research systems in the EU and in the neighboring Mediterranean Countries (hereinafter referred to as MPCs), paving the way to the development of a Euro-Mediterranean Innovation Space (EMIS).

Therefore a study was carried out among the coordinators of the ERA-WIDE successful proposals and other scientists with long experience in dealing with EU Funded projects to identify the main barriers to the participation of MPC institutions and research centers in the European Framework Programme for RI, and the difficulties in bridging the communication and collaboration gap between Academia (Universities and Research centers) and Industry in the MPCs, being firmly convinced that these two issues are strictly related and represent the two pillars of the future perspectives of research and innovation driven international cooperation.

It is a fact that industries and entrepreneurs are more often interested in fully recovering their investment in a short time. They know that research and academic activities may enhance and raise product standards, which in turn increase the benefits, but they lack a strategic long term vision that could be really useful to improve their technological skills. Moreover, the Industry in the Southern and Eastern Mediterranean Countries mainly consists of Small and Medium Sized Enterprises (SMEs) that have often no funds and no human capacity to start new cooperation projects with the Academia or projects in the arena of international cooperation. More information/publicity and capacity building for such a "sophisticated" partnership is needed by the industrial sector, and some funds



should be allocated to motivate industrialists to take the risk of investing time and human resources in these initiatives.

Other barriers also hamper the process towards a closer cooperation between Industry and Academia:

- Poor coordination among different institutions (Scientific Research / technical ministries such as agriculture and industry);
- Ad hoc measures to enhance capacity building of SMEs to trigger innovation processes.
- Lack of joint initiatives of “training by doing”;
- Lack of national incentives for Universities and Research institutions to make them closer to the business world;
- Few networks of services providers and agencies specializing in research commercialization (clusters, incubators, centralized and decentralized development of research, specialized financial institutions);
- Non-effective communication strategies concerning opportunities for Academia-Industry cooperation;
- Non-effective information on IPR issues;
- Despite the encouragement and various efforts to develop Academia/Industry cooperation, effective cooperation remains very difficult.

One of the most relevant issues is related to the heavy administrative and financial procedures. However, in practical terms, the biggest challenge is without doubt the heavy and complex procedure to mobilize funds (4-5 years minimum), which discourages many initiatives. Sometimes it also happens that the allocated budget is not available in the project starting phase and this makes things more complicated. Moreover, poor communication and gaps in priorities are a difficult challenge to take up since each side does not fully understand the other’s motivation and language, due to the poor mutual knowledge of their respective cultural background (in terms of the day to day practice) and expectations. **The result is the lack of trust.**

Another issue is the lack of information about opportunities they have and also of knowledge about the infrastructure they could share, as it is – for example - in Palestine. One of the experts illustrated a particularly interesting problem: in the field of therapeutics, involving research on safety and efficacy of prototypes and production of recombinant therapeutic proteins. The main obstacles to cooperation between the research centre and Industry were the following:

- There was neither a collaboration context nor a clear contract procedure. All aspects concerning collaboration were discussed and decided at a personal level by the person responsible for the laboratory, without a clear legal framework, even if the collaboration experience deals with both governmental and private pharmaceutical companies: the main obstacle for governmental pharmaceutical companies was bureaucracy, while for the private companies the frequent change



of the Company's head of research department reflecting on policies represented the main problem.

- The lack of clear rules on how to proceed with commercialization of Diagnostic kits for schistosomiasis and fascioliasis, for example, were kept on the shelf despite their proven efficacy at national level.

The results of the survey were discussed in the "International Conference on Mediterranean Countries and EU Opportunities", held in Amman in October 22nd-23rd 2012 co-sponsored by MIRA and the Jordan BILAT Project, bringing together national and international policy makers, EC representatives, coordinators of projects co-funded by the European Commission, Industry representatives and stakeholders. The following suggestions were additionally included in the list reported:

- Need to design specific programmes more adapted to the Euro-Mediterranean region and field conditions.
- Further support capacity building and mobility through regional and co-financed schemes inspired from the ERA-WIDE, REG POT, IAPP and IRSES including South-South and North-North.
- Provide further support, guidance, coaching and expertise on how to turn the strategies into business plans complying with banks' criteria.
- Take advantage of ERA-WIDE experience as a basis for future activities through dissemination actions which should involve researchers, industry, the public and policy makers, clustering of EU funding recipients to show the impact, ROI (Return on Investment) as well as success stories to raise awareness about the importance of lifting barriers to success, maintenance of a regional platform to enhance the field experience.

As clearly indicated by the survey, at national level, most of the experts involved agreed on four main factors which hamper Academia/Industry collaboration:

- Cultural gap between the business and the academic world.
- Lack of qualified personnel.
- Lack of information about a policy directed towards Academia/Industry cooperation.
- Lack of participation in the economic benefits deriving from knowledge exploitation on the academic side.

At international level, the main issues are the following:

- Poor information on financial instruments and programmes (public and private).
- Difficulties in managing the resources allocated, poor capacity to prepare proposals for cooperation and scarce support by public administrations.
- Lack of awareness of the common Academia/Industry interest in the international arena.

At the national level the main hurdle to cooperation is represented by the internal administrative procedures in public administrations which are too complicated, along with the budget limits and the constraints on the use of resources.



At the international level the main problems are that the external (public, banks, foundations, etc.) and internal (inside the organization) administrative procedures are also too complicated, mainly due to the constraints on the use of the budget allocated for the international project.

Some interesting results appear in the analysis of the survey and have been the basis for an interesting discussion in the above mentioned conference of Amman. The starting point of cooperation at national or international level is most of the time the results of personal contacts, so anonymous institutional information has less impact that favoring personal acquaintance.

