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The Research Driven Cluster Initiative - Challenges and opportunities for cluster approaches in the Mediterranean

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Abstract. There is a huge potential for transnational cluster initiatives in the Mediterranean Countries. In the frame of the networking project MIRA, the activities for the promotion and the development of a "Research Driven Cluster Initiative (RDCI) on Water and Waste Water Management in the Mediterranean" are considered as an appropriate approach to tackle the cross-border problems of integrated water management and water pollution in the Mediterranean macro-region. Taking into account the conditions and possibilities of the MIRA project, the efforts of the cluster development approach were focussed rather on the promotion of a cluster initiative and not so much on the establishment of clusters. This was done by introducing the relevance of a clustering approach, by analysing initial competencies and clusters, and by building a leadership group. This initiative is being carried out in the frame of the EMIS (Euro-Mediterranean Innovation Space) activities. Different events such as Innovation Forums and a Cluster Mission were organised which are described in the following text.

Keywords. Cluster – Innovation – Research – Water management – Waste water treatment.

Initiative de cluster poussée par la recherche – Défis et opportunités pour les approches cluster en Méditerranée

Résumé. Le potentiel pour les initiatives cluster dans les pays méditerranéens est immense. Dans le cadre du projet de réseau MIRA, des activités pour la promotion et le développement d'une « Initiative de cluster poussée par la recherche sur la gestion des eaux et des eaux usées en Méditerranée » sont considérées comme une approche appropriée pour aborder les problèmes transfrontaliers de gestion intégrée des ressources en eau et de pollution des ressources en eau dans la macro-région méditerranéenne. En considérant les conditions et possibilités du projet MIRA, les efforts du développement de cluster étaient plutôt concentrés sur la promotion d'une initiative cluster, et non pas sur l'établissement des clusters. Cela se fait en introduisant la pertinence d'une approche de regroupement en cluster, en analysant les compétences initiales et les clusters, et en créant un groupe de direction. Cette initiative est réalisée dans le cadre des activités « EMIS » (Espace Euro-Méditerranéen de l'Innovation). On a organisé différents événements comme des Forums de l'Innovation et une Mission de Cluster, décrits dans le texte suivant.

Mots-clés. Cluster – Innovation – Recherche – Gestion des eaux – Traitement des eaux usées.

I – Background

International cluster cooperation offers opportunities to scale up research and technological potential, enhance competitiveness and support the regional development. These cooperation approaches often fail due to constraints on resources, capabilities, instruments and funding. In this respect we often see a mismatch between aspiration and capabilities.

On the other hand, about 2,000 clusters only in the European Union covering all sectors, as well as corresponding clusters, networks and technopoles in the southern Mediterranean countries form a huge potential for transnational clustering. Having said that, we are fully aware of the different nature and development stages of clusters, technopoles and other cluster-like networks

in the Euro-Mediterranean Innovation Space (EMIS). Nevertheless we see these differences not as a hindrance but as an incentive for a targeted cluster activity.

Empirical evaluations prove that clusters are able to develop competitiveness, enhance innovation and contribute to productivity and job creation. Thus clusters and cluster initiatives gained importance in economic activities as well as in innovation and research policies within the last 20 years, while the concept of Michael E. Porter outlined in "The Competitive Advantage of Nations" marked an important milestone in the debate (Porter, 1990). As an "eclectic" concept it picks up various aspects from economics, economic geography, political sciences and system theory. National as well as regional governments and the EU used the cluster approach to further develop their policies mainly in the fields of innovation, research and structural policy.

The EU's framework for state aid defines innovative clusters as follows: "Innovation clusters mean groupings of independent undertakings – innovative start-ups, small, medium and large undertakings as well as research organizations – operating in a particular sector and region and designed to stimulate innovative activity by promoting intensive interactions, sharing of facilities and exchange of knowledge and expertise and by contributing effectively to technology transfer, networking and information dissemination among the undertakings in the cluster"¹.

The European Cluster Memorandum defines clusters as regional concentrations of specialised companies and institutions linked through multiple linkages and spill-overs, which provide an environment conducive to innovation².

Notably France, the United Kingdom, Germany, the Netherlands and Sweden inaugurated cluster policies as an instrument to their portfolio of policies. The new EU-Member States integrated cluster policies and instruments right from the beginning in their policy portfolio from 2004 on. Recently, also Mediterranean Partner Countries like Egypt, Tunisia, Jordan and Morocco use elements of the cluster concept for some of their research and innovation policies, and support the management of cluster initiatives (for example the technopole approach in Tunisia³).

