AQUARES – Interim Report
1st Stakeholders Meeting

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Introduction

This report is one of six required by the TORs to “focus on what was discussed during the stakeholder’s meeting held in each partnering institution”. The report is meant to synthesise the main issues which emerge during discussions and highlight bottlenecks in current policy and legislation on water reuse

At the end of the first semester six partner institutions observed the deadline and submitted minutes of the meeting. (Table 1). A brief synthesis will be given for each partner contribution, drawing on the minutes submitted by each partner to highlight the main issues raised by stakeholders at each partner meeting.

Partner	Submission of meeting minutes (1SM)
RRAPK	✓
Murcia GDW	
Lodzkie Region	✓
EWA	✓
FLA	✓
OOWV	
SSW	
Trebnje	✓
Baltic Coasts	✓

Table 1

Partner Reports

1**. Regional Government of Murcia, Ministry of Water, Agriculture, Livestock and Fisheries, General Direction of Water (RRAPK**)

The themes which were discussed during the 1st semester meeting focused on

1. The Interreg programme and the AQUARES Project
2. Circular economy
3. Barriers to transition to the circular economy
4. Good practice examples of water re-use
5. Exchange of practices and opinions between stakeholders
6. Grant possibilities

1.1 Emerging Issues

1. Problems with legislation
2. Problems with land ownership
3. Education dissemination of information among the public
4. Interest in interdisciplinary information
5. Better use of sludge
6. Emphasis on high water quality
7. Problems of drought
8. Issues with bacterial and pesticides
9. Cooperation between stakeholders and public administration
10. Lack of finance

1.2 Lessons learned

A. Scope of improving and changing legislation more cooperation is needed between public administration and the private organisations dealing with water reuse.

B. In order to educate stakeholders it is necessary to disseminate information on the importance of water reuse, through seminars and workshops.

C. Funding of reuse projects requires support from public administration and European Commission

2. Lodz Region

The 1st meeting was held on the 10/09/2018, Lodz, al. Piłsudskiego 8, Office of the Marshal of the Lodzkie Voivodship.

The Lodzkie partners proposed the following activities for the AQUARES project

- **a.** Comparative analysis of regional and national policies in the field of water reuse based on the project partner from Greece.
- **b.** Analysis of the needs and investment opportunities of the AQUARES regions in the scope of water reuse based on the methodology provided by the Project Leader (Spain) 2019,
- **c.** Evaluation of technologies and practices for water reuse in various sectors and regions based on the methodology provided by the Project Partner from Spain
- **d.** Identification of best practices for monitoring, evaluation and ensuring compliance with water reuse standards in based on the methodology provided by the Project Partner from Germany.

The result of these studies and research will lead to the development of a regional plan of action (action plan), and further update Regional Operational Program of the Lodz Voivodship

leading to new investments to support projects related to water efficiency and improvement of management of water bodies.

Study visits will be conducted to a number of institutions to demonstrate the improvements which can be achieved with the appropriate investments. The visits include:

- Technical University of Lodz, The Faculty of Process Engineering and Environmental Protection of the Lodz University of Technology completed the MONSUL project aimed at launching a measurement system for assessing water quality parameters in the reservoir and developing a 3D model of the Sulejowski reservoir that will allow calculation of temperature distribution, flow velocity and concentrations of pollutants and simulation of the ecological state of the reservoir,
- Politechnika Łódzka: Bay of Sport, an example of innovative technology and swimming pool water,
- Politechnika Łódzka: Water Praxis - design of sewage connections in commune of Mniszków - (implementation of innovative methods of limiting biogen emissions to rivers and lakes to practice
- European Center for Ecohydrology PAS: Project EH-REK "Life + " - recultivation Arturówka (currently the project is implemented in Radom) ,
- The European Center for Ecohydrology PAS: Project Switch: Sokołówka river and the application of ecohydrology River restoration to the city in order to increase water retention and improve the quality of life in the city; Ner river and yottamole's approach to water management in the city – Phyto-technologies use of sewage sludge management, bi oenergii production and improving water quality (in collaboration with GOS)
- EC1 - example of modern, eco-innovation and investment: 6 has a trapezoidal tank s (volume 1 700 m3) storing fresh rainwater, which is used for m. Al. to power the cooling tower, flush toilets. In addition, it has a green roof that allows, among others. on collection of rainwater, air purification.

3 Fondazione Lomardia per l'Ambiente

The 1st stakeholders' meeting was held on the 28th November 2008 at Palazzo Pirelli in Milan.

Following a brief introduction, Professor Ballarin Denti, the project supervisor emphasised on the strengths of AQUARES as a platform for experience exchange, improvement of governance and good practice in the Lombardy region.

Issues of climate change and its future impact on water supply in the Lombardy region on water bodies were explained by Mr Guzetti in his presentation. Mr Guzetti also demonstrated the main water reuse policies and emphasised on the importance of stakeholder involvement.