There is a real public concern to improve the Academy-Industry cooperation, but the instruments are not well suited, being financial or of any other kind, and their handling is discouraging. There exist many inconsistencies in the internal organization of the research system and its legal frame, and low qualification of the personnel handling the programs, leading to poor criteria in the assignment of resources and their management.

The research systems and the industry in the MPC must commit themselves in more joint research about standards, technology assimilation and knowledge transfer. A real patent policy must be drafted, with all the consequences, particularly the financial and juridical support, beyond voluntarism.

The Academia-Industry cooperation must be focused in strategic areas of national and regional interest, in order to facilitate internationalization of the research and innovation effort.

Relying on the expansion of Research, Development and Innovation (RDI) policy in the MPC, the upgrading of education and the development of information and communication infrastructures are fundamental assets for the knowledge economy, and could act as excellent catalyst for the MPC efforts to meet the challenges of the innovation chain, that is, all technical, financial and training mechanisms needed to support the innovative projects in its life course, from actions upstream of this cycle until the ultimate financing and exploitation stages.

One task of the MIRA (Mediterranean Innovation and Research Coordination Action) project is to promote and raise awareness about a Euro-Mediterranean Innovation Space (EMIS). With the exception of Israel and to some extent Turkey (considered as an emerging economy or “catch-up” country), the reality of Research Driven Innovation in the MPCs is rather bleak according to the findings of the ESTIME project (Evaluation of Scientific, Technology and Innovation capabilities in Mediterranean countries), where the final report includes a list of areas where MPCs lag behind: poor innovation policies, investment in RD ranging from 0.3% to 1%, poor RD infrastructure, low RD performance in terms of number of researchers, publications and patents, lack of coordination in policy making, difficult access to funding, poor innovation and entrepreneurship culture etc. The



report highlights the differences between countries, particularly the recognition that MPCs have varying profiles of governance in managing their ST and innovation systems. This situation casts serious doubts on the future of the whole Euro-Mediterranean region as an area of sustainable development and shared prosperity (as envisaged in the Barcelona Declaration and wished for by the Union for the Mediterranean). The Euro-Mediterranean Innovation Space (EMIS) activities within Project MIRA aimed at addressing some of the demands presented by the MPC stakeholders to cope with the gap between MPC and the EU.

Science, technology and innovation were not explicitly mentioned as an objective of the Barcelona Process which focused on three large directions (i. e. political and security dialogue, economic and financial partnership, social, cultural and human partnership). Nonetheless, science was instrumentally taken into account by the EU with the creation of the Monitoring Committee on ST policy (also known as MoCo). Within this context, we can expect substantial changes in the foreseeable future of the technological and innovation profile of MPCs enabling them to contribute with European countries to address those common trans-national challenges, on line with the Cairo Declaration and UfM declaration as well as to their objectives. Opening a process of dialogue among Euro-Med science, technology and innovation stakeholders (businesses, policy makers, researchers, programme managers, financiers) through an EMIS discussion platform will be important for the identification, selection of relevant activities and collaboration opportunities to outline the best course of actions to meet EMIS objectives. The EMIS discussion platform should play a key role in:

- Upgrading the strategic level of cooperation from less complex knowledge exchange schemes towards knowledge clustering schemes (see fig. 1 above),
- Moving the status of cooperation from the response to policy measures towards a joint framework of Euro-Med Cooperation in science, technology and innovation,
- Improving the communication channels among MPCs,
- Working towards the linking up of regional programming among MPCs,
- Contributing effectively to building science, technology and innovation capabilities in MPCs.

In the frame of EMIS-activities, different events were organised. A core activity was to promote a **Research Driven Cluster Initiative (RDCI)** in the Mediterranean area following the definition and functions of this instrument indicated in the European 7th Framework Program “Regions of Knowledge”: the aim is the “fostering of transnational, including cross-border and inter-regional co-operation (embracing mutual learning) between regional partners (research entities, enterprises, local and regional authorities) in creating and developing research-driven clusters in areas or topics of common interest, following the methodology outlined below:

Strategic steps required for the cluster development approach.
Tasks -> Activity related to the cluster development approach



- Identification of innovation stakeholders -> Initial competencies/cluster analysis
- EMIS Forum 1 (Casablanca December 2011) -> Introducing the relevance of a clustering approach + Identification of clustering initiatives in the Mediterranean countries + Discussion of aims and activities
- Research Driven Cluster Initiative (I) -> Building the leadership group/cluster development group; setting-up of sub-groups related to fields of activity + Cluster Missions to deepen contacts with clusters/networks – Cluster Partnership Agreements + Active use of EU-Cluster Collaboration Platform (<http://eco.inovex.de/>)
- Research Driven Cluster Initiative (II) -> Consolidating the leadership group + Consolidating the aim and structure + Defining and prioritizing activities + Involving further partners.

The expected output of these steps was:

- Raised awareness on the cluster concept and its advantages, and on the emerging Research Driven Cluster initiative on water and waste water management in the Mediterranean,
- Identification of clustering initiatives in the Mediterranean countries and their relevance to a Mediterranean-wide clustering initiative,
- Consolidation of the cluster development group, involvement of cluster partners,
- Setting up of sub-groups related to fields of activity.

Due to the nature of the MIRA project as a means of coordinating research policies between regions in a time frame of four years, taking into account the limited resources available and knowing that cluster building processes take about 10-15 years, the efforts of the cluster development approach were focused not so much on the establishment of clusters, but rather on the promotion of a cluster initiative by:

- Introducing the relevance of a clustering approach,
- Analysing initial competencies and clusters,
- Building the leadership group.

