

FINAL PUBLISHABLE SUMMARY



Grant Agreement number: 609550

Project acronym: FP4BATIW

Project title: Fostering partnerships for the implementation of best available technologies for water treatment & management in the Mediterranean

Funding Scheme: Coordination and Support action

Period covered: M1-M36, from 01/10/2013 to 30/09/2016

Name of the scientific representative of the project's co-ordinator, Manuel Valiente Malmagro

Title and Organisation: Professor. Universitat Autònoma de Barcelona (UAB), 08193. Cerdanyola del Valles (Barcelona) – Spain.

Tel: +34 93 581 29 03

Fax: + 34 93 581 19 85

E-mail: manuel.valiente@uab.cat

Project website address: www.fp4batiw.eu

EXECUTIVE SUMMARY

Perhaps, nowhere else in the world, does international cooperation play such an important role in conflict resolution as in the Mediterranean Partner Countries (MPC), a region located in a climatic zone with high intra-and interannual variations in precipitation and ranked among the most threatened region by the consequences of global warming. International cooperation, also carries enormous potential benefits for environmental protection. Particularly, in a region with common problems, where deficient management of such scarce water resources, threatened by pollution of increasing concern from various sources, are subject to intense human pressures.

Within this context, and in response to these challenges, FP4BATIW project, through a community of stakeholders that represent the complete value chain of water, aims to create a framework for better market uptake of research results, greater cooperation among research and innovation actors across EU and Mediterranean Partner Countries (MPC), and the establishment of a permanent platform for educating and training specialists in water management. From 1st of October 2013 till 30th of September 2016, through a coordinated research, cluster and innovation activities, designed to be in line with several EU objectives, policies, strategies and directives, FP4BATIW contributed to improve the availability of water resources from a systemic and cross-sectorial perspective. The project has also contributed to reduce uncertainties, identify and assess vulnerabilities, risks, costs and opportunities, as well as expand the range and improve the effectiveness of societal and policy responses and solutions. Actions involved in FP4BATIW also empower other actors of the water treatment technologies Knowledge Value Chain (KVC) to actively participate in this process. The innovative technologies to be considered within FP4BATIW provide opportunities for growth and jobs, as well as innovative options involving science, technology, the economy, policy and governance. FP4BATIW developed a series of remarkable activities that become the main outcomes of the project, which are summarized below:

- SWOT and SOR analysis of the region paving the ground for a Joint Action Plan and Road Map, identifying challenges, barriers, bottlenecks, axes of intervention, trends and required developments in the region, together with a series of recommendations to support EU-MPC policy dialogue.
- 72 Clustering activities with other ongoing initiatives in the region leading to joint policy recommendations to the EU and build up the R2i Alliance
- 5 MOU signed with initiatives in the EU and MPC region to extend their cooperation beyond FP4BATIW in the fields of their interest and in particular: the value of water and water-smart society.
- To avoid “brain drain” and support a balanced “brain circulation” within MPC countries through the involvement of diaspora associations (e.g. ACETEF, ATUGE, FIPA and TCAO) as well as talented individuals or skilled workers in WATER KIC sessions to transfer their experiences concerning the creation of innovative businesses.
- 4 Research to business to research missions to demonstrate technologies with a high replication potential in the regions of Italy, Tunis and Spain involving public and private sectors for a total of 30 individuals (14 MPC to EU, 16 EU to MED)
- 7 continuous ongoing technical assistances to MPC industries facing water treatment challenges within their production lines (6 in TN and 1 in JO)
- 10 project ideas. 5 business ideas assisted, three finally selected and presented to investors at the final conference through the FP4BATIW prize.
- 5 training events addressing i) Technologies valorization and management systems, ii) Science to Marketing & Business Plan iii) Risk capital, business model generation and elevator pitch and iv) Technology forecasting and technology management) (99 participants).
- 4 international workshops (545 attendants) with the corresponding brokerage events in JO, TN and ES. A total of 210 attendants to the brokerage events with a resulting number of 540 interviews.
- A market technology platform available to make the supply and demand of knowledge and technology for researchers and companies in the EU/MPC, and to promote the transfer of technology and knowledge to the economic, industrial and social sector. A legacy transferred to EIP on Water.

As a result a positive impact was generated in terms of i) increasing the potential of STI cooperation between MS and/or AC and MPC countries under the Horizon 2020 and to contribute to the definition of bi-regional programmes on innovation, ii) fostering mutually beneficial public-private-partnerships between MS and/or AC and MPC countries through the market uptake of research results, and iii) contributing to the achievement of a Common Knowledge and Innovation space between the EU and MPC countries through enhancing cooperation between research and innovation actors on both sides.

BACKGROUND, CONTEXT AND OBJECTIVES

Mediterranean Partner Countries (MPC) are located in a climatic zone with high intra- and interannual variations in precipitation and ranked among the most threatened region by the consequences of global warming. A deficient management of such scarce water resources, threatened by pollution of increasing concern from various sources, contributes to deteriorate the situation. Reducing water resource use and environmental impacts, whilst increasing competitiveness for more efficient treatment technologies, require a decisive societal and technological transition to an economy based on a sustainable relationship between nature and human well-being. Water scarcity on the Mediterranean Partners Countries often results in a non-equitable access to resources, sanitation problems (a substantial number of inhabitants do not have adequate access to clean water and sanitation, particularly in the rural areas) and consequent conflicts among the users.

There are several challenges concerning water availability that need to be addressed such as i) Proper identification of, water shortages, new technologies for desalination, reuse of waste, water flows and transfers of water between areas ii) Characterization of gaps in regulations in the sectors of water and its treatment iii) Establishing good practices in decentralization of the management of water and recycling, involving the private sector iv) Peoples' right to access to water in terms of quantity and quality v) Lack of appropriate expertise in the water management and treatment vi) Ensuring water management for all ecosystem functions and food security vii) Political willingness is needed to ensure a multi-sector and multi-scale approach viii) Strengthening societal and water users empowerment, improving dialogue as well as mutual trust among institutions, researchers and society ix) Building a regional co-ownership on water resources management, from challenges identification to financial and implementation synergies.

Thereby, a community of stakeholders that represent the complete value chain of water, established a partnership to deal with such problems as well as to provide some solutions to existing needs. Through a coordinated research, cluster and innovation activities, designed to be in line with several EU objectives, policies, strategies and directives, FP4BATIW contributes to **improve the availability of water resources from a systemic and cross-sectorial perspective**, reducing uncertainties, identify and assess vulnerabilities, risks, costs and opportunities, as well as expand the range and improve the effectiveness of societal and policy responses and solutions. Actions involved in FP4BATIW also **empower other actors of the water treatment technologies Knowledge Value Chain (KVC) to actively participate in this process**. The innovative technologies to be considered within FP4BATIW provide **opportunities for growth and jobs**, as well as innovative options involving science, technology, the economy, policy and governance. The involved activities within FP4BATIW reinforce the ability of society to become more resilient to environmental and climate change, ensure the availability of water as a raw material and **strengthen the chain of research and innovation in order to accelerate the market uptake of water technologies**.



It is noteworthy to mention the existence of a pair of key players such as the **European Partnership Initiative on water (EIP on Water)** and the **EU Water Initiative (EUWI)**, which have to be considered before engaging and promoting any cluster and coordination action with regard to the creation of a Common Knowledge and Innovation Space related technologies for water treatment. The **European Innovation Partnership (EIP) on water** is the result of the proposition of the Europe 2020 flagship initiative for an Innovation Union launching to create entities able to join up all actors and resources

around the water target to speed up breakthrough innovations to solve specific societal challenges where there is also a large market potential for EU business. **The European Water Initiative**, as an international political initiative, not a financial mechanism, takes a partnership approach with national governments, donors, the water industry, NGOs and other stakeholders. Through national policy dialogues, it aims to improve coordination & cooperation and deliver more effective development assistance, facilitate better coordination of water programmes and projects, targeting more effective use of existing funds and mobilization of new financial resources and enhance cooperation for project proper implementation, based on peer review and strategic assessment.

In light of this policy context, FP4BATIW activities were designed to coordinate and mutually reinforce not only water treatment technologies S&T but also cooperation in terms of innovation and entrepreneurship promotion at bi-regional and multilateral level, such as recommended by the European Commission. Given these points, during the framework of the project, several links with different actors of EIP Water, EU Water Initiative and the Water Supply and Sanitation Technology Platform, the Informal Group of Liaisons Offices Network, the Euro Mediterranean Innovation Space, the Global Water Partnership – Mediterranean as well as ongoing initiatives e.g. MED-SPRING, ERANETMED, Water JPI, PRIMA Initiative have been established for a close and long-lasting cooperation to push forward the MPC and facilitate their engagement in the EU Water Technology Platform as well as the European Innovation Partnership on water.

FP4BATIW AIMS

The main objective of the FP4BATIW project focused on fostering partnerships and networking for best available water treatment technologies implementation in the MPC region by promoting the interaction between highly qualified members, both from EU and MPC, of the water treatment KVC and corresponding stakeholders' community (national water agencies, municipalities, industrial waste water producers, entities managing business incubators, etc.). In the long run, **FP4BATIW contributes R&I as a critical resource for efficient water technologies supply addressing 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. To reach such aim, several specific objectives, detailed below, were defined under different components of action.

