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## Synthesis of the Mediterranean Water Forum

*22-24 January 2018, Cairo, Egypt*

### **Discussion panel: “The REUT and its impacts on Mediterranean cities and territories”**

***Tuesday 23 January 2018, Marriott Hotel, 5 pm-6:45 pm***

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In preparation for the 8<sup>th</sup> World Water Forum, that will take place in March in Brazil, the Mediterranean Water Institute and the Union for the Mediterranean organised the **3<sup>rd</sup> Mediterranean Water Forum in Cairo, from 22 to 24 January**. This meeting was a unique opportunity to mobilise all the stakeholders and to present original propositions to ensure access to water and sanitation for all, in a sustainable manner, in the Mediterranean.

Appointed as coordinators of the work group on the “urban” topic, the Mediterranean World Economic Foresight Institute (IPEMED) and the MedCities network wished to take advantage of this process to **highlight the know-how of cities and operators in terms of reuse of treated waste water (REUT/REUSE)**; as this topic was the main subject of the last United Nations report on the development of water resources. In this regard, IPEMED and MedCities organised **a discussion panel on the REUT and its consequences on the Mediterranean territories**, in the framework of the Mediterranean Water Forum, in Cairo, on 23 January 2018, at 5 pm.

The objectives were: taking advantage of past experiences, sharing and spreading information and highlighting the opinion of field actors. To do so, IPEMED and MedCities wished to collaborate with the Euromed Cities Network, the International Office for Water (OIEau) and the Euro-Mediterranean Water Information System (EMWIS) in order to rely on the results of the research carried out on the “needs to reinforce communities’ capacities to deal with drinking water, sanitation and storm water”.

#### Coordinators:



#### Partner organisations:





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## Presentation of the participants:

### **Moderators:**

**Oriol Barba**, Director (Medcities), Spain  
**François-Xavier Imbert**, International Cooperation Project Manager (OIEau), France  
**Kelly Robin**, Project Manager (IPEMED), France

### **Speakers:**

**Jérôme Cavailès**, Director of the Mayor's Cabinet of Agde, France.  
**Jacques Ganoulis**, Secretary of State for Water and the Marine Environment, Ministry of Environment and Energy, Greece.  
**José Muñoz**, Deputy Director for the Mediterranean, Suez Group.  
**Xavier Romero Hidalgo**, Environmental Technician at the Local Council of Granollers, Spain.  
**Rémi Tournon**, Programme and International Cooperation Manager, Rhône-Méditerranée-Corse (RMC) Agency.  
**Raffaella Vimont-Vicary De Gennaro**, Cooperation Project Manager at the Agde City Hall, France.  
**Mohammad Zawahreh**, Environment Director for the Municipality of Zarqa, Jordan.

### **Speakers from the audience:**

**Mohammed Bany-Mustafa**, Water Authority of Jordan, Jordan  
**Nasreddine Benzerga**, Deputy Director of the Sanitation National Office (ONA), Algeria  
**Pedro Béraud**, In charge of integrated waste management, Agua de Portugal Energias, Portugal  
**Hajiba Bourziza**, In charge of planning at the National Office for Electricity and Water (ONEE), Morocco  
**Yvan Kedaj**, Deputy General Director of Aqua-Valley, France  
**Mohammad Omar Makram**, Irrigation department of the Governorate of Fayoum, Ministry of Water Resources and Irrigation (MWRI), Egypt

### **Rapporteurs:**

**Selmin Burak**, Professor of the Department of Environmental Engineering, Istanbul University, member of the Mediterranean Water Institute (IME), Turkey  
**Arthur Deboos**, project officer, IPEMED, France

Number of participants: 40.

## REUT experiences to meet the local challenges of townships and territories.

**Xavier Romero** presented the case of Granollers, a city of 60,000 inhabitants in the Barcelona suburbs. Water is scarce in this very touristic and industrial Mediterranean region. This is why, at the beginning of the 2000's, the town council launched an adaptation policy that included a REUSE project subsidised by the European Union's Cohesion Fund. The objective of this project was the environmental rehabilitation of an industrial wasteland and the regeneration of a local ecosystem through the creation of a wetland that enables the tertiary treatment of the waters of the adjoining STP, near the Congost river. The treated wastewater is used for irrigation, watering of green spaces and cleaning of public roads. The extra treated wastewater will be available to local industries willing to have a reduced environmental impact and a lower water bill, thus creating a win-win partnership. Accredited as a "Natura 2000" space, the project was a success. It was highlighted by an environmental awareness centre and visited daily by a large number of inhabitants. Therefore, the township initiated a partnership with the neighbouring towns in order to create an environmental corridor to connect them to one another. The experience of Granollers is a good example of water reuse project at the local level, transforming a degraded area into a space that preserves nature and its ecosystems. Besides, this space is socially useful and promotes the circular economy.