Another task developed by MIRA was the **“creation of economic and social value from knowledge and scientific capabilities”** produced by a variety of channels: joint projects, patents license, business creation or training of specialists. The consideration of knowledge transfer as an actual role of the universities (the “third function”, after education and research) was introduced in most of the MPCs only in the last decade, and still has a long way ahead to set up regulations on the role of the universities, the researchers’ statute or the creation of professionalized capacities helping with industry liaison, RDT financing, IP management, contracts negotiation and business creation and development. Those measures quite often include the creation of liaison or technology transfer offices (TTO) as well as other structures (clusters, technology parks, technical



centres, incubators) able to provide the required expertise to both researchers and industry or final users. Valorization has to build as far as possible on research results that were produced looking forward to giving response to actual problems or innovation needs; otherwise the “marketability” of the academic knowledge will find barriers very difficult to overcome. The role of liaison with industries and final users as to help researchers to identify topics appears at the forefront of the TTO functions.

Most countries in the region have been defining valorization policies during the last decade, which included the creation of units in universities and research centres together with other structures of support to industry cooperation and innovation. The implementation of those policies, following quite often models already developed in other countries since the late eighties, usually needs long periods of time to achieve a sustainable impact, as they are closely related to the whole process of knowledge production and innovation, and are also conditioned by regulatory and organizational factors in the academic environment. Summarizing, it can be said that valorisation is usually allocated as a complementary function to units in charge of other responsibilities in the academic or research institutions, and since professionals in IP management, technology watch and specialized fields are rare. Those functions are to be usually performed either by the researchers themselves or other management people lacking the required qualification, who quite often require external support (patent agents, consultants, etc.). These findings are coherent with the general opinions on valorization and technology transfer also gathered in the surveys produced by MIRS which show that in research institutions: (1) research-business links are usually created through personal contacts; (2) transfer of patented knowledge is unusual as a means of co-operation with industry; (3) technology transfer units and services still play a marginal role in the creation of links with industry. Valorization of research results is facing similar challenges in most of the Mediterranean Partner Countries. A main one is the strengthening of links between researchers and firms allowing to orient and improve the quality of applied research performed in universities and research centres.

Those links can also play a key role in the creation of favorable conditions for innovation in industry and to promote the allocation of private resources to research which in return will help to overcome weaknesses of the industry and to improve its competitiveness.

On the industry side, the changes in the strategies of the firms are more and more conditioned by the competition in open markets to invest in product development and to innovate. The identification of the technology needs linked to the objectives of the firms appears therefore as a critical issue for industry that is followed by the measures to guarantee the accessibility to technology, through capacities in the country or through international alliances. It is here where the public research sector should focus its attention to become a strategic agent. Additionally MPCs show the need of a powerful policy of innovation to implement strong measures aimed to upgrade and modernize industry in terms of skills, equipment, information and quality management, to increase the number of firms able to compete in local and external markets. Knowledge and



technology available in universities and research institutions are to contribute to this endeavor, providing skilled graduates and the capabilities to deal with the technical problems and innovation challenges. On the research side, the public institutions are to deal with the issues related to the quality and motivation of researchers for cooperation with industry. This means that the public standards and regulations of the careers have to consider the possibilities of a stronger commitment of researchers active in applied research, with higher possibilities of getting involved in the exploitation of the results through joint projects with industry, patents licensing or creation of innovative start-ups. Public regulations and institutions are also to deal with the introduction of intellectual property culture and with IP rights management (ownership, share of revenues, patent licenses) and with provisions for the mobility of researchers, a hard challenge when the internationalization of research opens the labor market for researchers.

Innovation and research policies in MPC are currently deploying a wide arsenal of instruments – technology transfer interfaces, clusters, incubators, technoparks, technology platforms, etc. – which are to be tuned to the possibilities and requirements of the country's economy, after a sound consideration of the country's priorities in the different research and industry areas. The existing programmes are very often not addressing the research-industry cooperation needs in a fully satisfactory way, usually affected by governance barriers between the departments in charge.

In the international arena, certainly the use of the existing EU, bilateral and multilateral programmes offer wide opportunities of cooperation for MPC, helping keep close linkages and acquaintance of international markets, state-of-the-art and frontier technologies. Besides, what is actually missing is a deeper cooperation effort to create liaisons between the Mediterranean Partner Countries themselves, facilitating the creation of common platforms through technical and managerial exchanges with the critical mass in international forums and networks as to play a mutual benefit role in technology and research exchanges.

Tackling technology transfer at the regional level may have significant results if complemented with national actions. Regional cooperation opens up new space for transnational Technology Transfer and may be instrumental for achieving specific expertise which is not available within the national territories. Regional cooperation is an instrument for all countries regardless of the size as it allows for a real brain circulation and networking beyond the national borders. It has been highlighted that Regional road maps may be key to achieving regional objectives that should not be seen as the sole solution for the national objectives – the opening up of regional cooperation in the field could give access to a wider diaspora of qualified people, increased interfaces among institutions and new partnerships. The actions proposed by MIRA are the following:



- Setting-up of specialized programmes specifically targeted to the region. In the case of the EC it would be useful to have a specific ERA-NET on Technology Transfer in the EuroMed region;
- Set-up partnerships across borders and create clusters which may have the capacity to be linked to the EU and/or global scale;
- Have Public and Private technology brokers and use techno-parks as a tool for the developed clusters;
- Provide specific incentives for SMEs engaging in trans-national Technology Transfer activities;
- Provide funding for effective training of experts and networking amongst key players in
- Technology Transfer within both sides of the Euro-Med Region.

- ***Support to the other EU policies in the Mediterranean***

MIRA project support to the “Horizon 2020 Program of De-Polluting the Mediterranean” of the ENPI Program and the UfM. Challenges in the research domain.