IDENTIFICATION, ASSESSMENT, FOSTER INTERACTION

- To identify existing economic potentials and opportunities as well as bottlenecks and needs through an action plan that will let to properly interact with local and international stakeholders and revert in knowledge transfer between public research and industry to finally contribute to solve the socioeconomic needs concerning the sustainable use of water.
- Gain first-hand knowledge of the state-of-the-art in specific areas of solid waste and water treatment technologies research that are of interest to both the EU and MPC as a basis for joint research and to establish a research agenda based on the pre-selected scientific topics of interest.
- To promote mutual learning by encouraging exchange of best practices through twinning, training activities, exchange of staff and possible mobility schemes, specially supporting for young innovative companies to set-up technological partnerships.
- To strengthen existing and to establish new collaborations between involved complementary members of the water treatment KVC building interdisciplinary partnerships as a prerequisite for formation of a research-driven cluster to enhance innovation in the management of limited water resources.
- To foster the collaboration EU - MPC based on equal participation/co-ownership and involving different stakeholders to enable knowledge share and efficient transfer of mechanism for the use of research results at regional level, common monitoring/observatory mechanisms, technology share, water strategies/policies alignment

D1.1-1.3; D2.1-2.3, D4.2

POLICY DIALOGUE

- To link MPC'S water treatment strategies and policies with the EU Water Framework Directive to improve quality of mutual EU-MPC cooperation and competitiveness in the water sector.
- To create operational synergies with political and multi-stakeholder processes on water in the region to reach out policy makers, a range of regional and national players as well as other related initiatives, processes and programmes that provide support to policy making.
- To integrate research in local and regional clusters including all the relevant actors of the water treatment technologies KVC, from stakeholders to final users to successfully uptake research results and implement water policies.
- To support the setting up of the sustainable multi-stakeholder bilateral interregional EU-MPC and multilateral intra-regional dialogue, involving policy makers, the science community, the private sector (with emphasis on SME's) and the civil society. To facilitate the engagement of MPCs in the EU Water Technology Platform (i.e. Water Supply and sanitation Technology Platform) as well as the European Innovation Partnership on Water.

D1.2; D1.3; D2.3; D4.1; D4.2; D4.4; D5.4

CAPACITY BUILDING

- To strengthen and enlarge existing MPC human resources and their capabilities and competences for the implementation of water and wastewater management and regulations as a basis for innovation and adaptation to water risks.
- To promote hiring of experienced researchers, invite talented expatriates or skilled workers in the diaspora and retain the best research professionals at MPC ("brain gain") to reinforce the human potential of MPC and enhance competitive and innovative research in relevant water sectors.
- To provide researchers with innovation support services (technical assistance on e.g. market and risk assessment, access to risk capital, Intellectual Property Rights issues, business plan, compliance with standards, innovation management skills) and facilitate them to engage international partnerships to foster both research and service activities that will increase MPCs resources to make sustainable such activities.
- To implement and maintain sustainable best available water treatment technologies to contribute to reduce the pressure on MPC water resources in addition to the insufficient water saving measures proposed by the governments.

D2.1; D2.3; D3.1-3.4; D4.1; D4.2

FP4BATIW OUTPUTS

- To strengthen the multi-stakeholders and multidisciplinary nexus (water-energy-food) approaches, tools and innovation, integrating sustainability aspects and allowing the collaboration between experienced and new teams for coaching and capacity building in cooperation. Such fostering activities were addressed for greater accountability and trust in decision-making within the water value chain contributing to reduce the gap between research & innovation and the water treatment market enhancing synergies and allowing the concentration of efforts, know-how exchange, co-ownership and dialogue. Moreover, the activities carried out so far contribute to secure long term resilience, stability, sustainability and security of the MPC society with regard to water enabling synergies across sectors. **Further information available within D1.3**
- To support bilateral and cross-regional agenda for collaboration for research, development and innovation specifically in the water treatment sector in the MPC region as a result of the generated Joint Action Plan (JAP) which was built based on the analysis and strategy development from the activities carried out during the Assessment of the knowledge value chain (WP01) together with the continuous feedback gathered during the activities developed under Improvement of competences (WP02) Supporting Knowledge Value Chain (WP03) and Promoting Knowledge Value Chain and networking (WP04). The JAP provided a series of recommendations to better define the scope of future research themes, types of collaboration envisaged, timing of the projects within the framework of water value chain. This was possible due to information gathered so far during the SWOT and SOR analysis, the identification of challenges, barriers, bottlenecks, axes of intervention, trends and required developments in the region. The activities carried out by the project let to pave the ground for a continuous interaction with other ongoing initiatives in the international scenario such as MEDSPRING, 5TOI_4EWAS and future PRIMA initiative. Through this interaction it has been possible to provide additional links between research, technology enterprising and water users to enhance competitive research in water use efficiency, drought and flood management, non-conventional water use, water conservation. **Further information available within D1.1, D1.2.**
- Extensive networking carried out to foster relationships and expand the framework of international collaboration among all actors of the water knowledge value chain as a result of the organized workshops, brokerage events and clustering activities. Cluster and cooperation activities with ongoing INCO-NET, ERA-WIDE, BILAT and R2I projects let to enlarge the innovation ecosystem, improving the knowledge base and awareness on the value of water at all levels, including regional level contacting policy and funding agencies in MPC to identify the required coordinated policy measures to address the structural weaknesses in the MPC region. The continuous interaction between R2i projects let to build up the R2i Alliance. **Further information available within D1.3, D4.1, D4.4, D4.6, D4.8.**
- Improved the skills of researchers in EU and MPC to stimulate more young people to embark on a research or entrepreneur career thanks to the training activities. The project provided entrepreneurial training and coaching on innovation management skills, innovation support services for optimal management of intellectual property rights, technical assistance on water treatment and management market, business model generation and innovation support services in terms of access to risk capital. Involved individuals gathered a series of skills to allow them a continuous technology surveillance, technology foresight, creativity, analysis, internal/external identification, analysis of problems and opportunities, selection of ideas, efficient control of the projects portfolio, enhancement of their own technologies as well as protection and better exploitation of the research results and find the best option for sale, license or commercialization agreements of the developed technologies. In overall, the project contributed to increase MPC human resources competitiveness through technical, scientific and management training and an intensive exchange of know-how to implement innovative water treatment technologies as tools for a sustainable water consumption and treatment in the related industries. Such trainings were designed to introduce new economic models based on the “true” value of water with the aim to increase rational use and re-use and valorizing the value of water meaning extracting and exploiting relevant resources, such as nutrients, minerals, metals but also energy that is embedded in used water streams. **Further information available within D3.1-3.4**
- To promote the employment of sustainable, effective and efficient water treatment technologies through pilot plant demonstrations and real case studies achieved under former or ongoing EU-FP7 projects with MPC participation to

substantiate pre-competitive research in the water sector in the region, with particular regard to develop innovative business models (BMs) focused on generating water saving and multi-use solutions. Such promotion was supported through the successful implementation of the designed R2B2R mobility schemes that let to increase interaction among researchers, industry and entrepreneurs. As a result of all the organized missions, it was possible to generate a guide on learned practices to efficiently implement twinning activities for incremental innovation and technology adaptation between EU-MPC stakeholders. These missions become a suitable tool to shorten the gap between research and the market when combined with local technical assistance undertaken by leading researchers in the region. **Further information available within D2.1, D2.3 and D4.5.**

- Accelerated progress in key areas of some established and already ongoing water treatment S&T cooperation agreements with MPC countries. In this sense, a Market Technology Platform has been developed as an on-line platform to make the supply and demand of knowledge and technology for researchers and companies in the EU/MPC, and to promote agreements of collaborations between researchers and companies in the area. The platform strengthened the ties between research and business and allowed researchers to start interaction with the private sector to commercialize their technologies as well as to allow the business demanding technological solutions to specific problems on water treatment sector. As a legacy, the developed platform has been transferred to EiP on Water and will keep promoting the transfer of open research on emerging technologies and knowledge to foster effective and efficient market introduction of relevant solutions for the water and water dependent economic sectors in EU and MPC. **Further information available within D4.2, D4.3 and D4.5**
- To explore options for future research collaboration, enabling exchange of techniques, knowledge and materials by bringing all the relevant stakeholders of the water value chain together and connect resources, skills and people from across both regions. The actions carried out so far by the project on this regard paved the ground for the implementation of a Knowledge Innovation Community dealing with water sector in the MPC region (WATER KIC). The organized sessions of the WATER KIC helped to develop formal and informal partnerships between innovators and industry, entrepreneurs and enables, research and commerce. The established WATER KIC involved participants and delegations coming from water and wastewater utilities/water supply companies, water Ministries and Authorities, environmental agencies and Ministries, utility operators, private sector companies involving in Chemical, Textile, Agribusiness Metallurgical Industry, Scientific Equipment, consultants and educational institutions across both regions. Such community provides a seamless series of services for every stage of the innovation process within future technologies, products or services to be implemented in the EU and MPC region related to water treatment. This community contributes to turn prototypes into commercial products or transform feasible ideas into viable solutions through the cooperation of appropriate skills and resources provided by members of the community. **Further information available within D4.5**
- To avoid “brain drain” and support a balanced “brain circulation” within MPC countries through the involvement in project’s activities of diaspora associations (e.g. ACETEF, ATUGE, FIPA and TCAO) as well as talented individuals or skilled workers in the diaspora. WATER KIC sessions become the suitable tool that contributed to let such diaspora individuals to transfer their experiences concerning the creation of innovative businesses. Such involvement let to develop strong interactions between researchers, industry and stakeholders (promoting their participation in the project workshops) to deliver close-to-market solutions suitable to exploitation. Moreover, diaspora individuals contributed to enhance competitive and innovative research in relevant water sectors (water use efficiency-productivity, system performance, non-conventional water, water risks, access to water and water multi-uses towards zero water discharge) and boost the innovation in their homeland thanks to their strong entrepreneurial culture and international identity. **Further information available within D4.4-D4.6 and D4.8**