**Mohammad Zawahreh** talked about the township of Zarqa. Jordan is the second country in the world in terms of water scarcity. Zarqa is the second city and the main industrial centre in the country; it hosts a population of 400,000 inhabitants and over 100,000 migrants. The governorate stretches over 6,500 km<sup>2</sup> in a semiarid or arid space. Townships do not really control water management, which in Jordan is the preserve of the Water Authority of Jordan and the Ministry of Irrigation and Water Resources. The first STP was placed near the Zarqa river. However, maintenance was bad, the processes were little developed and as a consequence, polluting effluents were discharged into the river, which led to the ban from selling agricultural products grown with the REUSE water. A new STP, bigger and more modern, was built in 2004 in the framework of a public-private partnership (PPP) with the Suez Group; it was then extended in 2015. Located farther away from the Zarqa river and the eponymous city, it significantly reduced the inconveniences of the former STEP, especially the discharge of polluting effluents and unpleasant smells. It enabled to boost the region's economy by hiring young people and producing electricity through the installation of turbines that benefit from the geographic location of the STEP. The energy generated covers nearly 20% of the electricity consumed in Amman and 70% of the biogas burnt in Jordan.

**Mohammed Bany-Mustafa** explained the benefits of the public-private partnership in Zarqa on the As-Samra site, while insisting, as a representative of the Water Authority of Jordan, on the fact that the REUSE is one of the Jordanian Government priorities, after access to drinking water and sanitation. Nevertheless, Mr Zawahreh explained that a PPP involves higher prices, which makes access to water more difficult for the poorest populations, in great numbers in the Zarqa region, in spite of the State's price structuring. He also wished that the cooperation between the Zarqa township and the public service delegate be reinforced, especially through the activation of the corporate social responsibility clause, while improving populations' awareness to a responsible use of water resources.



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**Jérôme Cavailès** presented the REUSE project of the town of Agde. A Mediterranean sea resort in Southern France, this town of 27,000 inhabitants welcomes nearly 300,000 residents each summer. Facing a serious water stress situation, the need for water resources was essential, and required the implementation of a REUSE project. This project met three challenges: the quality of the effluents discharged in the sea for bathing water, the demographic increase (nearly five hundred inhabitants per year) and the watering of the town's green spaces, especially of the municipal golf. The first measure the township took was to monitor the drinking water network, which enabled to save nearly 300,000 m<sup>3</sup> of drinking water per year. Later, the town solicited the Rhône-Méditerranée-Corse (RMC) Water Agency in order to get an expertise for the project implementation, as well as a 80% funding assistance of €5.5 million for the STP works. The use of treated wastewater and the monitoring of the drinking water network will enable to reduce the town's drinking water consumption by 600,000 m<sup>3</sup>, that is the consumption of over 10,000 inhabitants. The City Hall is now planning to heat municipal buildings with the energy produced by the STP.

Besides, **Raffaella Vimont-Vicary De Gennaro** shared the cooperation experience between the towns of Agde and Tata, in the Souss-Massa region, in Morocco, on water management. By using the 1% mechanism of the Oudin-Santini Law (2006), the town of Agde, supported by the RMC Water Agency, contributes to liquid sanitation works and to the future extension of the STP for the tertiary treatment. The cost of the project amounts to €4.5 million, 31% of which are cofunded by the RMC Water Agency and Agde. Beyond offering decent living conditions to inhabitants, the objective is to create a green belt around the locality of Anti-Atlas, while significantly saving drinking water in this mostly agricultural region and reducing pollution to make the region more attractive for tourists.

### Experiences of field actors: Water Agencies and public service delegates

**José Muñoz** reminded the expertise of private service providers, especially in the framework of public-private partnerships. The SUEZ Group, specialised in water treatment, works in over 10,000 STP throughout the world, among which 2,500 treat wastewater. Suez is the public service delegate that was chosen in Zarqa for the construction and maintenance of As-Samra, just like in Alexandria. These two large-capacity STP (over 800,000 m<sup>3</sup> of water per day) were built in the framework of public-private partnerships (or Built-Operate-Transfer). In the face of the challenge of climate change and demographic growth in a mostly urban region (two thirds of the Mediterranean population), private actors are offering their know-how and investment capacities to bring adapted answers to cities and territories, while maintaining the dialogue with the authorities and the users, and ensuring quality and process transparency.

**Rémi Touron** explained the role of a water agency such as the Rhône-Méditerranée-Corse Water Agency. Water agencies aim to contribute to the reduction of all types of pollutions and to the protection of water resources and aquatic environments. Pursuant to the Framework Directive on Water of the European Commission (2000), the Agency receives royalty payments for water pollution, modernisation of collection networks, withholding on water resources and any activity with an impact on aquatic environments. The Agency technically and financially helps Southern French town to get equipped, especially for the implementation of REUSE projects. However, few towns have been interested in grants ever since they exist for this type of projects. Indeed, France has reused 0.2% of its treated sewage water, while the European and global average stands at about 2%.

Therefore, the Agency launched a €7 million call for proposals in order to encourage communities to reuse treated wastewater. 58 very diverse projects were proposed, and 44 of them were selected,



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among which Agde. Since then, the Agency chose to finance only innovative projects, be they REUSE, sub-product development or energy production.

