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Table of Contents

List of Figures

1. Executive Summary

The geo-political stability of the Mediterranean region is of fundamental importance for Europe, given the strategic position of the region. The southern Mediterranean region[1], including Morocco, Algeria, Tunisia, Libya, Egypt, Palestine, Israel, Jordan, Lebanon and Syria, also referred to as the **Mediterranean Partner countries (MPCs)**, constitute Europe's southern neighbourhood as defined by the **European Neighbourhood Policy (ENP)**[2]. The MPCs face common societal challenges including, but not limited to, water and food security, environment conservation and energy supplies, migration and brain drain, social exclusion, unemployment of youth and political instability. Some of these major challenges may be addressed through innovative and knowledge-based approaches. In September 2014, a **Common Euro-Mediterranean Innovation Agenda**[3] was endorsed by the **Euro-Mediterranean Group of Senior Officials in Research and Innovation (EU-Med GSO)**,[4] which plays a central role in monitoring and stimulating the Euro-Mediterranean cooperation in Research and Innovation. The Agenda aims at unleashing the innovative potential in the region and addressing the region's vital needs for funds and technical assistance in the sphere of innovation and commercial exploitation of research results.

In spite of their great potential and remarkable human capital, the MPCs' Innovation Systems are not efficient in terms of overall strategic vision, research excellence and international visibility. Major problems are encountered when commercialising publications and patents and managing the innovation environment while all MPCs are suffering from the brain drain phenomenon. In the current context where innovation is increasingly based on open, international networking built around innovation ecosystems, the **lack of proximity and trust between public and private sector stakeholders**, **rigid administrative frameworks**, **poorly trained innovation managers** and **governance problems** prevent the Mediterranean countries from pushing forward dynamic innovation policies.

A lot of consideration has been given to EU-Mediterranean cooperation and partnership through the EU policy framework, instruments and programmes since the advent of the **"Barcelona Process"**[5] launched in 1995. Public and private entities from the South Mediterranean participated in **EU Framework Programmes (FPs)** ever since, receiving a total EU contribution of about EUR 60 million in the context of FP7 only. The **Competiveness and Innovation Framework Program (CIP),** currently part of **Horizon 2020 (H2020),** was also open to the participation of MPCs while Coordination and Support Actions (CSA) under FP7 served as platforms for policy dialogue and coordination, raised awareness and built the capacity of research and innovation communities in the target region. Accordingly, priority areas[6] for

[1] The South Mediterranean region includes the ENP countries in the South, namely: Algeria, Morocco, Egypt, Israel, Jordan, Lebanon, Libya, Palestine, Tunisia and Syria. Israel was associated to FP7 and is associated to Horizon 2020, making its situation completely different from the one of third countries not associated to FP. Turkey, a major country in the South Mediterranean/Middle East, is not covered as it is a Candidate to EU membership – thus not covered by the ENP- and was associated to FP7.

[2] http://ec.europa.eu/enlargement/neighbourhood/southern-neighbourhood/index_en.htm

[3] Abdelhamid El-Zoheiry, Euro-Mediterranean University, Slovenia Euro-Mediterranean Cooperation in Science and Innovation: 20 Years of the Barcelona Process www.emuni.si/press/ISSN/1855-3362/8_063-076.pdf

[4] http://www.eumedgso.eu/

[5] http://europa.eu/legislation_summaries/external_relations/relations_with_third_countries/mediterranean_partner_countries/r15001_en.htm

[6] Priority areas identified by the Euro-Mediterranean conference in research and innovation, held on 2-3 April 2012 in Barcelona and endorsed by the Euro-Mediterranean Group of Senior Officials (EU-Med GSO), namely:

cooperation with the Southern Mediterranean countries are supported through Horizon 2020 work programmes. In addition to H2020, **t**he new **European Neighbourhood Instrument (ENI) ,** the main financial instrument for implementing the European Neighbourhood Policy (ENP), provides the bulk of EU funding to MPCs; an indicative allocation between €7.5 and €9.2 billion is foreseen for the Southern Neighbourhood region for 2014 – 2020.

Although substantial progress has been achieved, the cooperation across the Mediterranean still suffers considerable structural weaknesses. In this respect, the importance attributed to cooperation policies activated by the European Union (EU) for the enhancement of collaborative and networked forms of innovative efforts among both Members and peripheral countries is currently even greater. The creation of a **Euro-Mediterranean Innovation Space (EMIS)**[7] could provide a framework for concrete actions such as the harmonization of standards, facilitating the emergence of a knowledge-based economy, developing technological and productive clusters, which will ultimately help develop the innovation capacity to meet major challenges. Strengthening the linkages at various levels of innovation activities between European countries and the Mediterranean ones could lead to the creation of new regional and national innovation systems able to participate to international competition. The **Regional Innovation System (RIS)**[8]. concept emphasizes the role of interaction, localisation and embedding and gives an explanation of the resurgence of regional economies as structural elements in the global competition. Accordingly, a region-specific, EU compatible Mediterranean Innovation Scoreboard has to be created, while the MPC countries should design a clear Innovation Strategy and modernize their Innovation System through aligning it with real needs at the local, national and Mediterranean levels.