The territorial coverage of clusters crosses administrative regional or national boundaries (for example in the fields of environmental pollution or biotechnology). In this respect international cluster initiatives like Medicon Valley⁴ (Sweden/Denmark) prove that these initiatives are able to operate across national boundaries. Having stated this, we argue that cluster and cluster initiatives operate successfully if they are demand/challenge-driven and restrict the political influence to building the framework conditions.

The promotion and development of the Research Driven Cluster Initiative on Water and Waste Water Management in the Mediterranean is an appropriate approach to tackle the transnational problems of integrated water management and water pollution in the Mediterranean macro-region. This Cluster Initiative shall be perceived as one instrument in a portfolio of various approaches for the convergence of strategies of water management and de-pollution of the Mediterranean.

II – Aim

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). In the frame of EMIS-activities, different events were organised which are described in the following chapters. In core activities, we try 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, either

related to challenges from the globalisation of markets, technological change or the evolution of normative frames in the European context” (European Commission, 2007). In the particular case of the Mediterranean Countries, the presence of the regional and national authorities is of particular relevance due to their social and economic structure and to the need to transfer to the legislative bodies the recommendations emanating from the internal debate within the RDCI.

As a first attempt to test the feasibility of this instrument in the Mediterranean context, we chose a field where a common Mediterranean-wide political, social and economic concern exists, and there are enough intellectual resources and entrepreneurial activities. Two of such fields with common problems and actors on the transnational scale in the Mediterranean region are integrated water management and waste water management.

The main aim of the EMIS-initiative is not to create a cluster as an initial expected result, but to put together and combine expertise and talents across the Mediterranean region and bundle knowledge, which is only partly available or dispersed. Through our efforts a critical mass of knowledge shall be pooled.

III – Definition and Structure

We perceive the transnational Research Driven Cluster Initiative (RDCI) as an organised international effort to increase the growth and competitiveness of cluster or network structures within a macro-region (European Union – Southern Mediterranean Countries) involving the research community, clusters, industry and government/administration in adaptation to the Cluster Initiative Greenbook (Sölvell *et al.*, 2003).

The Research Driven Cluster Initiative should be structured as an umbrella organization, which integrates the existing and developing clusters and cluster initiatives, as well as projects and networks. By this, RDCI will contribute to the better co-ordination of single national and regional clusters and cluster initiatives in the Mediterranean.

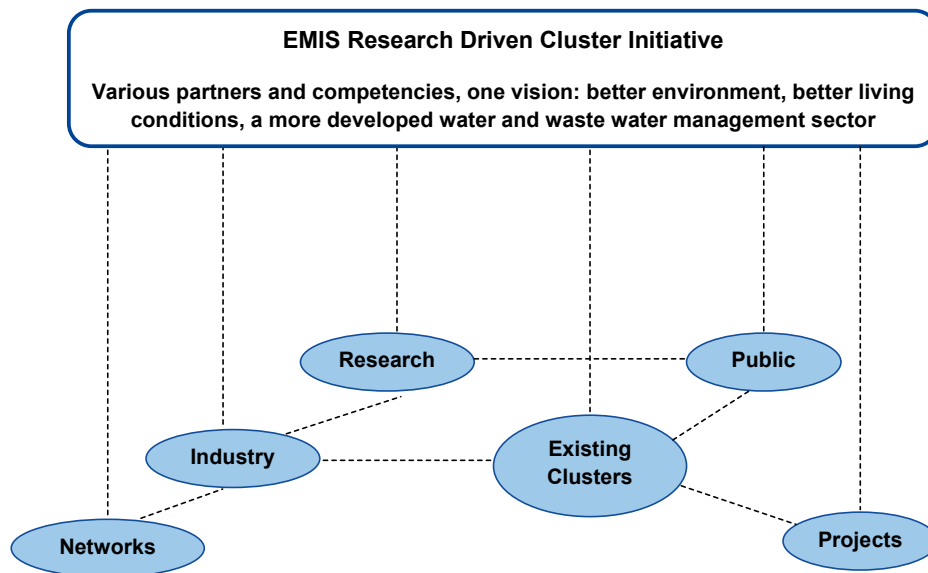


Figure 1. Possible Set-up of the Research Driven Cluster Initiative on Water and Waste Water Management in the Mediterranean.

Source and design by Roman Noetzel, 2012.

Due to the fact that we are applying a macro-regional cluster initiative approach, the cluster initiative should involve actors from existing clusters, industries, universities, technology transfer agencies and administrations across the Mediterranean region.