Mrs. Lapi closed the sessions by indicating that the project not only offers stakeholders an opportunity to share their professional experiences during the main steps of the project, such as the next interregional meeting which will be hosted by FLA, but also allows them to enrich their works by such events.

In addition, she explained the substantial potential for investments that could be unlocked in order to support projects on water efficiency and to improve the management of water bodies.

Overall, there was a positive reaction from stakeholders who welcomed this opportunity to be involved in similar activities. Representatives from the University of Milan and from the Land reclamation Authority “Est Ticino Villoresi” referred to other relevant projects inherent with AQUARES amongst which is phyto-filtration and emerging contaminants. Practical knowledge of these entities is expected give added value produce synergies in AQUARES. ERSAF emphasised on the need to resolve conflicts to improve governance and policies on water reuse and also brought up the importance of addressing emerging substances.

The Italian Ministry of the Environment highlighted the importance to develop green infrastructures to ensure economic sustainability and reduce secondary impacts, such as waste generation and energy consumption. Together with the representative from the University of Milan he emphasised the importance of green infrastructures and ecosystem services for the quality of wastewater.

Basic conditions must be guaranteed in order to improve such infrastructures:

a. enhancing the quantitative and qualitative protection of water resources;
b. simplifying purification interventions when technically suitable;
c. implementing the procedures for the economic upgrading of sites of pre-
d. eminent public interest;

e. facilitating testing and encourage the development of remediation
f. innovative technologies.

Before ending the meeting, FLA's team asked the participants to reply by email to a few questions related to water reuse. Alessandra Gelmini, Mrs. Alessandra Frongia, Mr. Alessandro Bianchini and Mr. Stefano Polesello from the water research institute ISRA-CNR (who couldn't attend the meeting) replied. Their answers are listed in the minutes of the meeting.

In this report reference will be only made to the questions asked to avoid repetition.

1) How do you intend or how do you think it is necessary to proceed at the legislative level in order to promote the practice of reuse of water resources in Lombardy?
2) Depending on the sector involved (agricultural, urban, industrial and environmental), what are the greatest difficulties that need to be addressed in order to obtain a permit to use treated wastewater?
3) On a regulatory level, how would it be possible to stimulate the circular economy in wastewater treatment?
4) What are the critical steps to define appropriate development strategies and actions to address critical issues (eg emerging pollutants)?
5) In addition to the priority areas identified by FLA which other urgencies you would like to report?
6) Which virtuous examples of wastewater treatment plants or WWTPs (such as the Nosedo WWTP) are found in Italy and/or in Lombardy and for which reasons? How could their experience be transmitted to other realities?
7) In order to remove the emerging pollutants, specific technologies are required, which are often very expensive. Following your experience, which technologies are the most promising and most advantageous from an economic point of view?
8) How would it be possible to establish collaborative relationships between research institutes and institutions?

9) According to a recent publication by Intesa San Paolo 1 , part of the required investments should be used to implement advanced digital solutions for environmental observation and monitoring (eg drones, sensors). This monitoring would be useful, for example, to install a capillary network of control devices in water distribution systems, which would allow optimising the management of the resource in real time. How could these investments be unlocked?

4. Municipality of Trebnje

The first stakeholders meeting “AQUARES – Water reuse policies advancement for resource efficient European regions” was held on Nov 30, 2018 at the conference room of the Municipality of Trebnje, Trebnje. Stakeholders included Ministry of Agriculture, Forestry and Food, Ministry of the Environment and Spatial Planning, Regional Development Centre Novo Mesto, University of Ljubljana (Biotechnical Faculty and Faculty of Arts, Department of Geography), public utility companies (Communal company Novo mesto, Communal company Trebnje) and Municipality of Trebnje.

The Head of the Department of the Environment and Spatial Planning the Mayor of the Municipality of Trbnje welcomed the participants and agreed on the importance of the Aquares project in the context of today’s circumstances where water resources are becoming more scarce.

Mrs Uhan, a project manager, gave a brief introduction and described what could be some impacts of climate change on the water supply in Slovenia and the EU. She emphasised that the project has to offer in terms of experience sharing and the potential investments that can be unlocked.

Mr Ritonja from Ministry of Agriculture, Forestry and Food stated that recycled water is in current a strategic source for irrigation. However there is still lack of information on emerging substances like plastics and medicines which may be found in treated waters in the last place (at first, we have some other water resources to be used). He also highlighted that not any water is good enough for irrigation. The biggest issue in water reuse is that we do not know enough about residues in recycled water (microplastic, medicines). This is a major concern.

Mrs Vodopivec from Ministry of the Environment and Spatial Planning illustrated the main policies on water reuse at the regional, national and European level.