This paper presents the current policy framework regarding EU-MPC cooperation in R&I as well as the Innovation Framework conditions in MPCs as they currently stand. Furthermore, it concludes with Recommendations and tools for the MPCs to develop new regional and national Innovation Systems able to participate to international competition.

2. Policy Framework

The EU policy toward the Mediterranean Countries was defined in the so-called **"Barcelona Process"** launched in 1995, where the Member States of the EU and the Mediterranean Partner Countries (MPCs) expressed a shared wish of a Mediterranean space of security, economic development and socio-cultural exchanges. The Euro-Mediterranean Ministerial Conference on Higher Education and Research held in Cairo in June 2007 (**Cairo Declaration** "Towards a Euro-Mediterranean Higher Education and Research Area"[9]) 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 **Union for**

Water availability and management, food security and agriculture; Renewable energy and efficiency; Fighting diseases and improving wellbeing; Green, efficient and integrated transport systems; Management of marine environment and resources; Changing science in changing societies.

[7] Azzioui, I. Paving the way towards the creation of a Euro-Mediterranean Innovation Space. In: Morini C. (ed.), Rodriguez Clemente R. (ed.), Arvanitis R. (ed.), Chaabouni R. (ed.). Moving forward in the Euro-Mediterranean Research and Innovation partnership. The experience of the MIRA project. Bari : CIHEAM, 2013. p. 217-228

[8] De Bruijn, P., and A. Lagendijk. 2005. "Regional innovation systems in the Lisbon strategy." European lanning Studies 13 (8): 1153–72. doi:10.1080/09654310500336519.

[9] http://ufmsecretariat.org/wp-content/uploads/2012/09/cairo_declaration.pdf

the Mediterranean (UfM)[10] was launched in the summer 2008, with the intention of rebuilding the EU-MPC partnership and the **EUROPE 2020 strategy** (European Commission 2010), which is the overall plan of the EU in science, technology and innovation, mentions, as a key issue, the cooperation with neighbourhood countries on societal challenges, and the European willingness to help their own reform efforts.

The EU response to the changes in the Arab world was articulated in 2011 when the EU offered its Mediterranean partners "A Partnership for democracy and shared prosperity" in the context of the European Neighbourhood Policy (ENP). The partnership focuses on three elements: democratic transformation, a partnership with people and civil society, and sustainable and inclusive growth. With regard especially to the last element, the EU has launched a number of initiatives with its Southern neighbours in the sphere of research, technological development and innovation. In its joint communication on "A New Response to a Changing Neighbourhood"[11] the EU has set itself the goal to work together with its neighbours, both to the South and to the East, towards the creation of a Common Knowledge and Innovation Space (CKIS).

The EU already holds reinforced bilateral dialogues based on Science and Technology Agreements with Tunisia (2003, into force in 2004), Morocco (2004, into force in 2005), Egypt (2005, into force in 2008), Jordan (2009, into force in 2010) and Algeria (signed 2012, entered into force in 2013). The bilateral dialogues contribute also to the bi-regional Euro-Mediterranean cooperation in research and innovation, institutionalized in 1995, when in the context of the Barcelona process, a Euro-Mediterranean Committee in Research and Technological Development (MoCo) was established – recently renamed Euro-Mediterranean Group of Senior Officials in Research and Innovation (EU-Med GSO) which plays a central role in monitoring and stimulating the Euro-Mediterranean cooperation in Research and Innovation.

The recent political developments in the South Mediterranean have driven the region in the throes of major political, economic and societal transformations, the effects of which will extend beyond the Mediterranean region. In this context, economic growth and prosperity is one of the key drivers which can secure the strategic political stability of the Mediterranean countries, and the promotion of innovation is crucial towards achieving this aim. In this regard, the development of an innovation capacity throughout the region becomes of vital importance to the Euro-Mediterranean region as a whole.

In line with the Cairo Declaration, in June 2011 - during the 15th meeting of the Euro-Mediterranean GSO in Szeged, Hungary, under the co-presidency of Egypt and France - the MPC representatives underlined their desire to introduce co-ownership of EU-MPC actions in research and innovation with the underlying principles of **demand-driven and impact-driven cooperation** based on co-decision making and co-funding of joint actions of mutual interest and shared benefit.

At the margins of the Informal Competitiveness Council held in June 2012 in Nicosia (Cyprus), several EU member states, led by Italy, announced an initiative to work towards an article 185 TFEU, launching the **"Partnership in Research and Innovation in the Mediterranean Area" (PRIMA)**[12]**.** The PRIMA initiative received a further endorsement during two subsequent Competitiveness Councils held under

[10] http://ufmsecretariat.org/

[11] A partnership for democracy and shared prosperity, COM (2011) 200 8.03.2011 and A new response to a changing Neighbourhood, COM (2011) 303 25.05.2011. Joint Communication of 25 May 2011 of the High Representative of the Union for Foreign Affairs and Security Policy and the Commission on 'A New Response to a Changing Neighbourhood', COM(2011) 303

[12] https://ec.europa.eu/research/environment/index.cfm?pg=prima

the Hellenic (May 2014 in Brussels) and the Italian (December 2014 in Napoli) Presidency of the Council of the EU and is currently undergoing impact assessment by the EU.