MAIN ACHIEVED RESULTS

WP1, addressing the Assessment of the knowledge value chain, originally planned the following specific objectives

Introduce innovation water treatment technologies ecosystems built around cluster activities involving a variety of players to interact and make collective decisions throughout the entire technology transfer process, from the initial idea to commercialization of the innovation products.

To ensure complementarities between local promotion services (technical support, training programmes etc.) and regional operations within the water treatment sector through the strategic analysis of the ecosystem and the stakeholders involved in the promotion of innovation related to water treatment sector in the MPC region

To ensure harmonization of various practices within the water treatment sector in the different MPC countries and make it easier for entrepreneurs to develop their international business

WP1 significant results

- *Introduced the innovation water treatment technologies ecosystems built around cluster activities involving a variety of players through the different events organized or where FP4BATIW have been attending to, thanks to a continuous organization of sectorial meetings and brokerage events with industrials and key relevant stakeholders such as WSSTP, Water JPI or EIP Water, to encourage the sector to join current activities of the project. As an example, such actions let to engage relevant Tunisian stakeholders (ACETEF, ATUGE, FIPA and TCAO) for future events that will take place in Tunisia.*
- *A total of 72 cluster and cooperation activities during this period where the partners have participated to exchange information, best practices or the organization of joint cluster meetings with MAGHRENOV, ETRERA2020, CINEA, MARE, MENFRI or SOHEALTHY that included brokerage events or presentation of results at the EU parliament.*
- *Such activities let to build up the R2i Alliance as a R&I meta cluster in the MPC area, an ecosystem covering the value chains of water, energy and food and the successful submission of 5TOI_4EWAS project to continue the activities engaged so far by the different projects. The R2i Alliance let to also establish the common position of the different R2i projects, establish the 10 Messina points, the corresponding recommendations for the future EU-MED cooperation in R&I within the Water, Energy and Food sector as well as to build up the new partnership that generated a new project successfully granted such as 5TOI_4WAS.*
- *Additional actions derived from such clustering activities include the submission of 5 proposals to different calls such as MSCA-RISE 2014&2015, H2020 SC5-13-2016-2017, SPIRE 2014-2015, H2020-2016-SC6-ENG-GLOBALLY, EUROPE AID, EuropeAid/151080/DH/ACT/Multi-1 Enhancing Innovation and Growth in the Southern Neighbourhood, involving the participation of FP4BATIW partners.*
- *Signed a series of MoUs with other ongoing projects and initiatives in the region (COWAMA, CLUSDEVMED, ETRERA2020, WELL, NORIA) to cross-fertilize the communication of the outputs of the different projects by exchange of promotional material, news, press releases to increase the size of the target audience.*
- *Interaction with diaspora researchers and the private sector associations and companies as a result of the clustering activities through sectorial meetings, especially the MPC region to engage and encourage their participation in the activities developed by the project such as brokerage events, employ the market place platform and become members of the Water KIC.*
- *Strategic analysis of the ecosystem and the stakeholders involved in the promotion of innovation related to water treatment sector in the MPC region through the survey prepared and distributed through the chambers of commerce in Tunisia and through the other partners in Jordan, Egypt and Palestine. Generation of the SWOT and SOR analysis of the region. Generation of a Joint Action Plan and Road Map for the region and presentation of the main outputs during the final conference of the project.*

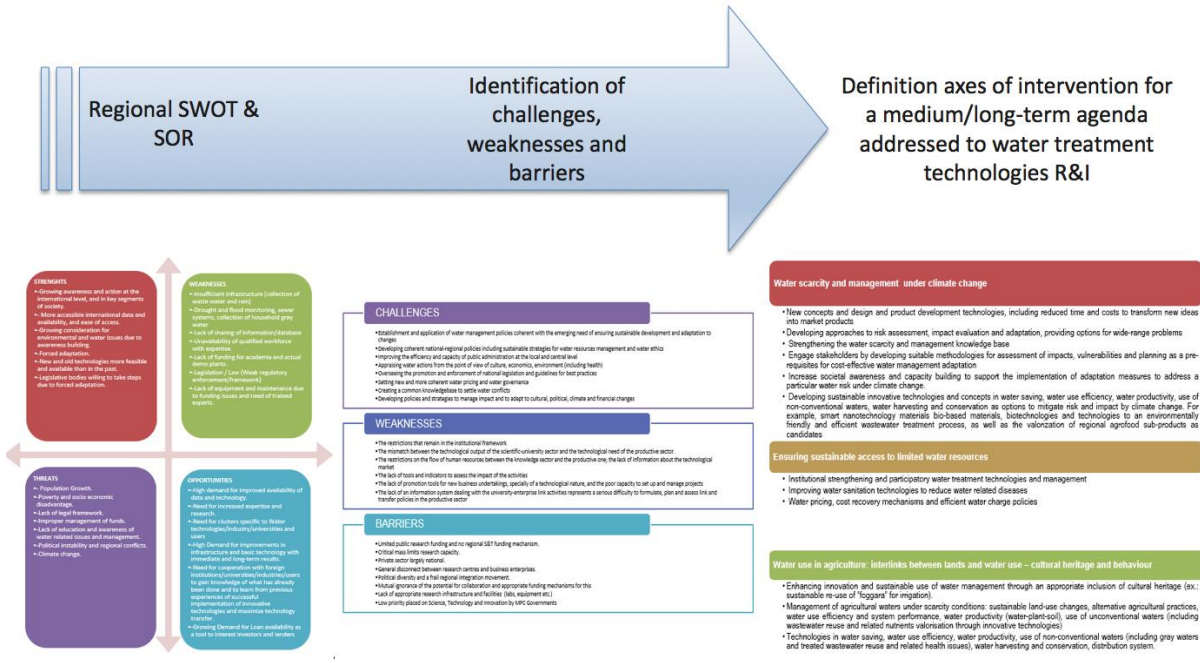
- Introduced the innovation water treatment technologies ecosystems built around cluster activities involving a variety of players through the different events organized or where FP4BATIW have been attending to, thanks to a continuous organization of sectorial meetings and brokerage events with industrials and key relevant stakeholders such as WSSTP, Water JPI or EIP Water, to encourage the sector to join current activities of the project. As an example, such actions let to engage relevant Tunisian stakeholders (ACETEF, ATUGE, FIPA and TCAO) for future events that will take place in Tunisia.

SYNERGIES

Ecosystem of former and actual initiatives on the region that becomes sources and targets of FP4BATIW JAP



Joint Action Plan definition



WP2, focused on the Improvement of competences, originally planned the following specific objectives

Enable young researchers from MPC and EU who plan to develop concrete projects in the field of water treatment technologies, to learn on how similar projects have been or are being developed in both regions in academic institutions and companies.

Promote the realization of new projects in MPC aiming to implement new materials for water treatment in the region, in order to increase the critical mass of involved researchers and stakeholders.

Increase interaction among researchers and entrepreneur students of FP4BATIW partners and WATER-KIC , and explore options for future research collaboration (Marie Curie actions and bilateral programs).

Enable exchange of techniques, knowledge and materials between the different partners.