### Recommendations to develop the REUSE approach.

For **Pédro Béraud** from Aqua de Portugal, if the REUSE is a project rooted in a territory, each STP should be able to implement a corresponding project, whatever the STP situation. In Portugal, the State forces major STP to bring local solutions. Indeed, out of the 60% of sewage water treated by these STP (about 5 million inhabitants), 30% are reused, with a 45% objective over time. Treated wastewater can always be used to clean public roads, water gardens and green spaces in urban areas and even to create artificial snow in the mountains. This is why a clear separation between conduction and conveyance networks must be made. Three networks are necessary: the drinking water, the sanitation and the REUSE networks.

**Hajiba Bourziza**, Director of planning at ONEE, explains that REUSE projects can be financed by private actors or other public operators: in Morocco, 3 STP equipped with treatments for REUT were financed by the Office Chérifien des Phosphates (OCP), which made substantial savings by avoiding the use of fresh water for phosphate cleaning. However, although Mrs Bourziza shares Mr Béraud's will to extend the use of the REUSE, she asks the question, still unsolved in Morocco, of the cost recovery: operators are often sanitation agencies that are not in charge of drinking water networks. The REUSE is a different service. Who shall pay for this service?

**Nasreddine Benzerga**, from ONA, is in favour of the REUSE, especially regarding irrigation. However, he exposes the standardisation issue regarding the treated wastewater norms as well as the question of sludge management. It is necessary to create norms at the European or Mediterranean level, for treated water and sewage sludge in order for them to be reused outside the national framework and in a sustainable cycle perspective. Although these norms do not exist yet at the regional level, the European Commission is currently working on several norms regarding discharges. However, according to Mr Touron and Mr Béraud, the disagreements between States on sludge reuse hinder the creation of regional norms on this topic.

And since populations have difficulties to accept the idea of drinking treated wastewater that became drinkable, Mr Benzerga supports the re-injection of treated wastewater by tertiary treatment into aquifers. This practice enables treated wastewater to be filtered and enriched in natural elements, and it solves the issue of non-conventional drinking water sources. **Mohammad Omar Makram**, from the Egyptian Ministry of Water Resources and Irrigation adds that recharging phreatic water and discharging treated wastewater into rivers will enable to resist better to increasingly frequent draughts in the region that are due to climate change. Therefore, cities sanitation directly benefits to the adaptation and mitigation processes of climate change effects for all territories.

**Rémi Touron** insisted on the necessity to inform consumers through a three-part approach "awareness-explications-proof" in order to develop the use of treated wastewater. 1) Raising awareness in users on the necessity to save water. 2) Creating explications on water treatment by showing quality differences and their effects, especially when they have a direct impact on people (bathing water for instance). 3) Providing proofs by sharing various experiences, positive and negative, of REUSE projects.

**Yvan Kedaj**, Deputy Director of the Aqua-Valley Competitiveness Cluster, reminded during the discussion panel that it is necessary to support research on the REUSE, and he launched a call for the



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internationalisation of research projects funding, in view of a water “nexus” in the Mediterranean. This nexus, that could potentially be realised through the creation of a Mediterranean Water Agency, as José Muñoz suggested, could serve as a platform to launch a call for proposal similar to that of the RMC Agency, but at the Mediterranean level, with the support of the Union for the Mediterranean (UfM).

Why does the REUSE approach not work at a large scale? Although the normative framework is developed in some countries, issues such as technological costs (linked to the necessary high-quality treatment of water), the lack of treatment capacities in some areas (an essential prerequisite), the investment profitability linked to the REUSE, the social acceptance of users, as well as sanitary and environmental risks hinder the REUSE development. For **Jacques Ganoulis**, the message for political decision-makers is clear: it is necessary to take up challenges by learning from the past and natural cycles. In order to reduce costs and generalise the use of REUSE, it is necessary to shift from “intensive” (chemical) technologies to “extensive” (natural) technologies, following the example of lagooning. These technologies have the advantage of being ecological, sustainable and of requiring less maintenance than major plants, which enable a quick reinforcement of capacities. Likewise, decentralised STP, closer to the direct issues of the territories on which they are located (rural, peri-urban areas), should be implemented more often into land planning. The centralised STP of major urban centres must remain in contact with the territories where fresh water is collected, in order to take part in their development or erasing the ecological footprint on water resources by recharging groundwater and rivers. As Rémi Touron reminded, it is necessary to educate and raise awareness in users. The awareness of the resource specificity is the only way to solve the water consumption paradox: decreasing costs should not lead to resource waste.

Public authorities and economic actors must unite their skills and prerogatives to shift from a sometimes informal REUSE to a planned tool that can support local policies and bigger strategies, like in Jordan. In the Mediterranean region, the treated waste water is mostly reused in irrigation, while towns and industries are only starting to use it. In spite of the disapproval of those who defend a water of excellent quality for the public’s health, the solution could be to adopt a pragmatic approach aiming to offer a treated wastewater that is adapted to its future use, as did the United States (Los Angeles station).