Following the decisions of the December 2013 meeting of the EU-Med GSO, a working group to define a **Common Euro-Mediterranean Innovation Agenda** was established, chaired by Egypt. The first draft was presented in April 2014 in a workshop organized by the Commission in Brussels and the agenda was endorsed by the subsequent EU-Med GSO in September 2014.

The common Euro-Mediterranean Innovation agenda aims at:

- Unleashing the innovative potential in the region in order to make direct use of research and innovation for socio-economic development in the medium and long term;
- Addressing the vital needs of the region for funds and technical assistance in the sphere of innovation and commercial exploitation of research results;
- Initiating a suitable support framework to enhance innovation at national and regional level in the Southern Mediterranean in line with the Common Knowledge and Innovation Space priority;
- Prioritising financing of innovative entrepreneurs, with a special focus on youth and women;
- Supporting the establishment of multilateral partnerships with MS, Southern-Mediterranean countries, International Financial Institutions, private sector, civil society and other stakeholders.

3. Stakeholders and Innovation Policies in the Mediterranean: State of Play

"Innovation" can be characterised using the OECD Oslo Manual (OECD, 2005)[13] under the following typologies:

I. Innovations 'new to the world': where a firm is the first to introduce innovation for all markets & industries, domestic and international.

II. Innovations 'new to the market': where a firm is the first to introduce innovation in its particular market.

III. Innovations 'new to the firm': where a firm introduces a product, process or method new to that firm, or significantly improved by it, even if it has already been implemented by other firms.

In the context of countries such as MPCs, where rapid adoption and diffusion is a central concern, innovations of "type II" (new to the market) and "type III" (new to the firm) are often more relevant and important. Scientific, technological and innovation capacities of most Southern Mediterranean countries remain modest and amounts invested in R&D are low compared to international averages: between 0.2% and 0.7% of GDP in the Mediterranean countries (Tunisia is an exception with approximately 1%)[14], compared to almost 2% in Europe (UNESCO, 2010)[15].

[13] Oslo Manual: Guidelines for Collecting and Interpreting Innovation Data, 3rd Edition
http://www.oecd.org/sti/inno/oslomanualguidelinesforcollectingandinterpretinginnovationdata3rdedition.htm

[14] Brussels, 11.9.2014 SWD(2014) 276 final COMMISSION STAFF WORKING DOCUMENT Roadmaps for international cooperation, Accompanying the document REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE

As there is a significant lack in funding for research and facilities across the Mediterranean, innovation systems are not efficient in terms of overall strategic vision, research excellence and international visibility. Problems are encountered when commercialising publications and patents and managing the innovation environment. In addition, these countries are all suffering from the brain drain phenomenon. There are, however, large differences: performances in countries such as Tunisia and Jordan are very similar or even better than those registered in some southern European countries, whereas Algeria is lagging behind in virtually all areas.

Generally speaking, the private sector still shows relatively low commitment to innovation, although in some Mediterranean countries is undergoing fundamental change. A new generation of entrepreneurs and innovative SMEs is coming up, the venture capital industry is developing and there is a broader involvement of the major groups, along with the introduction of increasing numbers of innovation support programmes at national and international level.

Three types of innovation support structures are mainly noticed in the Mediterranean[16]:

- **technology parks,** at the heart of all policies adopted by Mediterranean countries to attract investment and address the question of synergies between public and private players;
- **business incubators,** dealing with questions regarding the financing of innovation projects and the involvement of large companies in innovation ecosystems;
- **technology transfer offices,** raising the problem of governance and the need for public sector research to adapt to market needs.

At national level, there are still many obstacles in Academia (Research)/Industry cooperation[17]. Many MPCs still have little awareness of the importance of this collaboration. The reasons range from the lack of incentives to mobility between the two sectors to the difficulties in finding proper partners, from cultural divide to poor communication about available opportunities. Although industries and entrepreneurs realize that research and academic activities may enhance and raise product standards, which in turn increases the benefits, are more often interested in fully recovering their investment in a short time. Moreover, the Industry in the Southern and Eastern Mediterranean Countries mainly consists of Small and Medium Sized Enterprises (SMEs) that have no funds and no human capacity to start new cooperation projects with a strategic long term vision. There is a lack of integrated initiatives along with extensive programmes to bridge the gap between Industry and Academia. At the same time, little is known about the role of the International Financial Institutions in supporting cooperation between Academia and Industry in the Euro-Mediterranean region.