IV – First steps in the cluster development approach

The strategic steps foreseen in the frame of the MIRA Project (Mediterranean Innovation and Research Coordination Action) and necessary for the cluster development are described in Table 1.

Table 1. Strategic steps required for the cluster development approach.

Task	Activity related to the cluster development approach
Identification of innovation stakeholders	Initial competencies/cluster analysis
EMIS (Euro-Mediterranean Innovation Space) 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 initiative⁵ by:

- introducing the relevance of a clustering approach,
- analysing initial competencies and clusters,
- building the leadership group.

With regard to the potential activities of the Research Driven Cluster Initiative (RDCI) on Water and Waste Water Management in the Mediterranean, the first EMIS Forum was dedicated to validating the aim and structure and identifying appropriate approaches.

1. First Forum on the Euro-Mediterranean Innovation Space

This initiative was launched by MIRA with the support of the key stakeholders interested in the EU-Mediterranean Innovation policy cooperation. In this sense, the institutional partners of MIRA, such as the General Directorates of Research of the Mediterranean Partner Countries and the Ministries of Industry of these countries, were involved. Notably the European Investment Bank, FEMIP (Facility for Euro-Mediterranean Investment and Partnership) and the ANIMA Network, together with the services of the European Commission's Directorates General "Research and Innovation" and "Enterprise" contributed to identify possible key topics and lectures and any other issues. Special contributions from the Waste Water Cluster and the Regions of Knowledge Cluster, and their participation in the event, were very useful.

The EMIS Forum was organised by the MIRA project in partnership with R&D Maroc in the frame of the Conference MED INNOVA 2011 («Salon de l'innovation, de la recherche et du partenariat technologique») and was held on 1-2 December, 2011 in Casablanca/Morocco. MED INNOVA 2011 got the support of three Moroccan ministries (Industry, Higher Education & Research, and Economic Affairs). It was held under the patronage of His Majesty King Mohamed VI. MED INNOVA 2011 comprised exposition stands, B-to-B partnership spaces along with a conference programme.

The EMIS Forum was organised as a dialogue platform focussing on the Euro-Mediterranean Innovation Space. It was mainly dedicated to laying the basis for activities to promote Research Driven Clusters (such as cluster missions) by:

- raising awareness about clustering, supporting actively the initiation of a research driven cluster initiative;
- articulating common Mediterranean Partner Countries' RDI needs and solutions, notably the promotion of Research Driven Clusters (RDC);
- linking initiatives, creating new alliances;
- providing a nucleus for new cooperation and projects in the framework of the EU-Framework Programme, the CIP-Programme, instruments such as ENPI and EIB-FEMIP, etc.);
- enhancing the innovation capacity of involved stakeholders through the Forum as an established innovation dialogue platform;
- establishing a common ground for further activities (in view of social capital); and
- providing recommendations for the European Commission and the Monitoring Committee.

Bringing together experts from the North and the South of the Mediterranean, this Forum was the first of its kind addressing issues such as: (1) De-contamination of the Mediterranean - industrial waste water, (2) Integrated Water Management and Waste Water - sustainable technologies, (3) Innovation in Water and Waste Water Management in the Mediterranean, and (4) Enhancement of research results and technology transfer.

Presentations on policy tools, funding opportunities and international, national and regional initiatives followed interactive sessions serving as catalysts for collaboration opportunities. The attendance and active participation of numerous project representatives provided a good opportunity for networking and achieving the first results.

2. Follow-up Cluster Mission

As a follow-up of the EMIS Forum on water technology and water management, a Cluster Mission of experts from the Mediterranean Partner Countries to Germany was initiated. The aim of this Cluster Mission was to support the initiation of transnational cluster and network co-operation in the field of water management, including waste water. The Mission brought researchers, representatives from different relevant industries as well as local authorities together to foster trans-national and bi-regional cooperation in the field of water technology and water management. The Mission gave the participants the opportunity to establish and deepen connections and to build up the basis for future cooperation. In this respect, the Cluster Mission meets the aim of the Research Driven Cluster Initiative (RDCI) and could serve as a pattern for future activities of this kind in various topics.

The overall objective of the Cluster Missions in general and of the Cluster Mission on water in particular, was:

- to identify interested clusters, networks, initiatives,
- to make an innovation analysis for the identification of common processes, protocols and needs for capacity building; and
- to initiate a “cluster matching event”.

It should bring together:

- cluster strengths and weaknesses,
- cluster offers and requests and
- ideas for collaboration at project level.