MIRA organized a Working Group of MIRA to analyze the state of the past and present research activities in the Mediterranean Countries and the FP of the EC related to the objectives of “Horizon 2020. De-polluting the Mediterranean”. The results of the analysis points to the need of a strategy where the research effort in the region should be situated inside a more general coherent Euro-Med Strategy of knowledge and human and material resources management. In this sense, it is worth mentioning that the scientific efforts in all countries and cases should be coordinated with the monitoring of both the impact of pollution and of the political-administrative interventions and major de-pollution or prevention actions of all the states and the international community. In practical terms, this implies that the research infrastructures, equipment, methodologies and standards should be compatible or, even, shared among the monitoring institutions. This, in turn, implies that in many cases institutions and methods should be upgraded and certified. A strong link between both fields of intervention must be guarantee, particularly in the selection of key indicators that reflects on the one hand the impact of the contaminants, and on the other of policies and their enforcement. Both need to be well characterized and quantified by the research community. Similarly, the data used in monitoring and modeling of the contaminants should be better gathered, quality controlled, harmonized and evaluated at national and international levels to guarantee a Mediterranean wide cooperation of the research and monitoring communities.

Moreover, it is clear that Capacity Building (CB) in the scientific environment is needed in order to mobilize human resources at the technical and scientific levels to support policies and strategies, in a way similar to what has been done in the Capacity Building/MEP



Program of H2020. However, CB in the scientific world has to involve from the beginning researchers to identify gaps at Mediterranean level to tackle specific R&D issues related to water and to build a CB programs. It has to be used to build R&D networking and programs as objective and should be closely linked to EU/MED research programs (H2020) for real impact. Connection with mobility and infrastructure creation programs will assure sustainable impact. Such mechanism will lead to powerful R&D CB. The ERAWIDE programme (supporting some excellent quality research centers in the MPC) dealing with water issues, is a good example of experience on CB in scientific environment. Capacity building should also target new approaches, technologies, innovative governance and financing mechanisms allowing water multi-use, water reuse, water efficiency increase and leading to sustainable Med sea de-pollution.

The political and socio-economic dimensions of the H2020 has not been fully addressed by the scientific community, while the consequences of the diversity of legal frameworks, public perception of the issues at stake, such as the long term consequences of pollution or the need of waste water reuse, the impact of littoral massive urbanization, to mention only a few issues, are not seen as urgent matters by the societies and governments. An intensive awareness campaign targeting the political levels, Parliaments, Governments and Local Administrations must be drafted and developed at Mediterranean level, eventually within the next face of H2020. Similarly, the public awareness of the risks and consequences of sea contamination must target all levels of education and the media. It is necessary to collect reliable information/data from all available sources on chemical and biological contamination and marine litter to be used for the formulation and dissemination of the relevant information.

From a general point of view, recommendations that can lead to a significant and effective water reuse in the Mediterranean countries with water scarcity problems include:

- 1) Increase investments and research on the newest and most efficient wastewater treatment technologies, to reduce reclaimed water production costs.
- 2) Develop a flexible legislative or normative framework which establishes reclaimed water reuse rights and concessional system, quality standards according to the final uses, and procedures to bring closer this resource to water users.
- 3) Increase population's awareness and higher water-consumer sectors of the importance of making a rational and efficient use of water to ensure a sustainable development, and the benefits of reused wastewater to maintain clean water flows or groundwater reserves.
- 4) Water reuse must be primarily tackled in the industrial sector, where direct water recycle may be easily implemented through source segregation within the production cycle. This should lead to "zero discharge" of those industrial pollutants that, passing unaffected through the municipal wastewater treatment plant, may hinder treated water reuse.



The results of the MIRA Working Group on the Research Agenda for H2020 can be summarized in a number of domains of actions and concrete scientific research topics:

- Political and socio-economic domain. Innovation prospect
 - Collecting information about the institutional regulatory framework of water planning and waste water treatment in the different countries. Analysis and benchmarking of the legal and regulatory frames.
 - Analysis of the participative processes in water management and pollution abatement in the various Mediterranean countries.
 - Adopting the Water Strategy for the Mediterranean and a well-structured Action Plan will contribute not only to the harmonization of the Institutional regularity Frameworks but also in providing coherent national policies and strategies in the various Mediterranean. Feasibility study on a “Mediterranean Water Framework Directive” aiming at establishing a watershed-to-sea management prospect, based in basin units and establishing proper incentives for the reduction of contamination and reuse of waste water. This prospect should result from an exercise of Mediterranean-wide discussion and being fully co-owned by all or most of the Mediterranean countries.
 - Elaboration of guidelines to promote the sharing of water resources and contamination data and the opening of the national data base by all or most of the Mediterranean countries. Toward a common monitoring system.
 - Proposals for shortening the intake of the scientific advice by the decision-making community (legislative bodies, administrations, etc.). Mechanisms to promote and use the scientific support to the governance of the Mediterranean contamination issues
 - Support for the development of new technologies to tackle the reduction of pollutants (traditional and new) from the punctual and diffuse sources. New business opportunities in the handling of reclaimed waters.
 - Market and Incentive packages schemes to encourage different types of waste water treatments.

- Social awareness
 - Building trust between public and government/private agencies responsible for water and waste water treatment to be accepted for specific uses by the public.
 - Creating an intellectual resources bank of science based arguments about water impact on society structure, the meaning of water scarcity, need of utilization of reclaimed waters and criteria for its use, to be used at different levels of education.
 - Repository of updated information about water challenges in the Mediterranean accessible to the media