REGIONS Report on the implementation of the strategy for international cooperation in research and innovation {COM(2014) 567 final}

[15] UNESCO, 2010. Science report: The current status of science around the World. www.uis.unesco.org

[16] Dagault S., Ziane-Cherif A., Menéndez A. Promoting innovation in the Mediterranean. Profiles and expectations of business incubators, technology parks and technology transfer offices. In : Morini C. (ed.), Rodriguez Clemente R. (ed.), Arvanitis R. (ed.), Chaabouni R. (ed.). Moving forward in the Euro-Mediterranean Research and Innovation partnership. The experience of the MIRA project. Bari : CIHEAM, 2013. p. 251-257. (Options Méditerranéennes: Série B. Etudes et Recherches; n. 71). http://om.ciheam.org/om/pdf/b71/00006801.pdf

[17] Rodriguez Clemente R., Martinez-Blanch J., Rossano M., Zebakh S. Identifying barriers to Academia-Industry relationships in the MPCs, and their impact on Research and Innovation cooperation between the EU and MPCs. In: Morini C. (ed.), Rodriguez Clemente R. (ed.), Arvanitis R. (ed.), Chaaboun i R. (ed.). Moving forward in the Euro-Mediterranean Research and Innovation partnership. The experience of the MIRA project. Bari: CIHEAM, 2 01 3. p.133-145 (Options Méditerranéennes: Série B. Etudes et Recherches; n .71)

Additional barriers hampering the process towards a closer cooperation between Industry and Academia are:

- poor coordination among different institutions;
- *ad hoc* measures to enhance capacity building of SMEs to trigger innovation processes;
- lack of national incentives for Universities and Research institutions to approach the business world;
- few networks of services providers and agencies specializing in research commercialisation;
- non-effective communication strategies concerning opportunities for Academia-Industry cooperation;
- non-effective information on IPR issues;

At the International level, in the current EU Framework Programme for Research & Innovation, Horizon 2020, innovation is the key issue in many cooperation initiatives co-financed by the European Commission. Cooperation between Academia and Industry on specific objectives of common interest is therefore regarded as an urgent need. However, the same barriers that hamper cooperation at national level seem to affect internationalization also. With the exception of Israel and to some extent Turkey (modest innovator)[18], the reality in the MPCs remains rather bleak[19]; the European trend chart on innovation on MEDA countries also analyses weaknesses and opportunities for innovation in the Mediterranean area.

The weaknesses are identified in poor diffusion of incubators for new businesses and start-up technology companies (particularly in Syria and Algeria) and narrow local market for goods and high technology services. On the other hand, the main opportunity is identified by the ability to attract foreign technologies.

The countries in this area that have been more successful are Morocco, followed by Algeria, Tunisia and Lebanon. Tunisia is a good example of a country that has given particular emphasis in the re-orientation of the research system toward economic activities. The aim of Tunisian policies in the last two decades has been to emphasise new enterprise development or new business creation. Another good example of a voluntarism policy towards innovation has been that of Morocco. The country has been embarked in a large reform of the university system that was undertaken in 1997. As a relatively new effort for Morocco, we should also mention the technology platforms around some heavy equipment and new programmes of research with socio-economic objectives. In addition, a systematic effort has been made to promote specific funding for technological development. Although different in the nature of the policy initiatives, Morocco and Tunisia show a common turn toward innovation in their S&T policies. Most of the measures try to link research, science, and universities to the productive sector.

In the current context where innovation is increasingly based on open, international networking built around innovation ecosystems, the **lack of proximity and trust between public and private sector stakeholders**, **rigid administrative frameworks**, **poorly trained innovation managers** and **governance problems** all

[18] The Innovation Union Scoreboard 2015. The Innovation Union Scoreboard report and annexes and the indicators' database are available at: http://ec.europa.eu/growth/industry/innovation/facts-figures/scoreboards/index_en.htm

[19] Ferrara M. & Mavilia R. (2015) Innovation policies in the Mediterranean area: Towards a Mediterranean system of innovation, African Journal of Science, Technology, Innovation and Development, 7:6, 429-440

represent major hurdles that prevent the Mediterranean countries from pushing forward dynamic innovation policies.

Despite the above challenges, the Mediterranean countries still have great potential and remarkable human capital. Moreover, in the face of the increasingly globalised landscape, the future of these countries strongly depends on the absorption, production and exploitation of knowledge and innovation. In this respect, great importance seems to be increasingly attributed to cooperation policies activated by the European Union (EU) for the enhancement of collaborative and networked forms of innovative efforts among both Members and peripheral countries.

However, there are still serious obstacles in Euro-Mediterranean cooperation and the leverage of innovation through the EU FPs; the administration of the European research funds remains heavy and cumbersome for Mediterranean participants. These scientists receive little or no administrative support from their institutions which discourages them from participating in EU FP projects. Furthermore, the innovation leaders are all northern European countries and only France and Italy are included among the countries characterised by an average performance, while EU Mediterranean countries are placed together with new member states in the last positions[20]. Certainly, much more must be done to improve the process of cooperation in its multiple dimensions: scientific, administrative and financial.