WP2 significant results

- Performed 4 R2B2R missions to Italy, Tunis and Spain involving public and private sectors for a total of 30 individuals (14 from MPC traveling to EU, and 16 from EU traveling to MED) following the designed call for applications to R2B2R guidelines and scope that has been successfully evaluated and disseminated, available through the project's YouTube channel. Excellent evaluation questionnaires from the selected participants were gathered together with the requested reporting of the missions and proposed solutions to improve those companies facing challenges when managing their actual water consumption or treatment. As a result of such missions more than 30 companies were visited in the corresponding countries for establishment of needs in their effluents treatment and promotion of use of R2B2R missions as a mechanism to solve them. Moreover, large research infrastructures, water treatment plants as well as research centres were visited by the individuals taking part on the missions. The overall figures overpass those originally scheduled within the DoW. The overall design of the technical support, calls, and visits helped to regain trust of the private sector on the research stakeholders on the MPC region able to solve the actual problems of the regional companies.
 - <https://www.youtube.com/watch?v=5Q2BclChYgg>
 - <https://www.youtube.com/watch?v=cioJA3AHyG4>
 - https://www.youtube.com/watch?v=3_G2-VC0-7s
 - <https://www.youtube.com/watch?v=mOHMar1U6wg>
- Organisation of several side training activities such as those organized under WP3 which were linked to the workshops to be implemented during the different R2B2R missions enabled the corresponding capacity building and interaction of individuals participating in the R2B2R missions with other key stakeholders of the water value chain at EU- MPC region.
- Generation of new partnerships as a result of the developed activities that let to generate new consortiums for additional project proposals, including broadening the MPC innovation horizons and let MPC partners to be more outward looking, to break down barriers, to understand other cultures and to learn about not only how capacity building is developed and implemented in EU but also the employment perspective in the regional context. Already described under the framework of WP1 achieved results.

Tuesday, 20 January 2015 11:31

The experience of R2B2R participants

Print Email



The first mobility of Research2Business2Research (R2B2R) from MPC to EU took place in December in Tuscany Region, Italy.

Karim Ergaleg, from National Agronomic Institute of Tunisia (Tunisia), Jules Hatem, from TRIPLE E (Liban), Salah Jellali and Akrouf Hanene from CERTE (Tunisia) were the selected candidates. They describe their experience in these videos:

<http://www.youtube.com/playlist?list=PLHfjRRt-nB4sHWWh5t8yOjGZ24oPZYcE0>

Thursday, 01 October 2015 08:25

9 candidates selected in the second R2B2R call

Print Email



The FP4BATIW Executive Board announce the list of candidates selected to participate in the second R2B2R exchange. There are three researchers from research centers of universities selected: Chedly Tizaoui, from Swansea University (United Kingdom), Eric Chainet, from LEPMI Laboratory (France) and Laura Passatore, from National Research Council (Italy). And six from companies: Salvatore Volo, from Volo Engineering and Consulting SRL (Italy), Ricardo Bresciani, from IRIDRA SRL (Italy), Tamas Bardocz, from Aquabiotech Group (Malta), Carlos Berdonces, from OMS-SACEDE (Spain), Walid Akkari, from WEHRLE UMWELT GMBH (Germany) and Gabriele Delio, from ITALPROGETTI SPA (Italy)

All of them participated in a mission in Tunisia, from 25th to 30th October 2015. In such mission, they visited agrifood and textile sector related companies as well as met with other potential Water-KIC members in Tunisia during the brokerage event that was organized the 29th of October.

WP3, dealing with the Support of Knowledge Value Chain, originally planned the following specific objectives

Motivate the entrepreneurial attitude among young EU-MPC researchers in the water treatment sector.

To identify BMs that are already developing novel technologies, products and/or offering services such as related to nanotechnology in EU and/or MPC region, which could be technology transfer leaders or mentors between the academic world and the business area.

Identify and involve innovation stakeholders in the definition and implementation of new BMs based on promising technologies for a more efficient water treatment in MPC.

In cooperation with stakeholders make available the breakthroughs and benefits of new technologies, products and/or offering services for water treatment and transfer knowledge to industry.

To encourage policy makers and water treatment corporations to support SME and young academic entrepreneurs to develop nano-based projects by opening paths to new economic and financial resources.

In line with Europe H2020 strategy, promote science based start-up companies through the integration of nanotechnology based materials and production technologies for more efficient water treatment applications.

WP3 significant results

- 7 continuous ongoing technical assistances to MPC industries facing water treatment challenges within their production lines (6 in TN and 1 in JO) as a result of integration of the activities performed under WP2-WP4 that provided the tools to start the innovation support services after the consortium has analysed companies' problems and requests. Such technical assistance activities included the corresponding scientific demonstrations of alternative processes to be implemented.



- Launched the FP4BATIW prize to identify business models and ideas that are already developing novel technologies, products and/or offering services such as related to nanotechnology in EU and/or MPC region, which could be technology transfer leaders or mentors between the academic world and the business area during the framework of the different training events organized so far. Gathered 10 project ideas. 5 business ideas assisted, three finally selected and presented to investors at the final conference through the FP4BATIW prize. Such actions included the involvement of innovation stakeholders to better define and implement the new business models based on promising technologies for a more efficient water treatment in MPC. https://www.youtube.com/watch?v=Rrw2_jDkrXI&feature=youtu.be contributing to some researchers' career developments

FP4BATIW Prize

The **FP4BATIW Prize** is a competition based on business ideas on water topics, like water management, water treatment or water saving. The competition is open to SMEs, individual, researchers and entrepreneurs from Palestine, Jordan, Egypt and Tunisia.

The best 10 business ideas will be appointed as FP4BATIW prize winners. They will be assisted and assessed under the business and technical point of view by the technical and business project partners.

At the end of this process that will last about 6 months, the best 3 ideas from the 10 ideas that took part at the acceleration programme will be trained on how to present an elevator pitch etc. (one day) to a Venture Capital /Business Angels.

They will be invited at the final conference of FP4BATIW and they will have the chance to present their business idea to a large audience. Also the companies that took part at the acceleration programme will have the chance to take part to the training and to take part at the final conference, but on their budget.

You can download all the **terms & conditions (in English or in French)**.



Finalists:

These are the best 3 participants selected to present their business idea to a large audience at the final conference of FP4BATIW:

- **Michael Schuring:** Groasis Technology, an integrated planting technology to plant in dry, eroded, degraded farmland and rocky areas.
- **Noureddine Jhinaout:** Security and control system of water pipes against leaks.
- **Sadak Khouja:** Valorization of water rejected by the fish cannery using ornamental fish.

Finalists:

These are the 5 finalist of the FP4BATIW Prize Acceleration programme. They receive support on their business idea generation by participating in international training events and putting them in contact with Venture Capital and Business Angels:

- **Noureddine Jhinaout:** Security and control system of water pipes against leaks.
- **Michael Schuring:** Groasis Technology, an integrated planting technology to plant in dry, eroded, degraded farmland and rocky areas.
- **Sadak Khouja:** Valorization of water rejected by the fish cannery using ornamental fish.
- **Heia Hassairi:** w@COR, an innovative protective solution against water corrosion of metallic system.
- **Yasser Rabiey:** Supplemental unit for treating water, resulting from sewage plants.

- *Continuous capacity building activities organized within FP4BATIW project let to train 99 individuals trained during the different 5 training events organized during the framework of the project. Italy, Pisa, December 2014 (Innovation support services for appropriate management and valorization of knowledge generated by research organizations); Jordan, Amman, April 2015 (Technologies valorization and management systems); Sousse, Tunisia, October 2015 (Science to Marketing & Business Plan); Tunis, Tunis March 2016 (Risk capital, business model generation and elevator pitch); Spain, Barcelona July 2016 (Technology forecasting and technology management). Such trainings has provided innovation management skills technical assistance to MPC individuals in terms of advice on negotiation of IP issues, promote entrepreneurial attitude of young EU-MPC researchers, identification of intangible assets of developed technologies, definition of advantages and disadvantages of the different existing exploitation options, management of IPR conflicts resolution and appropriate ways to keep track of IP violations, counterfeiting and other alternatives of litigation.*



WP4, dedicated to promote Knowledge Value Chain, and networking, originally planned the following specific objectives

To promote the transfer of technology and knowledge to the economic, industrial and social sector looking forward the implementation of new and more efficient water treatment technologies in MPC.

To develop strong interactions between researchers, industry and stakeholders (promoting their participation in the project workshops) to deliver close-to-market solutions suitable to exploitation.

To develop strong bonds between researchers and groups of excellence at all levels from each of the participants by sharing of research ideas, results and perspectives.

To identify topics for possible future collaborations via new research groups, networks and clusters.

To promote the participation of funding agencies from MPC-EU in the definition of water treatment priorities.

To promote participation of WATER-KIC members on forum discussions to produce new innovations and new innovation models which nourish and inspire FP4BATIW events and results.

WP4 significant results

- Successful organization of 4 workshops (545 attendants) with the corresponding brokerage events in JO, TN and ES. Relevant figures in terms of industrial sector participation in all the organized events. Remarkable evaluations of the organized events. A total of 210 attendants to the brokerage events with a resulting number of 540 interviews.
 - **Water use in the Mediterranean basin considering NEXUS approach.** Amman. Jordan 27/04/2015. The activities carried out during the Water KIC session let to tackle water management issues, by establishing innovative partnerships and providing a platform for greater collaboration and coordination among the existent networks of key stakeholders active in the water sector within MPC countries. Such sessions do not only intend to provide an opportunity to enhance communication flows, synergies and the sharing of successful experiences, but also facilitate the creation of new partnerships that complement and maximise the ongoing work in the water sector, for benefit of all the MPC countries. In overall, the first Water KIC session represented an important opportunity for the whole water and wastewater management community, where water management professionals, private sector and other institutions had the opportunity to meet each other to exchange ideas, knowledge and experiences, discuss problems and get exposed to the state of the art in terms of new technologies and solutions. The workshop provided a broad range of technical presentations and policy-based program, along with a specialized exhibition (First MPC Jordan Fair) targeting water supply and wastewater vendor's and other service providers in the water sector. 1st brokerage 20 att/60 interviews, within the workshop entitled Water use in the Mediterranean basin considering NEXUS approach. Amman. Jordan 27/04/2015

Session I. Regional Strategies For Water: Problems, General Situation And Solutions

- The interaction of the involved stakeholders during this session let to introduce the European and Jordan policy in this field, as well as the importance of technology transfer describing the link between academia and industry focused on water and food sectors, including problems, best practices and solutions from other regions in the MPC.