- Capacity building in the scientific environment



- Use the experience of the activities in Capacity Building (CB/MEP) H2020 Sub Group (MIO-ECSDE) for capacity building in scientific environment and develop adapted mechanisms and connections with other programmes for sustainable impact. Promote specific training for technicians and scientist on the De-contamination topics and technologies.
 - Use the experience of ERAWIDE programs and the water priorities for S&T collaboration identified in the frame of related projects as starting point to build efficient CB in scientific environment
 - Promote the systematic uptake of the Mediterranean ancestral water culture, and link the results of the past with present research effort (see HYDRRIA project/MEdIES).
 - Create a specific fund to support the upgrading of the research analytical infrastructures, with a perspective of sharing them with the monitoring institutions.
 - Create a specific fund to support the certification of the analytical infrastructures and procedures.
- Connectivity with the Monitoring initiatives. Standards and quality of data exploring fully the H2020/SEIS and UNEP/MAP projects
- Comprehensive revision of the different national systems already in place and standardize their different processes.
 - Setting a uniform data collection system with shared methodologies and quality standards.
 - Creation and maintenance of a Mediterranean-wide common data base for monitoring and scientific purposes, and to support an evidence-based political management.
 - Enhance regional cooperation as it concerns data for offshore waters and characteristics of sub-regions according to EU Marine Strategy Framework Directive (MSFD) and UNEP/MAP Ecosystem Approach.
 - New measurements should address emerging needs (e.g. climate change, species migration and intrusion of alien species).
 - Develop citizen science (involve public in environmental data acquisition).
- Scientific research areas to be addressed
- Drafting the targeted research programs and project with full development of the social, economic, cultural and scientific dimensions.
 - Impulse the shared elaboration of complete biogeochemical models in which scenarios based on various emissions of agricultural, industrial, physical (including sediments), chemical and biological pollutants (such as algal bloom or invasive species), and environmental changes (including climate changes) could be implemented, and serve as a reference for assessment the quality of waters.
 - Deepening the study of the impacts of emerging contaminants coming from river runoff or dumping (e.g. pharmaceuticals, per fluorinated compounds, etc.) or having endocrine disrupting properties (e.g. phthalates, nonylphenol, bisphenol A, etc.) in coastal water and/or organisms. Modeling of the nutritional web evolution provoked by these emerging contaminants.



- Modeling the impact of coastal urbanization in waste water production and management, coastal erosion and marine litter impact.
- Modeling of changes in the basin hydrological cycles provoked by man induced changes or extreme events, considering the coastal lines and the river basins as an integrated physical and hydrographical unit.
- Modeling the impact of punctual and diffuse (agricultural origin) contamination on the human health, fisheries and aquaculture activities.
- Developing of early warning monitoring systems strategies and assessment methodologies.
- Fostering innovation in water sector and know how transfer
- Supporting R&D project on Med sea protection including prevention actions “acting at the source” in the frame of sustainable development

MIRA project support to the definition of a “The Common Euro-Mediterranean Research and Innovation Agenda” (CRIA) on behalf of the MoCo Presidency Group.

The Final Report of the Euro-Mediterranean Barcelona Conference on Research and Innovation, held in Barcelona in April 2012, highlights two aspects that cannot be emphasized enough:

- Research and innovation (R&I) offer significant opportunities for Mediterranean countries to develop and exploit their assets for the benefit of their economies and of their peoples, especially as drivers of economic development. Increased knowledge and R&I are keys to the successful deployment of specific solutions which, in turn, may deliver economic benefits on a wider scale.

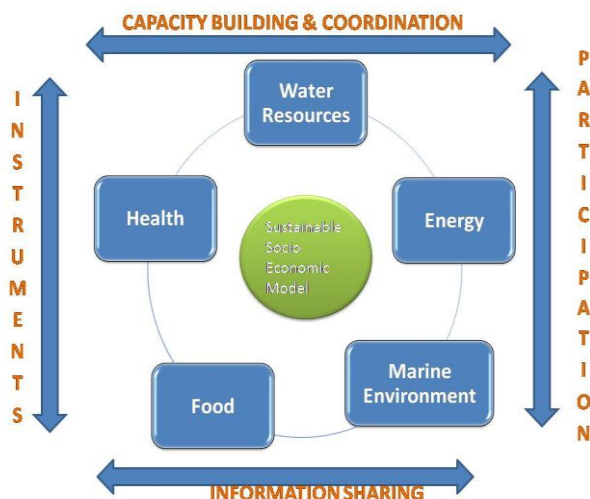
- The successful implementation of this ambitious strategy and the delivery of sustainable results depend on coordinated action and streamlined activities aimed at building a common innovation- and research-based culture.

The necessary coordinated effort in R&I cannot deal with the entire set of challenges faced by the region, so a critical analysis of the importance of some key challenges and their reliability to the previous and running common regional mobilization of research resources, suggest a limited number of sectors, highly interconnected in their goals, where a common Research Agenda can be proposed as a reference frame to align different sources of financing and decision taking levels.

The five challenges proposed as a federative reference are: water resources, renewable energy, food, marine environment and health. All of them are clearly interconnected and targeting the sustainability of our social and economic models and the wellbeing of our populations. Water and energy are the basic resources to guarantee the availability of food, jobs creation and urban development. On the other hand the marine resources are common assets of all Mediterranean riparian countries and a driver for further



development, while a good status of the population health and welfare is determined among other key issues by high quality food, safe water and low contamination. (See Fig.)



These social and economic challenges are also challenges for the scientific community which needs a reliable structural frame of coordination and participation, a reliable governance and financing system, common design and monitoring, and systems of exploitation of the benefits of research.

The Common Research Agenda should be based on a series of shared principles and objectives:

- Being oriented to provide scientific and technological support to address the societal challenges.
- Being informed of the holistic approach covering the whole societal challenges, in order to obtain a maximum benefit of synergetic interactions all along the innovation chain.
- Being fully co-owned and co-designed by all the parties engaged in its development and ruled through a light, efficiency oriented governance.
- Being a frame where different initiatives: national, bilateral or international, could find a source of inspiration and of benchmark for their objectives.
- Being a driver for innovation, economic development and welfare, following the sustainability principle.
- Addressing preventive and predictive actions in order to be ahead of rising risks.
- Engaging stakeholders coming from different horizons, from social organizations to industrialist interested in the exploitation of the knowledge generated in cooperative actions, and being customized, personalized, to the particular cultural, economic and social circumstances of all participating parties.