[20] The Innovation Union Scoreboard 2015
The Innovation Union Scoreboard report and annexes and the indicators' database are available at: http://ec.europa.eu/growth/industry/innovation/facts-figures/scoreboards/index_en.htm

4. Cooperation between the Southern Mediterranean and the EU on Research and Innovation: State of Play, Instruments & Programmes

As of February 2014, about 580 public and private entities from the South Mediterranean participated in FP7 signed grant agreements, receiving a total EU contribution of about EUR 60 million. The distribution of the Southern Mediterranean participation (by total cost of Southern Mediterranean participants) over the different **FP7 sub-programmes** is shown below[21].

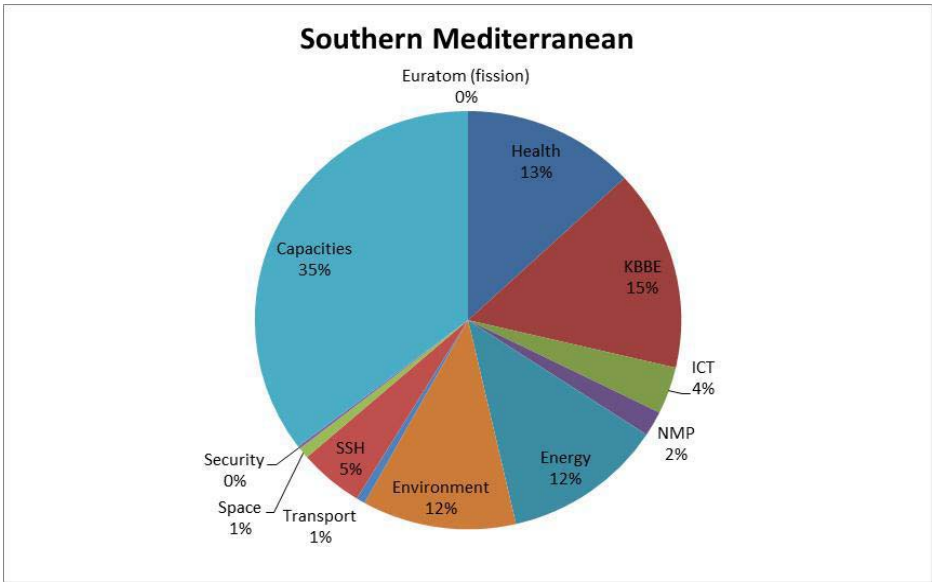

Figure 1 - Distribution of the Southern Mediterranean participation (by total cost of Southern Mediterranean participants) over the different FP7 Sub-programmes (Israel is not included in these figures as it was associated to FP7 and therefore enjoys a different status).

The majority of the participation was in the sub-programme of Capacities, including Coordination and Support Actions. Within the Collaborative Research sub-programme, 4 thematic areas stand out as the main areas of cooperation, in order of participation Food, Agriculture & Biotechnology, Health, Energy and Environment including Water. The **Competiveness and Innovation Framework Program (CIP),** currently part of **H2020,** was open to the participation of MPC along FP7 through the Entrepreneurship and Innovation Programme (EIP). Coordination and Support Actions (CSA) under FP7 served as platforms for policy dialogue and coordination, raised awareness and built the capacity of research and innovation communities in the target region (MPCs).

The MIRA (FP7 Mediterranean Research and Innovation action, 2008-2012), MEDSPRING (FP7 Mediterranean Science Research and Innovation Gateway, 2012-2016) and recently MERID through H2020 funding (Middle East Research and Innovation Dialogue, 2015–2018) represent successful examples of such projects.

[21] Brussels, 11.9.2014 SWD(2014) 276 final COMMISSION STAFF WORKING DOCUMENT Roadmaps for international cooperation, Accompanying the document REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS Report on the implementation of the strategy for international cooperation in research and innovation {COM(2014) 567 final}

The Southern Mediterranean has been targeted as a partner for cooperation in the first **Horizon 2020 work programme (2014-15)**, with topics encouraging cooperation in areas such as research infrastructures, road transport, water technologies or raw materials. Priority areas for cooperation with the Southern Mediterranean countries identified by the Euro-Mediterranean conference in research and innovation, held on 2-3 April 2012 in Barcelona and endorsed by the Euro-Mediterranean Group of Senior Officials (EU-Med GSO) will be supported through Horizon 2020 work programmes. These are namely: Water availability and management, food security and agriculture; Renewable energy and efficiency; Fighting diseases and improving wellbeing; Green, efficient and integrated transport systems; Management of marine environment and resources; Changing science in changing societies. In addition to the above, the development and/or exploitation of joint research infrastructures is of paramount importance in the Euro-Mediterranean research cooperation given the lack of high-quality and affordable research infrastructure in the region and their importance in addressing adequately most of the shared societal challenges in the broader Mediterranean region. This was addressed in work programme 2014-2015 in the Research Infrastructures programme where a topic has been included on the development of an inventory of the Research Infrastructure capabilities in the region (e.g. including the Jordanian efforts to build a synchrotron – SESAME).

The **H2020 Twinning programme** could also support the development of Research and Innovation in the Med region and its harmonization to the EU standards.