Representatives of University of Ljubljana described relevant projects that they have developed and whose topics are inherent with the AQUARES project, such as LIFE RusaLCA "Nanoremediation of water from small water treatment plants and reuse of water and solid remains for local needs", LIFE CiVaCCAdapt, etc.

Other speakers included Mrs Maksimovic, Mr Zakrajsek and the representative of a communal company in Novo Mesto who explained the pilot project for water reuse in car manufacturing company Revoz, Novo mesto. This is a novel project which improves efficiency of water use by recycling treated waters for an industrial purpose.

5. Līga Brūniņa Board of the Baltic Coast

In total, 7 presentations were delivered concerning projects and recent research on sustainable management and reuse of water resources in Latvia and abroad. These were:

1) "VillageWaters", experiences and results, Loreta Urtāne Faculty of Geography and Earth Sciences, Latvian University;

2) "Waterways Forward", experiences and results, Loreta Urtāne Faculty of Geography and Earth Sciences, Latvian University;

3) Sustainable water management in agriculture, Linda Grīnberga Department of Environment and Water Management, Latvian University of Agriculture;

4) The links between climate, water, energy, food and land use components for low carbon development, Ingrīda Brēmere, Baltic Environmental Forum;

5) Experience with planning and implementation of sustainable rainwater management solutions in Latvia, Jurijs Kondratenko Ltd. "Grupa 93";

6) “BSR WATER, Platform on Integrated Water Coorparation”, experiences and results, Andris Ločmanis Riga City Council City Development Department;

7) Water quality modelling for river basin management plans in Lithuania, Uldis Bethers University of Latvia, Faculty of Physics, Mathematics and Optometry.

All presentations of the working group meeting are attached to minutes of the meeting and are available on the website of the association “Baltic Coasts” in the AQUARES project section (http://baltijaskrasti.lv/blog/projekti/aquares/notikusi-pirma-darba-grupas-sanaksme/).

Discussions followed the aforementioned presentations and arguments raised were reported in the minutes submitted by the project leader. Very valuable information on wastewater management and treatment plants came from the presentation of the Village Waters project where it is aimed to develop cost-effective technologies for small premises and decentralised homes not connected to the public sewer. AQUARES is therefore key to providing experience to this project which aims to develop cost-effective and environmentally friendly wastewater treatment technologies on a small scale.

The recently launched BSR WATER project, which focuses on the development of policy tools and the promotion of sustainable solutions for waste water and rainwater management. The project calls for the promotion of cross-sectoral cooperation in water management, enabling international exchange of experience. Therefore, working with BSR WATER, it is possible to work towards common goals promoting re-use of water resources.

In the area of rainwater management, examples were presented namely the *iwater* and *Group 93* projects, which are examples of good practice in rainwater management in the Riga City Municipality. Both projects highlighted the importance of significant rainwater resources for improving urban landscapes and microclimate, recreation, promoting biodiversity, environmental education, and economic needs.

Thus, it can be concluded that the possibilities for stormwater management and reuse in urban areas need to be seen in complex terms, both from urban planning, engineering, environmental and aesthetic point of view. The creation of wetlands is important for water reuse in agricultural areas and has additional benefits by improving water quality.

Within the AQUARES project these studies provide a scientifically sound platform for the development of possible policy tools and action plans for the reuse of water resources. The meeting also provided an opportunity to examine linkages between climate, energy, water food and land use evaluate the interaction between policy objectives and measures to improve policy making and resource efficiency

6 Energy and Water Agency.

The first stakeholders' meeting was held on the 1 February 2019 at Villa Arrigo Naxxar Malta.

The project leader Mr. Manuel Sapiano introduced the AQUARES project to those present and described its objectives. He explained how stakeholders' meetings in participating countries will be structured. Following this introduction four presentations were delivered by different speakers in the following order:

a. Relevance of Water Reuse to overcome water scarcity and drought delivered by Dr.J. Mangion

b. The National Perspective of water reuse delivered by Mr M. Sapiano

c. Presentation by Mr. Stephen Zammit on the wastewater treatment infrastructure operated by the Water Services Corporation(WSC)

d. Presentation by Mr.Geoffrey Saliba on the initiative by the Malta Business Bureau to promote water conservation in hotels and the tourism sector

The first presentation by Dr. John Mangion provided background information on the relevance of water reuse as an alternative resource to buffer the effects of climate change and future availability of water resources. The presentation proposed solutions to overcome water

scarcity and drought. The list of solutions is included in the minutes. The EU Commission's new *Circular Economy package* with a related Action Plan to boost productivity and competitiveness was highlighted and included amongst others actions on water reuse, including a proposal for regulations on *minimum requirements*

The second presentation delivered by Mr. Manuel Sapiano "National perspective of Water Reuse"

He distinguished between *indirect* potable reuse, following the discharge of treated wastewaters to an environmental buffer, and direct potable reuse, from the treatment plant to the consumer. The latter is still considered as a high risk option whilst the first is an established practice in the EU. Water reuse should primarily be directed to water uses facing an insufficient water-supply base.