Session II. International Strategies For Water: Problems, Best Practices And Solutions Outside the Region

- During the second session, water problems were pointed out, with the crucial importance of them in all the North and South Mediterranean Basin. The solutions to such problems, like water scarcity or use of reclaimed waters, are not necessary linked to a higher technological development, as the experience of dealing with water scarcity and its proper management is, perhaps, better developed in those countries with higher water stress, like Jordan. Much can be learned from both sides on these experiences from the ground, and in the adaptation to the local conditions of technologies produced in all parts of the world. International collaboration is a fundamental tool to cope with this challenge, and the panelist presented some of activities of international organisations.

Session III. Climate KIK, NEXUS approach and technology transfer

- The last session of the conference looked closely at the importance of establishing links between water and broader social, economic, political and environmental issues. The principal conclusion drawn from the speakers’ contributions is that an integrated approach is vital if countries such as Jordan are to be successful in addressing the present water supply issues. The Water-Energy Nexus, the necessity to adopt climate-change measures within agricultural and water-related policies and above all the importance of knowledge sharing and technology transfer between regions and countries in the Mediterranean basin were the principal conclusions of the session.

Session IV. Threats And Opportunities In Water In Agricultural Sector

- A very practical that included 4 successful cases to be presented, including the i) Separation of Olive mill Wastewater into valuable condensate and biofuel by solar distillation (presented by Yarmouk University); ii) Science, technology and Innovation Policies and strategies in Jordan targeting scientific research priorities: the cases of SRTD II and ERANETMED Projects such as good experiences for water sector (presented by The Higher Council For Science & Technology); iii) SME Water Innovation and Commercialization in Jordan. A Case Study presented by International Energy Technology Industries; iv) BEWATER project (presented by INNOLABS); and v) Water Conservation Program (presented by Jordan Bromine Company).

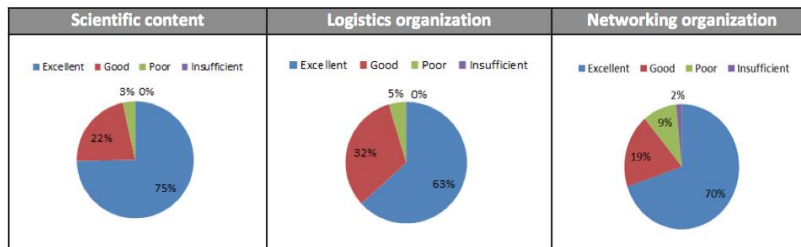
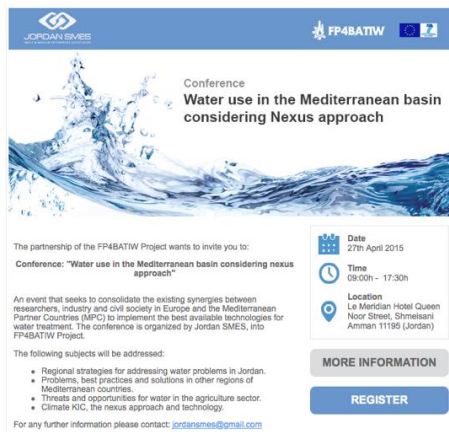
230 attendants, 6 nationalities
78% SMEs, 11% HEIs, 7% RC,
4% Ministries

1 Brokerage event
20 registered participants, 60 interviews
5 of sessions, 16 of speakers



• **Workshop1. April 2015. Jordan.**

• Event focused on innovative and sustainable use of water in agriculture and management of water resources under scarcity conditions.



- **Addressing Sustainable Water Management: Wastewater Legislation and Technologies.** Tunis, Tunisia. 29/10/2015. Water KIC sessions addressed to Regulations and standards for wastewater treatment and Reuse; Inexpensive and Attractive Processes for Water Treatment for Industry; Water Management in Agriculture, provided an opportunity to enhance communication flows, synergies, sharing of successful experiences and facilitate the creation of new partnerships that complement and maximise the ongoing work in the water sector, for benefit of all the MPC countries. The workshop provided high level experts to present and discuss their opinions and solutions in wastewater reuse and related legislation and technologies at the industrial and agricultural levels. Innovative and attractive, low cost process with consideration of water- energy nexus adapted to the MPC region was also a matter of interest and discussion during the three sessions of the workshop providing the appropriate environment to build partnerships and future cooperation between EU and MPC within the water sector. Moreover, the workshop and brokerage events helped to reduce the gap between research and innovation and the water treatment market enhancing collaboration and allowing the increase of the partnerships, expertise exchange and dialogue. 2nd brokerage 101 att/200 interviews, within the workshop entitled the Addressing Sustainable Water Management: Wastewater Legislation and Technologies. Tunis, Tunisia. 29/10/2015

Session I addressed to REGULATIONS AND STANDARDS FOR WASTEWATER TREATMENT AND REUSE

- This session let exchange opinions and solutions concerning the effectiveness of actual on going regulations in the water sector or the vest strategies to increase the incentives or enforce regulation or increase environmental responsibility concerning water treatment. According to the panelist’s discussion, it appears that there is inadequate between health protection and water reuse. Health protection related to water reuse lead to more strengthen laws and standards which at the same time strongly decrease the reuse potential of treated wastewater. The sanitary risk linked to wastewater reuse should be better considered at the end user with the implementation of adapted and safety operational practices allowing safety water reuse and fully benefit from the nutrients in treated wastewater. End users should be involved in participative way in wastewater treatment (access to information) and their capacities in water and health risk management in order to increase their expertise and autonomy. Panelists also underlined the pressure exerted by water treatment companies leading to stronger water standards.

Session II considering NEXUS challenges in the MPC region

- During this session, panelists tackled the water-energy-agriculture challenges for the MED region, the request for low cost treatment to contribute to sustainability and the role that the private sector should play in the choice of most suitable technologies to face mentioned challenges. The legal and institutional framework for technology transfer in general and in the field of water treatments is still limited and not suitable adding to a performance that is limited. The role of the private sector holding technologies of water treatment is not well defined and integrated in the technological transfer system. The reuse of treated municipal wastewater in the industries is an alternative to be encouraged and an interesting alternative to increase the reuse rate. The experience of the «Groupe Chimique Tunisien» and the participatory approach to the implementation of such reuse deserves further study for multiplication. New approaches such as cleaner technology and natural systems for the treatment of wastewater (low-cost) can lead to improved sustainability of industries and their treatment processes. Holistic approach with the integration of water energy approach and climate change is necessary to be considered in the region for the industrial sector but also agricultural one. The general water-related problems are similar at MPC and deserve to be supported together regionally. The H2020 program and the recent Association of Tunisia in this program provide an ideal framework for SMEs for this collaboration in the field of treatment of industrial wastewater for a reuse.

Session III, focused on limitations of water reuse in agriculture for MPC region

- During this session, panelists pointed out agricultural water problems, the need for incentives and the governance mechanism for agricultural water management to include reuse. It was revealed the crucial importance of them in all the North and South Mediterranean Basin as it corresponds to more than 70% of water use in many countries. However, this sector is also concerned by high water wasting during irrigation. Due to the aridity context, the reuse of reclaimed waters is necessary but limited by the secondary quality of the treated wastewater. This quality represents the limitation to increase reuse ratio and to expand the reuse of treated water to agricultural species with high economical value. Also social acceptance of plants/fruits irrigated by treated wastewater is limited. One presented solution is the addition of tertiary treatment by farmers to improve the quality of water. The treatment is not necessary linked to a high technology but the natural system as stabilization ponds or constructed wetlands are more adapted. Much can be learned from both sides of the Med on reuse experiences, and in the adaptation to the local conditions. The governance related to water reuse is considered also not adapted in several MPC countries as reuse is in general linked to three ministries: water, health and agriculture

130 attendants, 9 nationalities
17% SMEs, 45% HEIs, 13% Agencies, 18% Ministries

1 Brokerage event
101 registered participants,
200 interviews
3 of sessions, 17 of speakers



Workshop 2. October 2015. Tunisia.

- Policy event addressed to new regulations and standards for wastewater treatment and reuse in industry and agriculture.
- Main Water-KIC members involved: NA, NRA, CoC (promotion of SMEs participation)..