Within the **European Neighbourhood Partnership Instrument (ENPI)** for the period 2007-2013 Research Development and Innovation Programmes dedicated to the South Mediterranean countries supported bottom-up capacity building and actions, notably in Algeria (ESRS, higher education, mobility and research: EUR 38 million), Egypt (RDI: EUR 11 million for the first programme + EUR 20 million for its continuation), Jordan (SRTD: EUR 5 million for the first programme + EUR 5 million for the second programme), and Tunisia (PASRI: EUR 12 million). The ENPI was, since 2014, replaced by the **European Neighbourhood Instrument (ENI)**, which provides increased support to 16 partner countries to the East and South of the EU's borders. The ENP launched in 2003 and developed throughout 2004, was reviewed in 2011, following the 'Arab Spring' uprisings. However, given the significant developments in the Neighbourhood since 2011, it became essential to undertake a further review of the ENP. In this regard, a Joint Communication setting out the main lines of the review of the ENP has been published on 18 November 2015[22] following a public consultation, involving partner countries, international organisations, social partners, civil society and academia. The ENP review proposes revised **joint priorities for cooperation**, better suited to the challenges of our time and adapted to the regions evolutions. In addition to good governance, democracy, rule of law and human rights, three other sets of joint priorities have been identified, each of them covering a wide number of cooperation sectors: 1) economic development for stabilisation; 2) the security dimension and 3) migration and mobility. The new **European Neighbourhood Instrument (ENI) (€15.4 billion for the period 2014-2020)** is the main financial instrument for implementing the ENP. The ENI provides the bulk of EU funding to the 16 ENP partner countries. It builds on the achievements of the previous European Neighbourhood and Partnership Instrument (ENPI). In the Southern Neighbourhood region, the ENP is implemented through bilateral (tailor-made for each county), regional, neighbourhood-wide and Cross-Border cooperation programmes. These various EU cooperation programmes cover a wide range of sectors; including democratic development, rule

[22] https://www.die-gdi.de/.../the-2015-european-neighbourhood-policy-review-more-rea...

of law and good governance; state building; economic development; social protection; and migration. An **indicative allocation between €7.5 and €9.2 billion is foreseen for the Southern Neighbourhood region for 2014 – 2020 under the ENI.** The **Euro-Mediterranean Industrial Cooperation Programme**[23]**,** managed by Directorate General Enterprise in consultation with the Working Party on Euro-Mediterranean Industrial Cooperation, is an instrument created under the Barcelona Process and financed by the provisions of the Bilateral Association Agreements and the European Neighbourhood Instrument (ENI).

The **Facility for Euro-Mediterranean Investment and Partnership (FEMIP)**[24] was created in 2002 and provides funding for private sector development in the Mediterranean region aimed at sustainable economic growth. Tentatively, a capital of about 32Million Euro/year is allocated to FEMIP for technical assistance and risk capital.

Technical Assistance and Information Exchange Programme (TAIEX)[25] provides short-term technical assistance and advice on convergence with EU legislation, best practices and standards and on related administrative capacity needs, technical training and peer assistance, as well as a data base and information network that facilitates the monitoring of approximation measures. MPCs have taken up this demand-driven instrument, which is key in supporting the transition and reform processes.

The **ANIMA Investment Network**[26] is a multi-country cooperation platform for economic development in the Mediterranean. The ANIMA network gathers national and regional investment promotion agencies, international organisations, business federations, innovation clusters, financial investors and research institutes from the region. ANIMA's objective is to contribute to the continued improvement of the Mediterranean business climate, as well as encourage a shared and sustainable economic development for the region.

5. Recommendations towards a Mediterranean System of Innovation

Innovation is an issue of high importance for the development and growth of the Mediterranean region; economic growth and prosperity is one of the key drivers which can secure the strategic political stability of the Mediterranean countries, and the promotion of innovation is crucial towards achieving this aim. Developing innovation economies is even more important during a crisis and this is why virtually every country in the world is striving to remain competitive, generate added value and create sustainable jobs. In this regard, the development of an innovation capacity throughout the region becomes of vital importance to the Euro-Med region as a whole.

The development priorities include developing promising new industrial activities, encouraging entrepreneurship, attracting foreign investment in high-end business areas and ensuring appropriate infrastructure to support knowledge exchange. In response to these challenges, most MPCs are falling behind at different levels. They find it difficult to acquire sufficient critical mass for investments and installations, they lack global visibility and perform poorly when commercialising research results. Thus, public-private partnerships are difficult to establish. However, these countries still

[23] ec.europa.eu/DocsRoom/documents/13323/attachments/1/translations/en/.../native
[24] http://www.eib.org/projects/regions/med/
[25] http://ec.europa.eu/enlargement/tenders/taiex/index_en.htm
[26] http://www.animaweb.org/en/missions

have great potential and remarkable human capital. Moreover, there is a strong willingness of the Mediterranean countries to create highly innovation-oriented sectors. This is particularly evident in countries such as Morocco and Tunisia, where clear innovation policies have been issued with a certain degree of coordination and complementarity between various policy areas: SME development, science and technology, training systems and industry[27].