- Dealing with the high-tech (“...omics”, genomic, proteomic....) divide between the countries in order to facilitate real cooperation in equal foot.
- Favoring joint investments in human capital, research infrastructures and demonstrators as well as in innovation-based joint-ventures.

The mechanism to reach these objectives and define a way forward for actions should be:

- Be supported by participatory Forums where all interested parties could express their concerns and demands, federate their capacities and mark their common targets and priorities.
- Put innovation in the front line of the actions, as only innovative approaches could deal with the rising challenges.
- Well-structured and reactive Interconnectedness of all kind of stakeholders, especially legislators, administrators of public services, SMEs and social organizations.
- Use the existing running cooperation projects to mobilize the scientific community on the issues raised by CRIA.
- Present the challenges in a mutually coherent way, and establishing a clear understanding of the necessity of addressing their objective in a holistic way.
- Launch pilot experiences of inter-sectorial and inter-challenges character, including addressing its social dimension, as a mobilizing bottom-up experiment involving young people and beneficiary populations.

The Institutional setting of the Agenda must address the cross-cutting issues shared by all the challenges, notably:

- The alignment of legislation dealing with the handling of the challenges and creating optimal and sustainable conditions for joint investments in innovation.
- The agreement on the use of common standards in the description of the variables affecting the challenges, a common system of data acquisition must also be agreed as well as rules for sharing data and guarantees of transparency between the collaborating parties.
- Promote capacity building in human resources and infrastructures for research as well as for the deployment of new technologies.
- Promote the setting of reference centers and shared infrastructures.

The implementation of the CRIA needs a clear engagement of financing institutions, national, regional or international, which must be informed of the main arguments to support this common endeavor, particularly the innovation component associated to the methodology of addressing the challenges and the expected benefits of addressing the challenges in terms of evolution of the social and economic frame and new jobs creation.

As mentioned above, the CRIA must be an inspiring instrument able to federate resources and shared objectives in different time horizons. However, a tool-box of instruments must be identified to facilitate the federation of wills and resources. Certainly, the inspiring



driver for this federation of Instruments must be the Euro-Mediterranean Innovation and Research Space (EMIES), where all countries should find the frame for the cooperation based in the mutual benefit. Actions financed by regional, national, bi-national, and international institutions should find a place to support those initiatives inscribed in their own actions plans. Further Euro-Med initiatives such as such as the setting of the structure associated to the application of Art. 185 of the EU Treaty could also use CRIA as an inspiring background source. A coherent interaction between different European Instruments, such as the ENPI, the Horizon 2020 Program or the regional Policy, sectoral innovative strategies (SET Plan, e.g.) as well as the Mediterranean Regional Cooperation Instruments is a compulsory argument for the success of the CRIA.

The CRIA document is based in the synthesis effort made by a group of expert (See Annex) of relevant documents elaborated in the frame of EU- and MPC experts debates and dialogue, notably the Final Report of the Euro-Mediterranean Barcelona Conference on Research and Innovation, held in Barcelona the 1-2 April 2012, the Conclusions and Recommendations of this Barcelona Conference, the Synthesis report of the Thematic Workshops of the INCO.Net MIRA Project organized to identify common Euro-Mediterranean research priorities (see <http://www.miraproject.eu>), and the Final Report of the “EuroMed 2030: Long term challenges for the Mediterranean are” prepared by a Eu and MPC group of experts on behalf of the Directorate General for Research and Innovation. Social Sciences and Humanities Directorate, EU 2011, EUR 24740, among other documents relevant to the challenged analyzed.

CRIA WAY FORWARD

- The Mediterranean governance is not only limited by financial constrains but by the recognition of several gaps in the development of research and innovation capacities. The structural unbalance between Research and Innovation National or EU Systems limits the capacity of absorption of the cooperation support policies primary based on financing principles.
- Gaps also concern the rhythm of evolution of Research and Innovation. Europe is engaged in a world competition on Research and Innovation around Great Challenges. H2020 addresses this point through programme integration on a large scale while MPCs still need actions at single project level.
- A sustainable approach to overcome these gaps in a single Mediterranean regional approach should be definitively based on co-ownership and common initiatives to structure the Research and Innovation cooperation in the Mediterranean area.
- The common governance of the cooperation should be established as a federative body. This structure will address different levels including initiatives towards the convergence in the National Research and Innovation Systems, recognition of shared instruments for multi-lateral cooperation (like ERANET, Mobility, Research Infrastructures Programmes, Educational Programmes), and financing and mobilization of resources. This should be consolidated in a formal single vision document for R&I Mediterranean cooperation and its development, a definition of the roadmap for establishing the common governance structure (which should be



articulated with Art 185) and the development of R&I cooperation and an implementation plan.

• *MIRA Project Lessons Learned (some conclusions and recommendations)*

The experience of MIRA provides some Lessons Learnt and insights on the future of the EU-MPC scientific collaboration expectations that we can list as conclusions and recommendations of the Project:

- A fluid cooperation dynamic has produced a demand for moving from a, somehow, unidirectional setting of the scenario and decision-making process to a partnership with co-ownership of programmes on all aspect of this collaboration.
- This new scenario is being assumed by most of the MPC, but it is highly dependent on political difficulties, on both sides of the Mediterranean; Networking of thematic parties from the EU and the MPC, including Technological Platforms, must be promoted and maintained for the mutual interest. A structure providing a minimum management of these networks should be created and co-owned.
- The political debate structured by the MoCo and the Ministerial Conferences need to build a shared instrument in order to execute the actions needed to impulse and improve the quality and focus of the cooperation. This instrument must be co-owned by all parties.
- The identification of demands should be the result of analysis, debate and, if possible, consensus. No common shared agenda will ever be the result of a purely national dynamic. Also, no agenda can ever be built uniquely on political discourse: experts need to be enrolled from all sides of the Mediterranean in actual projects that assess the cooperation potential, the issues open to research and development and the instruments to be mobilized. The shared partnership cannot be made at the expense of a documented analysis.
- The debates in the Mediterranean cultural environment need the physical presence of the actors, and the management of information needs a centralized structure well connected with the sources.
- The political actors need to rely on institutions that are less engaged in the political dynamic to guarantee the long-term sustainability of scientific cooperation.
- MPC partners have had enormous difficulties to handle the funding received from the European projects. There are urgent needs to adapt their financial and administrative systems to the context of scientific cooperation. May be the use of "third parties" and/or an independent co-owned structure to cope with the handling of the EU-MPC cooperation in R&I could be a solution.
- The MPC scientific community is claiming for a better research environment: less bureaucracy and more linkage to the societal challenges of their countries. The actions will look for more involvement with the industrial sector/SMEs. Duplicating actions from other regions is not a solution.



- The participation in research and innovation activities must be better rewarded. The EU-MPC cooperation must address this as a common challenge, research needs to be given a strong footing inside the EU-MPC relationships, innovation has to be part of the political agenda and not be relegated to some subaltern activity. Innovation activities must be associated to most of the actions launched by the international cooperation in research.
- Finding success stories and best practices in South - South cooperation and transform them in initiatives will help to mutual learning between actors sharing similar challenges. Look at neighbors before asking to the supposed advanced countries.
- Innovation push needs a joint action plan for the creation of an international platform to cooperate on the technology transfer area. MoCo should support the constitution of this platform/network on technology transfer and innovation as a priority for achieving a Euro-Mediterranean Research and Innovation Space.
- Big investment supported by political decision should follow, not precede, an innovation and research strategy centered in improving human capacities, building or improving the innovation and research environment adapted to the national circumstances, and guaranteeing the sustainability of the investments and the job security of the actors. Research needs a long term strategy, a continuous effort, with priorities linked to national and regional challenges on social, economic and environmental demands.
- The building of trust between cooperating parties results from the engagement in well drafted actions that engage all parties. Prejudices do not resist the proof of cooperation in topics of mutual interest.

As highlighted in the previous section a new approach to EU-MPCs cooperation policies based on co-ownership and co-decision principles is necessary and could be supported by ad hoc STI instruments ensuring long-term and stable cooperation. The key aspects of such cooperation are:

- Participatory approach during the co-decision phase of cooperation in STI, on the basis of common priorities and challenges. These can be identified in synergies and complementarities among European MSs and MPCs' research programmes. Sustainable and long-term cooperation can be guaranteed by a bottom-up approach and by the involvement of the cross-border chain of research and innovation.
- Financial commitment of MPCs for the whole duration of initiatives, in order to guarantee a wide participation in the decision-making process and a more active involvement in joint implementation. The sharing of responsibility and commitment among Member States and MPCs allows better integration, the enhancement of capacity building, knowledge and innovation, and the achievement of common benefits and mutual interests. Moving forward in the Euro-Mediterranean Research and Innovation partnership



- Flexible financial and administrative rules, that take into account the asymmetry of governance and financial procedures of European MSs and MPCs, as well as the respective fields of research and innovation and different coordination tools. A flexible harmonization of financial and governmental procedures is strongly encouraged by all involved parties.

In order to be effective, the re-thinking of Euro-Mediterranean STI cooperation outlined above should be sided by the establishment of new governance models.



References

ARVANITIS, Rigas, Rula ATWEH, and Hatem M'HENNI. 2013. Assessing international scientific cooperation in the Mediterranean region. An international challenge ahead. In "Moving forward in the Euro-Mediterranean Research and Innovation partnership. The experience of the MIRA project" . Eds. C.Morini, R. Rodríguez Clemente, R. Arvanitis, R. Chaabouni. Options Mediterraneennes. CIHEAM., pp.105-132.

ARVANITIS, Rigas, Rafael RODRIGUEZ-CLEMENTE, and A. Hamid EL-ZOHEIRY. 2013. The policy framework of Euro-Med cooperation on research and innovation. Effects on research collaborations. In " Moving forward in the Euro-Mediterranean Research and Innovation partnership. The experience of the MIRA project". Eds. C.Morini, R. Rodríguez Clemente, R. Arvanitis, R. Chaabouni Options Mediterraneennes, CIHEAM., pp.19-42.

AYADI, Rym and Carlo SESSA. 2013. What scenarios for the Euro-Mediterranean in 2030 in the wake of the Arab spring?. In "Moving forward in the Euro-Mediterranean Research and Innovation partnership. The experience of the MIRA project". Eds. C.Morini, R. Rodríguez Clemente, R. Arvanitis, R. Chaabouni Options Mediterraneennes, CIHEAM., pp.13-18.

AZZIOUI, Ilyas. 2013. Paving the way towards the creation of the Euro-Mediterranean Innovation Space. In "Moving forward in the Euro-Mediterranean Research and Innovation partnership. The experience of the MIRA project". Eds. C.Morini, R. Rodríguez Clemente, R. Arvanitis, R. Chaabouni Options Mediterraneennes. CIHEAM., pp.217-228.

DAGAULT, Sebastien, Amine ZIANE-CHERIF, and Arturo MENÉNDEZ. 2013. Promoting innovation in the Mediterranean Profiles and expectations of business incubators, technology parks and technology transfer offices. In "Moving forward in the Euro-Mediterranean Research and Innovation partnership. The experience of the MIRA project". Eds. C.Morini, R. Rodríguez Clemente, R. Arvanitis, R. Chaabouni Options Mediterraneennes. CIHEAM., pp.251-258.