WORKSHOP & BROKERAGE EVENTS
Addressing Sustainable Water Management: Wastewater Legislation and Technologies
Tunis (Hotel Ramada Plaza, Gammar), 29 October 2015

There are several challenges to support the implementation of sustainable water management. These events will focus on the wastewater reuse and related legislative and technologies at the industrial and agricultural areas, innovative and attractive, and cost persons with consideration of water-energy nexus available in the MPC region, will be discussed in order to build partnerships and collaborations.

FP4BATIW is a coordinative and support action to foster partnerships and to represent the best water treatment technologies available in the MPC region by promoting experience among States, both in EU and MPC. The project aims to build new capacities, tools and knowledge by integrating concepts of sustainability, enabling collaboration between experienced teams for creating partnerships and capacity building in the area.

The workshop and brokerage events, aimed to help actors to get better insight and knowledge and the water treatment market, enhance collaborative and allow the build partnerships, expertise exchange and dialogue.

REGISTRATION
Online registration to the workshop and/or brokerage event is opened and compulsory at the official project website: <http://www.fp4batiw.eu> before 13th October 2015. Please contact email for information before the 13th October 2015 to Catherine Escribano: fp4batiw@ec.europa.eu

Contact: CSRE, Tel: 70 521 122 - Fax: 70 520 462
MPC: Tel: 70 520 464 - Fax: 71 120 151

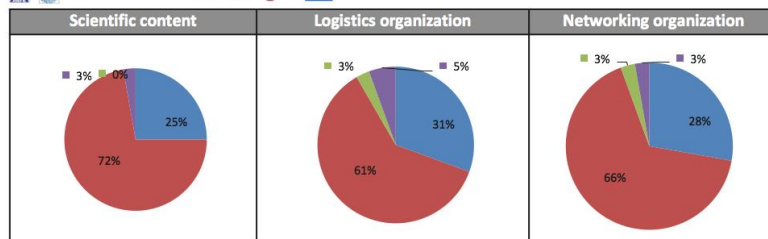
WORKSHOP TOPICS
Regulations and standards for wastewater treatment and reuse.
Innovative and Attractive Processes for Water Treatment for Industry.
Water Management in Agriculture

ORGANIZING COMMITTEE
Ahmed Ghazal (CSRE)
Sara Ghazal (CSRE)
Fouad Laroui (NA)
Laila Hachemi (CSRE)
Mickael Pignatelli (FP4BATIW)
Marie Perle (ANALAD)
Thea Brand (CSRE)

Organized with the collaboration of: 



← Excellent Good Insufficient Poor



- **Innovative Technologies in Industrial Waste Water Treatment.** Sousse, Tunisia. 30-31/03/2016. *The workshop focussed on innovative aspects of Water Treatment and Waste Management, presenting new technologies applied on the agrofood and textile sectors, including nanotechnology based approach, electrocoagulation, adsorption etc, describing the state of the art and related case studies, discussing the main controversial subjects, sharing experiences among different countries, valuating social and economic balances and launching a new project. In this case, Water KIC sessions were addressed to tackle the issue of water treatment strategies and technologies which are currently undergoing rapid development. Actually, the discharge standards of liquid waste are becoming increasingly stringent therefore; we must seek for new low cost and effective treatment methods. Therefore, partnerships seeking to reuse treated water of the MPC regions where the water shortage is highly remarkable became the final aim of the different organized sessions. 3rd brokerage 59 att/160 interviews, within the workshop entitled Innovative Technologies in Industrial Waste Water Treatment. Sousse, Tunisia. 30-31/03/2016.*

Session I was dedicated to Agro-food and Biological Waste Water Treatment

- Agrofood-industries contribute significantly to worldwide industrial pollution. Effluents from many agro-food industries are a danger to the environment. The presentations showed several innovative technologies that can remove the pollution of agro-food industry.

Session II was dedicated to Textile Waste Water Treatment

- Textile industry is one of the most chemically intensive industries on the earth and the major polluter of potable water. It generates huge quantities of wastewater including complex chemical substances and dyes as a part of unused materials. The oral presentations were focused on the developing innovative technologies that can diminish the environmental damage.

Session III was dedicated to Innovative Technologies

- This session was focused on Nanosciences and were began by a very interesting conferences presented by Pr. Mohamed Mammoun concerning the potential of nanoparticles for environmental applications and waste water treatment. Many innovative technologies were presented in this session, principally application of use of Potential of nanoparticles for environmental applications, Synthesis and Characterization of Porous Material from Kaolinite as an adsorbent and ion exchanger, A comparative study between the effect of alternating and direct current on the elimination of cationic and anionic dye from aqueous solution by electrocoagulation process and the coagulation flocculation process, Biosorption of chromium (VI) by a biomaterial: “Phragmite Australis”, A comparative study between the effect of alternating and direct current on the elimination of cationic and anionic dye from aqueous solution by electrocoagulation process and the coagulation flocculation process, etc.

Session IV focused on the Presentation of the Waste Cluster Initiative and their objectives & synergies established

- Session addressed to present successful stories within the water treatment sector in both regions, EU and MPC as well as potential opportunities for future partnerships generated during previous sessions

Session V was addressed to Panel Technology Transfer in Water Treatment

- New and low cost technology in industrial waste water treatment from university to industrials, pointed the transfer of new and low cost technology in industrial waste water treatment from university to industrials. During the session, panelists tackled about the following questions such as the most suitable low cost for an innovative technology to become sustainable or the success indicators that reveal a positive technology transfer

• Workshop 3. March 2016. Tunisia.

• Event concentrated on new treatment technologies involving inexpensive and attractive processes with the minimum energy consumption for the MPC regions.



The partnership of the FP4BATIW project will bring you to the workshop

"Innovative Technologies in Industrial Waste Water Treatment"

Date: 02nd and 03rd March, 2016
Location: Sousse (Tunisia)

IMPORTANT DATES:
 Abstract Submission: 04th March 2016 (Monday)
 Registration of interested companies: 1st March 2016
 Registration Deadline: 02nd March 2016
 Start of the meeting: 02nd March 2016

CALL FOR PAPERS REGISTRATION

WORKSHOP REGISTRATION

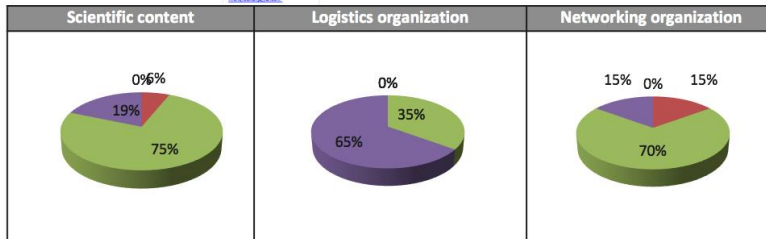
Contact:
 Dr Ingrid Isenhardt, Higher School of Sciences and Technology of Sousse, Tunisia
iniso@rednet.rnu.tn

150 attendants, 9 nationalities
 21% SMEs, 19% HEIs, 16% RC,
 44% Agencies, Ministries

1 Brokerage event
 59 registered participants, 150 interviews
 5 of sessions, 21 of speakers



← ■ Insufficient ■ Poor ■ Good ■ Excellent



- **National, regional and international water treatment strategies from a circular economy perspective.** Barcelona. Spain. 12-14/07/2016. 4th brokerage 30 att/120 interview, within the workshop entitled National, regional and international water treatment strategies from a circular economy perspective. Barcelona. Spain. 12-14/07/2016.

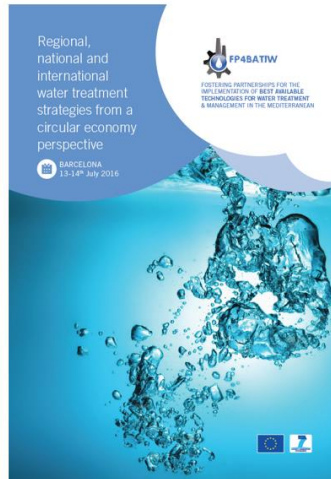
50-100 of attendants, 14-16 of nationalities
 20% SMEs, 10% Agencies, 15% RC, 55% HEI

1 Brokerage event participation
 30-40 registered participants,
 120-150 interviews
 5 sessions, 36 of speakers



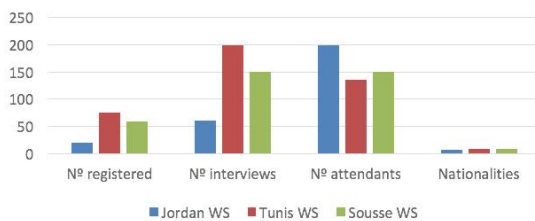
•Workshop 4. M34. Spain.

- Final event dedicated to facilitate knowledge transfer between researchers and companies in the water treatment and advanced technologies.
- Main Water-KIC members involved: All actors of Water-KIC. This event is specially addressed to SMEs participation.