The creation of a Euro-Mediterranean Innovation Space (EMIS) as already suggested[28] could provide a framework for concrete actions with regard to STI collaboration between EU and the Mediterranean countries. Instead of calling for a specific policy oriented towards innovation it would be more appropriate to launch a strategy to create a Euro-Mediterranean Innovation Space (EMIS) to support several of the broad objectives, such as the harmonization of standards, facilitating the emergence of a knowledge-based economy, developing technological and productive clusters, which will ultimately help develop the innovation capacity to meet these challenges. Such a structure should be closely linked to the Union for the Mediterranean and be in line with the priorities mentioned above.

The policy framework, instruments and programmes outlined above demonstrate that a lot of consideration has been given to EU-Mediterranean cooperation and partnership since the advent of the Barcelona Process in 1995. Substantial progress has been achieved, especially regarding participation in joint initiatives and projects. However, the cooperation across the Mediterranean still suffers considerable structural weaknesses and there are remaining obstacles towards building the desired partnership. In this respect, the importance attributed to cooperation policies activated by the European Union (EU) for the enhancement of collaborative and networked forms of innovative efforts among both Members and peripheral countries is currently even greater. European policies for the development of innovation networks in the Mediterranean move toward a Mediterranean system of innovation (MSI), while there is an evident lack of a unique North African countries' policy for innovation and research.

The difficulty of establishing partnerships among asymmetrical cooperating systems, with frequently uneven capacities, requires effective coordination and harmonisation between the cooperating partners and instruments. This coordination is not only lacking between the national systems across the Mediterranean, but is also inadequate between the bi-lateral and bi-regional cooperation instruments as well as the EU instruments themselves. However, this does not preclude structural measures and institutional reforms that the MPCs have to undertake in order to modernise their STI governance and augment their absorption capacity of funds. The cooperation fields should be more demand-driven and the instruments and programmes redesigned to be more impact-oriented. The impact should be perceived by the civil societies on both shores of the Mediterranean in order to attain a sense of co-ownership and partnership. For this to happen, co-funding of joint activities by the MPCs is essential. This is indeed the will of most, if not all, MPCs expressed in several occasions from 2011 onwards. This also constitutes the basis of the PRIMA initiative, which many of the EU member states and MPCs are supporting.

[27] Salemi, P. 2007. The economic and innovation context of the Mediterranean area. Rome: CeSPI

[28] Azzioui, I. Paving the way towards the creation of a Euro-Mediterranean Innovation Space. In: Morini C. (ed.), Rodriguez Clemente R. (ed.), Arvanitis R. (ed.), Chaabouni R. (ed.). Moving forward in the Euro-Mediterranean Research and Innovation partnership. The experience of the MIRA project. Bari : CIHEAM, 2013. p. 217-228

Therefore, the transition towards a knowledge-based economy in MPCs requires:

- Establishment of Institutional Frameworks capable of swift management of the resources used for research and the efficient utilisation of knowledge and its transformation into business ideas and supporting of entrepreneurship.
- Capacity building of the academic community to create, share and use knowledge, with special emphasis on professional training and promoting Doctorate Programs in high priority areas dictated by the demands of the industrial and business sectors.
- Investment in dynamic infrastructures, including information infrastructures and systems, for the industrial and research sectors.
- Setting up national research and innovation programs to create synergies between the research and business sectors.
- Developing regional demand-driven innovation and entrepreneurship programmes that would engage the growing population of youth in the MPCs.

MPCs need to be equipped with the appropriate tools to improve their innovation capacity for competing internationally. More specifically, the encouragement and development of cooperation between Industry and Research should fall within various frameworks:

- Programmes under the Association Agreements with the EU.
- Twinning, joint projects co-financed by the European Commission.
- Programmes of the Mediterranean and Arabic area, co-funded by participating countries.
- Global partnership programmes on specific issues, such as those of ICARDA (International Centre for Agricultural Research in the Dry Areas), IWMI (International Water Management Institute), IFPRI (International Food Policy Research Institute).
- Bilateral cooperation. In particular, new South-South cooperation projects should envisage the full involvement of Industry representatives and the civil society.

Indeed, strengthening the linkages at various levels of innovation activities between European countries and the Mediterranean ones, as well as recovering appropriate infrastructural conditions, could lead to the creation of new regional and national innovation systems of organisations and firms able to participate to international competition. The Regional Innovation System (RIS) concept emphasizes the role of interaction, localisation and embedding and gives an explanation of the resurgence of regional economies as structural elements in the global competition[29]. Regions play an important role in the European Research Area's programme developed by the European Union that involves also peripheral countries, fostering the development of research infrastructures such as science and technological parks and innovation incubators in regional networks of innovation of small and medium enterprises[30]. In the context of the "smart specialisation strategies" [31] Regional Innovation Systems (RISs) have an important role to play in economic development policy. With funds from 2000–2006, the regional institutions received the opportunity to structure regional innovation programmes, build networks of various entities in the

[29] De Bruijn, P., and A. Lagendijk. 2005. "Regional innovation systems in the Lisbon strategy." European planning Studies 13 (8): 1153–72. doi:10.1080/09654310500336519.