Malta's 2nd RBMP seeks the conjunctive adoption of water demand management and water supply augmentation measures to achieve the good status objectives of the Water Framework Directive. Water reuse is key to this strategy, widening the water resource base available to address deficiency in water supplies, both potable and other.

Within the (national) water balance, water reuse cannot be considered as a strict water supply augmentation measure and by introducing an in-system feedback loop, enables water demands to be met by smaller water inputs. Thus water reuse reduces the pressures on natural water resources (inputs).

Mr Sapiano concluded that the strategic approach should be that of ensuring the availability of water supply in a changing demand scenario (security of supply) whilst maintaining current cost-levels to ensure affordability and competitivity. This strategy should not compromise attaining higher levels of environmental protection.

The third presentation was delivered by Mr Stephen Zammit from the Water Services Corporation(WSC) who outlined the infrastructure which WSC operates, with a special focus on wastewater treatment plants and new facilities to polish the effluent to high standards. He gave details on ongoing projects to deliver highly treated New Water to farmers at the point of use. Apprehensions by farmers have been overcome following an intensive educational campaign where farmers were invited to irrigate their cultivars with this water, free of cost and in some cases supplied at the point of use.

The fourth presentation was delivered by Mr Geoffrey Saliba from the Malta Business Bureau.
He described an initiative which was undertaken to promote water saving amongst hotel operators and industry in general. It was noted that operators were willing to apply water saving devices in general but some had encountered operational problems particularly in some hotels

Following these presentations, *break-out* sessions were organised and four sets of questions were put to stakeholders who were split in two groups, each discussing two of the questions. The arguments raised and the results of these sessions are reported in the minutes whereas the questions are reproduced hereunder:

1. Which of the followings is the issue of most concern for water reuse?

- environmental sustainability
- cost effectiveness vis a vis other non-conventional sources
- marketability for crops
- food safety,
- unknown behaviour to treatment of emerging substances

2. Tourism. What does the touristic sector and the leisure industry expect from the service provider when reclaimed water becomes available.

3. Social issues. Water reuse is constrained by a number of social barriers one of which is public apprehensions? What would you suggest to overcome these barriers?

- improve awareness and education
- encourage more transparency to monitoring data.
- provide consumers with easy-to-understand data on food and water quality.
- deliver education on water recycling in schools

4. Irrigation farming. In your opinion, what does the conventional farmer expect from water reuse:

. higher productivity of crops and higher returns.

- more resilience to drought.

- Both of the above.

- Lower fertiliser cost

Based on the reactions of stakeholders it transpired that farmers' concerns are mainly addressing the marketability for crops being irrigated by reused water. For those coming from the tourist sector as well as industrial, the cost effectiveness is definitely their main issue of concern. For regulatory institutions, namely the Health and Environmental sector the general well-being of the consumers, food safety come first. Confidence in the quality of the effluent was also considered as a barrier to the acceptability of water reuse whilst the cost of treatment may also restrict its affordability

7. Conclusions of the first stakeholders' meeting – emerging issues

By and large the outlook towards AQUARES and water reuse of all partner countries was indeed a positive one where water reuse is considered as a sustainable alternative to overcome scarcity and drought. All partners emphasised on the need to include water reuse in national water policies as a tool to implement sustainable management of water resources within the context of a *circular economy*. Some partners showed specific interest in methodologies to stimulate further this concept by introducing appropriate regulations.

Climate change was also an issue discussed by all partners on account of its impact on various sectors and the importance of water reuse to overcome the effects of water scarcity and drought, which can be reduced by the reuse of treated waters.

The reports express the need for efficient caution and safety standards. There are still several unknowns on emerging substances (some partners include plastics) which may be found in treated waters intended for reuse. One partner referred to the relevance of the proposal for a regulation for the European Parliament and the Council on *Minimum Requirements on Water reuse*

The sector where there was common agreement as the most suitable for water reuse is irrigated agriculture. Treated waters can provide farmers with a feasible alternative during the spring and summer seasons particularly where dry spells of weather occur for very long periods. Here again concern was raised over quality standards suitable for crop irrigation.

Another topic which emerged during discussions was rainwater harvesting for use in municipalities either for landscaping or other secondary use.

Finally all partners expressed the need to have appropriate policies where water reuse “figures in” as a key tool towards the sustainable management of water resources. Partners emphasised the need to support these policies with a robust legal framework that can lead to an improved regulation and management of water resources.

Indeed this is the outstanding value of AQUARES which serves as a forum for different partners to discuss common issues concerning water reuse, and involve different stakeholders to share their experience gained on the ground.