The following flow chart exemplifies the process in a simplified way:⁶

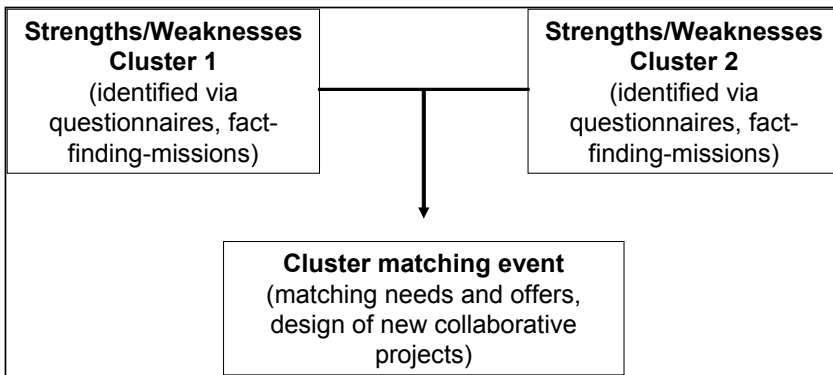


Figure 2. Methodology of the Cluster Mission.

Source and design by Roman Noetzel, 2012.

As a result, a pooling of resources was realised and a critical mass of RDI competencies was attained. The Cluster Mission could serve as a tool to initiate trans-national and bi-regional Research Driven Clusters between partners from Europe and Southern Mediterranean Countries.

In the particular case of the Southern Mediterranean Countries, the active participation of the regional and national authorities is of particular relevance to ensure good innovation system

governance. Moreover, translating the recommendations coming from the dialogue within the RDCI into legislative protocols, as well as supporting the change of technologies and the harmonization of legislations in both European and Southern Mediterranean contexts are of special importance.

Networking and knowledge exchange will be complemented by capacity building and training activities, as well as by demonstrations on the development and use of innovative water technologies in the following sectors:

- water use efficiency
- agricultural water productivity, and
- reuse of non-conventional water resources.

This is also in line with the outcomes of the Casablanca Water Group Meeting and regional research priorities identified in the MIRA Thematic Workshops for Environment and Agriculture/Food/Biotechnology (KBBE).

The capacity building and training activities include a 3/4-day training for trainers organised on specific needs and gaps of the Southern Mediterranean Countries, identified in the cluster mission. The training will focus on water technology development, applications, results and prospects. The maximum number of trainees is 15 participants.

The overall objective of the training is the aggregation of trans-national clusters and network co-operation in the field of water management (including waste water reuse), as a follow up of the EMIS Forum in Casablanca.

The key learning outcomes are:

- informed trainees on innovative water and waste water technologies, and
- differentiation between conventional and alternative water management technologies and approaches, including water demand management, sewerage, waste water treatment.
- exchange of experiences in treated waste water and agricultural water management in the Mediterranean basin.

Having accomplished the training activities, a counselling based on specific demands in the Mediterranean Countries will be realised as a follow up. This could encompass smaller on-site coaching or even bilateral meetings.

V – Outlook

Innovation Forums and Cluster Missions were a preliminary approach to initiate transnational Research Driven Clusters with European and Southern Mediterranean countries. Establishing a functioning cluster can take up to 15 years, based on the experiences of a national cluster building process. Transnational clusters have additionally overcome the challenges faced by international cooperation, like different innovation systems and different cluster approaches.

Hence, the actions taken within the MIRA project can only be the first step and can in the best case lead to embryonic clusters. For the next steps it is important to keep the momentum of these approaches. The cluster building process could be supported by strengthening the cooperation between the potential members of clusters. This could be implemented through joint R&D projects, networking events and capacity building activities. It is essential that all existing platforms for RDI join their forces to raise awareness to transnational cluster building and support the establishment of the RDCI.

Having gained experience in the cluster approach in the water and waste water management sector, the implementation concept was further developed and adapted to the needs of the renewable energy sector (see the following chapter).

Notes

- ¹ See Community Framework for State Aid for Research and Development and Innovation (2006/C 323/01) of 30.12.2006.
- ² The High Level Advisory Group on Clusters: European Cluster Memorandum, p. 1.
- ³ See <http://www.getit-tunisia.com/parcs-technologiques.php>
- ⁴ See <http://www.mediconvalley.com>
- ⁵ Stages of cluster development adapted from <http://www.clusternavigators.com>
- ⁶ A similar approach was applied to the automotive and metal industry within the cluster part of the b2fair activities. For further information see <http://www.b2fair.com/>

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