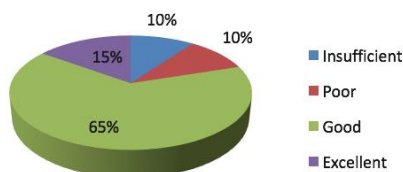


BROKERAGE EVENTS

Brokerage events evolution



Evaluation of B2B contacts efficiency



- The different sessions organized during the different workshops involving key relevant figures of the future EU-MPC Water-KIC enable to define the future fundamentals in terms of VALUE (By interconnecting business of medium size with

researchers and inventors to provide EU and MPC region water industry the opportunity to invest in ideas that will add value to their business and enhance commercial opportunities for new products. Involvement of key stakeholders in the region e.g. Water JPI, WSTTP and EIB), PROTECTION (The involvement of the Water KIC own resources in new product development and the engagement of potential customers at the beginning of the process would create the appropriate conditions for the ecosystem to protect the intellectual property of the involved partners) and SUPPORT (Through the technical and commercial support from across EU and MPC region it will be possible to contribute and ensure that complementary skills and resources are available to each idea).



- A market technology platform available to make the supply and demand of knowledge and technology for researchers and companies in the EU/MPC, and to promote the transfer of technology and knowledge to the economic, industrial and social sector looking forward the implementation of new and more efficient water treatment technologies in MPC as well as agreements of collaborations between researchers and companies in the area. 20 technology offers available with a good representation of the MPC countries. Successful transfer of the outputs of the market platform to EIP water becoming a legacy of the project.

List of Projects

- 

Textile wastewater treatment for recycling [technology offer]

Bids: **0**
Status: **Open**

Posted by : bousselmi
Skills Required : Water Technology, Sustainability

- 

Aquaponics Technology [technology offer]

Bids: **0**
Status: **Open**

Posted by : AquaBioTech Group
Skills Required : Water Technology, Sustainability

- 

Recirculating Aquaculture Systems [technology offer]

Bids: **0**
Status: **Open**

Posted by : AquaBioTech Group
Skills Required : Water Technology, Sustainability

- 

Adsorbent filter to remove arsenic from contaminated water sources [technology offer]

Bids: **0**
Status: **Open**

Posted by : IP and Technology Transfer Manager UAB
Skills Required : Water Technology

- 

enviroment [technology request]

Bids: **0**
Status: **Open**

Posted by : LabEM - ESSTHS
Skills Required : Water Policy and Administration



Technology Offer

Adsorbent filter to remove arsenic from contaminated water sources

Summary

Arsenic contamination in drinking water sources is a public health problem that is not totally solved in the whole of the population areas and countries. The cost of the implementation and maintenance of an efficient system is huge that's why not all the towns and rural areas have one at the same level of efficiency as cities. At the present time, the arsenic metal amount accepted in water for the human intake has decreased to 10 µg/l. Currently, adsorption systems for arsenic removal using iron and aluminium hydroxide lack of efficiency.

We have developed an adsorbent filter based on Superparamagnetic Iron Oxide Nanoparticles (SPION) and polyacrylonitrile (PAN) nanofibers that has high efficiency for arsenic removal from contaminated water. We are seeking a company partner to further develop the technology through a co-development and license agreement.

IP Rights

Priority patent application: 6th February 2013
PCT application. Filing date: 6th February 2014

Innovative aspects and applications

- > New adsorbent filter has high efficiency for arsenic removal from domestic and community drinking water.
- > New adsorbent filter removes 6 times more Arsenic as current adsorbent Systems.
- > Swelling effect that improves the contact surface between the arsenic solution and the adsorbent material.
- > Small solid waste that can be easily treated or stored

State of development

- > Manufacturing procedure has been optimized. More than 95 % of the SPION is fixed over PAN nanofibers surface providing an optimal amount and distribution
- > Efficiency studies of arsenic removal are done in synthetic samples and real arsenic contaminated water.



Adsorbent filter to remove arsenic from contaminated water sources

The Invention

Novel adsorbent filter formed by Superparamagnetic Iron Oxide Nanoparticles (SPION) on the surface of polymeric nanofibers of polyacrylonitrile (PAN) (See Figure 1). SPION have been processed as an appropriate material to increase the arsenic adsorption from contaminated waters. This new adsorbent system that includes PAN nanofibers overcomes the SPION aggregation and improves the adsorption. Arsenic removal is 30 times higher in comparison with SPION suspension and there is not SPION release to the liquid.

Experimental results are obtained in both batch and continuous mode showing that adsorption efficiency is improved by counter-flow in continuous mode. To date, studies in real Arsenic contaminated water show the same results and similar behaviour as synthetic samples (See Figure 2).

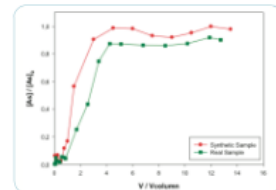


Fig. 2. PCT shows removal arsenic efficiency in a counter-flow system column for synthetic and real contaminated water samples.



Fig. 1. Last step in the process of synthesizing the adsorbent consisting of PAN-SPION nanofiber. SPION is represented by black circles and PAN is represented by white strands. SPION is placed on the surface of PAN.

WP5, centered on dissemination and networking, originally planned the following specific objectives

<i>Develop/deliver robust Plan for Use & Dissemination for a maximum impact within/external to the consortium</i>
<i>To disseminate and valorize the project results through sound communication and promotional activities in order to engage in the project the maximum number of stakeholders from the EU and the MPC region</i>
<i>To facilitate opportunities for water treatment S&T Policy Dialogue between the relevant stakeholders both from MPC region and EU in order to set up and support a long-term communication and exchange.</i>
<i>To open-up the EU-MPC water treatment dialogue to the maximum number of relevant institutions and initiatives, creating fruitful synergies for international cooperation on water treatment S&T.</i>

WP5 significant results

- Definition and implementation of a Communication and dissemination strategy through the corresponding and continuous updated of the promotional kit and tools (specially the different videos prepared and available on the website) being constantly monitored let to reach the target audiences and keep a constant flow of updated information related to the activities and outputs of the project.
- As examples of indicators, 91 validated dissemination activities performed so far, 3 Peer reviewed publications, 1 Paper in Proceedings of a Conference/Workshop and 5 Thesis/Dissertation
- In this sense, we consider that the following table generated during the constant monitoring of the dissemination activities of the project as a significant result in terms of dissemination

	Activity Indicator		Result Indicator	
Website	<i>Updates on the homepage (monthly)</i>	2	<i>Nº of visitors</i>	12.482
			<i>Nº of downloads</i>	6.529
			<i>Links to websites</i>	45
Database			<i>Nº of contacts</i>	534
Promotional Kit	<i>Copies printed of Brochures</i>	3320	<i>Number of Downloads</i>	499
	<i>Copies printed of Roll-ups</i>	9	<i>Number of Downloads</i>	504
	<i>Copies printed of Posters</i>	15	<i>Number of Downloads</i>	513
	<i>Videos Published</i>	14	<i>Nº of plays</i>	1.962
Newsletter	<i>Copies Sent</i>	6	<i>Copies read</i>	659
			<i>Copies downloaded</i>	1.213
Water-KIC	<i>Number of topic discussion</i>	1	<i>Nº of posts</i>	1
			<i>Nº of added organizations</i>	61
R2B2R Program	<i>Number of applicants each call</i>	83	<i>Final nº of applications</i>	83
Social Network	<i>Number of twits</i>	192	<i>Nº of followers</i>	169
			<i>Nº of retweets</i>	412
			<i>Nº of Hashtags</i>	93
Media Impact	<i>Number of Press Releases</i>	22	<i>Nº of articles published in the MEDIA</i>	13
	<i>Mailing list of journalists</i>		<i>Nº items sent to journalists</i>	
Events	<i>Events organized</i>	4	<i>Nº of participants</i>	545
	<i>External events where FP4BATIW participates</i>	34	<i>Nº of presentations in events</i>	
Publication			<i>Nº of publications published</i>	5

WP6, designed for the project management, originally planned the following specific objectives