EL-MAJID, Zayer and Reda EL-FELLAH. 2013. National MPC policies of cooperation with the EU in Science and Innovation: the case of Morocco. In " Moving forward in the Euro-Mediterranean Research and Innovation partnership. The experience of the MIRA project". Eds. C.Morini, R. Rodríguez Clemente, R. Arvanitis, R. Chaabouni Options Mediterraneennes, CIHEAM., pp.57-62.

GAILLARD, Anne-Marie, Aude-Annabelle CANESSE, Jacques GAILLARD, and Rigas ARVANITIS. 2013. Euro-Mediterranean science and technology collaborations: a questionnaire survey. In "Moving forward in the Euro-Mediterranean Research and Innovation partnership. The experience of the MIRA project". Eds. C.Morini, R. Rodríguez Clemente, R. Arvanitis, R. Chaabouni Options Mediterraneennes, CIHEAM., pp.79-104.



GAUCI-BORDA, Ian, Yasemin KOC, and Antonios FYSEKIDIS. 2013. Technology transfer experiences in the Mediterranean. "Moving forward in the Euro-Mediterranean Research and Innovation partnership. The experience of the MIRA project". Eds. C.Morini, R. Rodríguez Clemente, R. Arvanitis, R. Chaabouni Options Mediterraneennes. CIHEAM., pp.247-250.

MENENDEZ, Arturo. 2013. Valorisation of research results in the Mediterranean region. In "Moving forward in the Euro-Mediterranean Research and Innovation partnership. The experience of the MIRA project". Eds. C.Morini, R. Rodríguez Clemente, R. Arvanitis, R. Chaabouni Options Mediterraneennes. CIHEAM., pp.237-246.

MUNOZ, Macarena, Carmen SILLER, Monique BOSSI et al. 2013. Financial, legal and administrative management of INCO-NET projects. Difficulties, solutions and recommendations for the future. In "Moving forward in the Euro-Mediterranean Research and Innovation partnership. The experience of the MIRA project". Eds. C.Morini, R. Rodríguez Clemente, R. Arvanitis, R. Chaabouni Options Mediterraneennes. CIHEAM., pp.185-196.

NOETZEL, Roman, Abdel Hamid EL-ZOHEIRY, and Chiara MORINI. 2013. Dealing with a common research agenda between the EU and Mediterranean Partner Countries A methodological approach. In "Moving forward in the Euro-Mediterranean Research and Innovation partnership. The experience of the MIRA project". Eds. C.Morini, R. Rodríguez Clemente, R. Arvanitis, R. Chaabouni Options Mediterraneennes. CIHEAM., pp.167-184.

NOETZEL, Roman, Ulrike KUNZE, and Birgit DITGENS. 2013. The Research Driven Cluster Initiative - Challenges and opportunities for cluster approaches in the Mediterranean. In "Moving forward in the Euro-Mediterranean Research and Innovation partnership. The experience of the MIRA project". Eds. C.Morini, R. Rodríguez Clemente, R. Arvanitis, R. Chaabouni Options Mediterraneennes. CIHEAM., pp.229-236.

PANCERA, Aurelie, Kyriaki PAPAGEORGEOU, Sanaa BOUTROS et al. 2013. First lessons learnt from the Mediterranean ERA-WIDE projects. In "Moving forward in the Euro-Mediterranean Research and Innovation partnership. The experience of the MIRA project". Eds. C.Morini, R. Rodríguez Clemente, R. Arvanitis, R. Chaabouni Options Mediterraneennes, CIHEAM., pp.63-78.

RODRIGUEZ-CLEMENTE, Rafael. 2013. MIRA project self-evaluation. In "Moving forward in the Euro-Mediterranean Research and Innovation partnership. The experience of the MIRA project". Eds. C.Morini, R. Rodríguez Clemente, R. Arvanitis, R. Chaabouni Options Mediterraneennes. CIHEAM., pp.197-204.

RODRIGUEZ-CLEMENTE, Rafael, Jordi MARTINEZ-BLANCH, Marilena ROSSANO, and Sanaa ZEBAKH. 2013. Identifying barriers to Academia-Industry relationships in the MPCs, and



their impact on Research and Innovation cooperation between EU and MPCs. In "Moving forward in the Euro-Mediterranean Research and Innovation partnership. The experience of the MIRA project". Eds. C. Morini, R. Rodríguez Clemente, R. Arvanitis, R. Chaabouni Options Mediterraneennes. CIHEAM., pp.133-146.

ROSSANO, Marilena, Jose BONFIM, Refaat CHAABOUNI, and George BONAS. 2013. The Monitoring Committee for RTD. In "Moving forward in the Euro-Mediterranean Research and Innovation partnership. The experience of the MIRA project". Eds. C. Morini, R. Rodríguez Clemente, R. Arvanitis, R. Chaabouni Options Mediterraneennes, CIHEAM., pp.43-56.

ROSSANO, Marilena, Chiara MORINI, and Reda EL-FELLAH. 2013. Participation of the MPCs in the European Research Area. Capacity building activities in MIRA Project. In "Moving forward in the Euro-Mediterranean Research and Innovation partnership. The experience of the MIRA project". Eds. C. Morini, R. Rodríguez Clemente, R. Arvanitis, R. Chaabouni Options Mediterraneennes. CIHEAM., pp.147-166.

SEMERARO, M., Marinella GIANNELLI, Caludio BOGLIOTTI et al. 2013. End aid now: a prospect of financial synergies for a long-term Euro-Mediterranean cooperation on science, technology and innovation. In "Moving forward in the Euro-Mediterranean Research and Innovation partnership. The experience of the MIRA project". Options Mediterraneennes. CIHEAM., pp.205-216.