[30] Ferrara, M., and R. Mavilia. (2014). "The effects of technopoles and science parks on regional economies in Italy." WSEAS Transactions on Business and Economics 11 (1): 537–49.

[31] ec.europa.eu/regional_policy/sources/docgener/.../smart_specialisation_en.pdf

territory and encourage public-private partnerships while during the first years of the previous decade the role of regional institutions has been further enhanced. The Regional Innovation Scoreboard[32] makes an important contribution to the description and analysis of the performance levels of European regions; with the use of a regional innovation index that takes into account several important elements of regional innovation capacity such as the amount of human resources, entrepreneurship and investments in innovation by firms, the availability of finance for innovative activities and regional expenses in research and development, it has been possible to assess the overall innovativeness of each territory. Accordingly, a Mediterranean Innovation Scoreboard could be created which has to be:

- "region-specific", in order to respond to the development model of the MPCs,
- EU-compatible, in order to be compared with Europe (and in particular the European innovation benchmark tool, namely the European Innovation Scoreboard – EIS).

Although currently the economies of the EU member states and the MPC countries are hardly comparable, it is hoped that at a later stage, as envisaged by the Euro-Mediterranean Partnership, the corresponding benchmarks could evolve in parallel.

6. Conclusions & Future Perspectives

The uprisings in the south Mediterranean since January 2011 have driven the region in the throes of major political, economic and societal transformations, the results of which are yet to be witnessed. This situation combined with the refugees' crisis and the fundamentalism issue urgently necessitate reconsidering of the EU's strategy towards its southern neighbours. Education, Research and Innovation should be at the heart of this strategy to pursue a sustainable development agenda in the MPCs, but also to capitalise on science diplomacy, which is a source of Europe's soft power. The perception of citizens regarding the benefits of science, its universal nature, and its detachment from ideological, socio-political or religious conflicts, empowers its role as a valuable cooperation strategy.

On the other hand, the MPCs still make much smaller R&D investments in new technologies, preferring to spend the money on services and creative business models. The MPC countries should design a clear Innovation Strategy and modernize their Innovation System through aligning it with real needs at the local, national and Mediterranean levels. This would be reached by mapping existing capabilities, drawing up an appropriate innovation strategy and legal framework, selecting and implementing funding mechanisms and innovation programmes that foster R&D activities, strengthening intra- and inter-Mediterranean collaboration through tighter agreements with Europe, and new programmes for facilitating collaboration.

Considering the fact that youth comprises about half of the population in the Southern Mediterranean, empowering youth provides a unique opportunity to constructively build the region's future. Specific actions directed to building the capacity of youth should be an integral part of any EU strategy for the South-Mediterranean, not only to limit illegal migration, but more importantly to encourage the value-added of brain circulation and avoid those young individuals falling victims to extremist ideologies.

More specifically:

- Amendments to practical issues such as administrative burden, bureaucracy, obstacles to mobility should be made to pave the way for a Euro-

[32] http://ec.europa.eu/growth/industry/innovation/facts-figures/regional_en

Mediterranean research and innovation community capable of competing and integrating itself at a global level,

- In order to face the current major challenges, linking Research to Innovation (link to the problems and challenges of the industry in MPCs, impact- & demand-driven cooperation addressing MPCs' societies) is indispensable; networks and links at various levels among the actors of a Mediterranean Innovation System at a regional, cross-border level should be developed in the Mediterranean area. The Mediterranean Sea Basin Programme, developed by the EU within the framework of the ENPI could serve as the infrastructural basis,
- Joint research and innovation projects within the Euro-Mediterranean region should be linked to global networks. Again the Mediterranean Sea Basin Programme along with other programmes of the EU, such as Twinning, TAIEX and Erasmus Mundus could provide the means. EU strategies, instruments and programmes should be co-ordinated accordingly,
- There is the need to develop a trans-national institution, able to ensure a framework for regional programming through which all the actors involved (policy makers, business, researchers, financers) can cooperate. Defining a common vision and a common agenda building on "Cairo Declaration" are imperative to achieve a Regional Innovation System and it is important to involve all the actors from the beginning. Hints in this sense can be taken by what has been done within the ENPI regarding water management in the Mediterranean or the Mediterranean solar plan (https://www.plansolairemediterraneen.org/) provide a model towards this direction,
- Finally, an important action like the PRIMA initiative, utilizing article 185 of the TFEU, should not be based on a mono-thematic research cooperation scheme but it should rather develop joint initiatives accounting on a well balanced integration of different themes (e.g. food systems, water in its larger sense). PRIMA is the result of a lengthy and vigorous process of high-level policy dialogue and hard work, in which the MPCs developed a sense of co-ownership and co-decision making. With today's constrained public budgets, innovative approaches able to make best use of the policies and funds available are crucial and should be supported by the EU; PRIMA can be the first critical step for the creation of a sustainable EU-MPC Innovation Space to the benefit of both players.

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