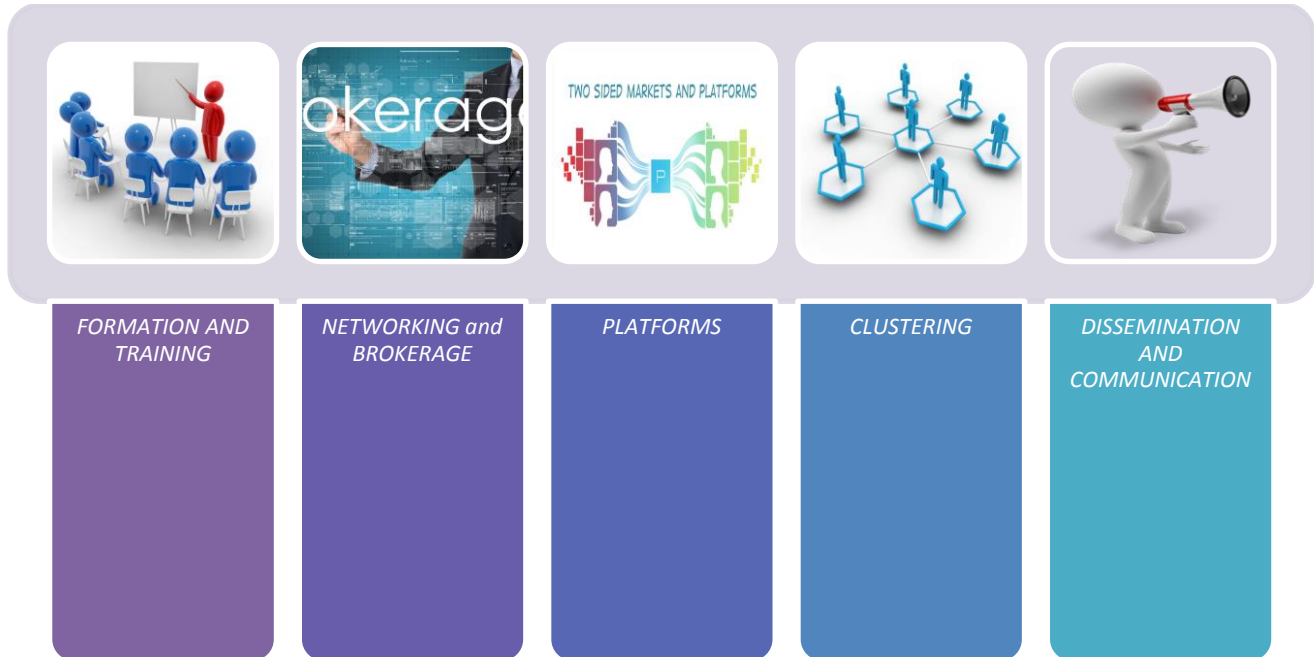
<i>To co-ordinate and manage the consortium, over and above the technical management of WPs</i>
<i>To create a management framework, maintain overall consortium communication and act as the communication channel for all dialogue with the Commission.</i>
<i>To establish an effective project management structure incorporating the management teams</i>
<i>To establish and implement project activity plans and reporting structures.</i>
<i>To establish the Advisory Board, including definition of roles and membership.</i>
<i>To set up and manage financial accounting records and reporting mechanisms including the website that incorporates the Advisory Notification System</i>
<i>To assess and mitigate any potential or identified risks to the project</i>
<i>To conduct mid-term assessment and final review</i>

WP6 significant results

- *The established management framework, continuous interaction with the different managing bodies of the management structure let an effective project management and submission of the corresponding deliverables including periodic reporting, monitoring, risk assessment and the agendas of meetings. Such project management activities let the consortium to provide the figures and facts on time, being used the established procedures and guidelines to ease the process of reporting and upload the contents to the RPP. The implemented management also helped the MPC countries in terms to get familiar with REA procedures in terms of scientific and financial reporting.*
- *Continuous recording of project meetings and share the gathered information with REA.*

THE POTENTIAL IMPACT

The main project results summarized above can be categorized within 5 main categories such as



FP4BATIW project generated and added value for the EU by several activities that have contributed to fight against the lack of trust that usually hampers the collaboration between research and industry within the water treatment technologies sector, mitigating the lack of confidence in public structures concerning projects confidentiality and afford proximity between the public and private stakeholders of the water treatment sector. In such a way, the transference of experiences of talented individuals during the R2B2R missions, the WATER KIC sessions, the technical assistance, the innovation prize contributed to the creation of innovative businesses that will boost the innovation thanks to their strong entrepreneurial culture and international identity as well as to the establishment of new dynamics for cooperation, creating new forms of public-private partnerships. Simultaneously, we foresee that FP4BATIW had an important economic and innovation potential due to its contribution to the expansion of the global market for EU eco-innovative technologies and services, thus increasing the EU and MPC economy competitiveness and the generation of new green jobs. In other words, FP4BATIW contributed to the "EU Skills Panorama" by providing a future supply and demand of skilled workers.

FP4BATIW IMPACTS

FP4BATIW's activities directly support the uptake of research results across the EU-MED region which is according to the first expected impact listed in the call. The impact was achieved in particular through the following actions.

Fostering mutually beneficial public-private-partnerships between MS and/or AC and MPC countries through the market uptake of research results, through

- *Transference of experiences of talented individuals in the diaspora concerning the creation of innovative businesses through the organization of different WATER KIC sessions.*
- *Exchange of best practices concerning innovation demonstrators to afford a real demonstration of their innovations related to water technologies through the technical assistance services, combined with the R2B2R missions and the training actions.*
- *Training and improving of MPC human resources concerning innovation management, business development and team management skills to face the needs of investors and support the implementation of technology transfer offices.*
- *Speed up commercialization and optimization of potentially developed water treatment technologies, ensuring a constant flow of interaction with the market demand, by the suitable training activities.*
- *Expansion of the global market for eco-innovative technologies and services, thus increasing the EU and MPC economy competitiveness by the designed R2B2R missions*
- *Define links and establish new dynamics for cooperation, creating new forms of public-private partnerships and convert MPC into real pushers forward of dynamic innovation policies within the water treatment sector, through the project activities such as workshops and especially, brokerage events.*

Contributing to the achievement of a Common Knowledge and Innovation space between the EU and MPC countries through enhancing cooperation between research and innovation actors on both sides, through

- *Greater visibility and continuity to the various European Commission activities designed to strengthen the bonds between the scientific and technological communities from both sides, by an active participation of key representative stakeholders of the project in several events organized by other initiatives.*
- *Together with other R2I projects (R2i Meta cluster alliance), enhance the scientific capacities of the MPC, increasing the impact and coherence of initiatives in the region as well as underlining the values of mutual respect, reciprocity and partnership.*
- *Water sector offering the opportunity for 'win-win' policies and the achievement of a Common Knowledge and Innovation Space.*

Increasing the potential of STI cooperation between MS and/or AC and MPC countries under the Horizon 2020 and to contribute to the definition of bi-regional programmes on innovation, by:

- *Pre-competitive technology development that can be used for a wide range of costs, management systems, scales and technological advances in the region, enabling replication and the scale up of successful pilot/demonstration actions. In such a way, FP4BATIW innovation prize becomes an example, in addition to the technical assistance activities.*
- *To facilitate the engagement of MPC in the EU Water Technology Platform (ex: Water Supply and sanitation Technology Platform) through the established interactions with EIP Water, Water JPI and other ongoing initiatives in the region.*
- *Link research thematic networks dealing with water treatment technologies and individual researchers from the EU with their counterparts in the MPC, through the organized R2B2R missions.*

- *Cross-border awareness of the water treatment technologies benefits in MPC, thus contributing to overcome social fears about the re-use of wastewater. In this way, it becomes a real success the impressive commitment of the chambers of commerce that participate in the project by facilitating appropriate contact with important number of stakeholders (mostly companies) where the project has disseminated the outputs, opportunities and possibilities of developing new synergies EU-MED.*
- *A continuous North-South cooperation through identification of specific opportunities for collaboration between universities, private sector and institutions as well as exchange of ideas to raise the professionalism of young people concerning Best Available Water Treatment Technologies. Such advance has been possible due to the successful organization of the scheduled workshops and the communication and dissemination of the outputs that were finally implemented in the corresponding Joint Action Plan.*
- *Greater sustainable water management as a consequence of a better reuse of wastewater resources from a social, health and environmental point of view, based on the learned technologies, their validation and assessment as well as a guaranteed technical assistance, providing the seeds for a long-lasting relationship between the public and private sectors in the target regions.*

FP4BATIW CONSORTIUM

N°	PARTICIPANT LEGAL NAME	ACRONYM	COUNTRY	TYPE
1	UNIVERSIDAD AUTÒNOMA DE BARCELONA	UAB	SPAIN	HEI
2	PARC DE RECERCA UAB	PRUAB	SPAIN	RP&IC
3	INNOLABS SRL	INNOLABS	ITALY	IOISS
4	HIGH SCHOOL OF SCIENCES AND TECHNOLOGIES OF HAMMAM SOUSSE	EHTSS	TUNISIA	HEI
5	JORDAN SMALL AND MEDIUM ENTERPRISES INDUSTRIAL ASSOCIATION	JSMEIA	JORDAN	CoC
6	INTERNATIONAL ENERGY TECHNOLOGY INDUSTRIES	MEI	JORDAN	SME
7	CONSIGLIO NAZIONALE DELLE RICERCHE, INSTITUTE OF AGRO-ENVIRONMENTAL AND FOREST BIOLOGY AND WATER RESEARCH INSTITUTE	CNR-IABF/IRSA	ITALY	NRA
8	NATIONAL AGENCY FOR ENVIRONMENTAL PROTECTION	ANPE	TUNISIA	NA&EU
9	INNOVA BIC	INNOVA	ITALY	IOISS
10	WATER RESEARCHES AND TECHNOLOGIES CENTRE OF BORJ-CEDRIA	CERTE	TUNISIA	RP&IC
11	PALESTINIAN TECHNICAL UNIVERSITY OF KADORIE	PTUK	PALESTINE	HEI
12	CHAMBER OF COMMERCE AND INDUSTRY OF THE CENTER	CCIC	TUNISIA	CoC
13	NATIONAL AUTHORITY FOR REMOTE SENSING AND SPACE SCIENCES	NARSS	EGYPT	HEI

