AQUARES – Interim Report

2nd Stakeholders Meeting

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Introduction

The second stakeholders meeting theme revolted around the *Linkages between water reuse policy and other sectoral policies, namely agriculture, industry and tourism*.

This report is the second of its kind required by the Guidance Document to focus on what was discussed during the stakeholder's meeting held in each partnering institution". It is meant to synthesise the main issues which emerged during discussions of the second stakeholders' meeting, highlighting bottlenecks in current policy and legislation on water reuse.
Following the second stakeholders meeting the following national partners submitted minutes to the EWA; these are listed in table 1 below.

Partner	Submission of meeting minutes (2SM)
RRAPK	✓
Murcia GDW	✓
Lodzkie Region	✓
EWA	✓
FLA	✓
OOWV	✓
SSW	
Trebnje	✓
Baltic Coasts	✓

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. minuted documents received from partners are attached to this report

Partner Reports

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

The second stakeholders meeting started with an opening question - "What do you think the investment priorities are about water reused in Murcia Region?"

In the discussion held the following points where the ones which tackled the question.:

- More attention needs to be implemented to tertiary treatment which must be in every single WWTPs . This is important so that direct water reuse can be carried out, and the future directives can be met. Issues and complaints were raised is not tertiary treatment in Murcia East WWTP or in Cartagena's.

- Secondly, there must be specific distribution networks for watering gardens. Just because if droughts management were done with a differentiated distribution network for watering gardens, technical performance would increase (there is to take into account that Murcia is a drought area).

Important investment must be made for reused water distributionSo, within that plan, the following measures are to be considered:

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- . .It is necessary to carry on advancing in the management plans; and above all, working on the water quality that the end user receives.

- San Javier is a suitable point to increase reused water consumption. That is to say, that the investment is better in the coastal municipalities than in those whose discharges are necessarily made in the river.

2. Lodz Region

1. The aim of the meeting was to discuss the needs of the Lodzkie Region in terms of reducing water abstraction and reuse. The discussion was attended by representatives of region administration (including the Managing Authority of ROP WŁ), science and business which amounted to a total 21attendents).

2.During the First Session questions about Political challenges where asked such as – “how to make the triple helix work in practice?”
The conclusions from the discussion focussed on 5 issues:

- Cooperation platforms
- Decentralised water treatment methods

- Challenges and societal barriers
- Campaigns on water efficiency

Effective consideration of the issue of water reuse therefore requires the development of a broader economic framework..

3. Second Session concerned the “Consultation on proposals for modifications to the Regional Operational Programme 2014-2020 in the aspect of water reuse” provided by the Lodzkie Region.

The main problem for sustainable water management in Lodzkie Region was identified as the poor surface water status in Sulejów and Jeziorsko reservoirs and related catchment areas. This situation is due to secondary agricultural and industrial activities.

One of the most important barriers to the use of water recovery technologies are economic issues, and the resulting low public awareness of the benefits that can be derived from the application of modern sustainable water management solutions.
Another problem is the lack of expertise by entrepreneurs willing to implement wastewater treatment technologies in their plants. Land development was also identified as a threat to the water resources of Lodzkie Region.

During the discussion a number of solutions involving water reuse were proposed such as:

- promotion of natural biological processes in water treatment (ecosystem biotechnologies),
- treatment systems in wastewater generating areas (e.g. industrial plants),
- creating water reservoirs,
- restoration and protection of wetlands,
- the use of expansion wells in buildings to be constructed,
- support for organic farming.

The solution that would allow for the development of water reuse technology in Lodzkie Region is to include elements related to this issue in the relevant calls.

The use of water recovery and reuse technologies would give additional points to beneficiaries applying for co-financing in various areas, not only those related to environmental protection or water management in particular.
It was proposed to consult with Polish Ministry of Environment to meet national targets with local needs.

4. Third Session was a wrap up of the conclusions and main messages of each breakout session as presented by each rapporteur.
It was decided that Lodzkie Region will organize the first study visit within the AQUARES project presenting investments and solutions related to the reuse of water – October 2019.
Practices to be presented and promoted will include proven investments and solutions which are worth replicating due to their positive impact on the natural environment and improvement of living conditions in urban areas.

During the study visit, the following places will be visited:

- Technical University of Łódź: Sport Bay –
- European Ecohydrology Centre of the Polish Academy of Sciences: EH-REK "Life+" project
- Arturówek reclamation
- Sokołówka River and application of ecohydrology to reclaim water retention and improve the quality of life in the city;
- Biliński Textile Workshop Sp. j. - innovative process of dyeing cellulose fibre fabrics

3 Fondazione Lomardia per l'Ambiente

In the first session a presentation was delivered introducing the goals and milestones of AQUARES project.

Details of the main outcome of the "Interregional Workshop on Water Reuse Technologies", were given and illustrations made on the sectors that can benefit the most from water reuse, such as agricultural. Weaknesses and barriers of the national legislation were also explained. The speaker presented the new European legislation on water reuse, arguing that it could be considered as a valid

starting point for producing better regulations capable to incentivize a more effective circular economy in the region.

Question put by the Lombardy Region: “How the AQUARES project can support local initiatives on water reuse?”

What was discussed concluded that Despite AQUARES’ potential unlock investments to support projects on water efficiency, the region is facing some challenges connected with the ROP ERDF 2014-2020 that has already concluded its funding allocation. However, during the meeting it was agreed on trying to work out alternative solutions to this issue.

Second Session

A second presentation was delivered presenting six Italian cases on water reuse which proved that water reuse can be successfully applied to different sectors. The speaker stressed the importance of integrating treated water with other non-conventional water resources for different purposes (such as combining rainwater with treated water for firefighting uses). Finally, the illustrated climate trend scenario of the Lombardy region, highlighting that the territory on the right side of the Po river is experiencing everlasting droughts during summers.

Third Session and Roundtable discussion.

During this session FLA members and Lombardy Region’s representatives explored the potential of the AQUARES project. Specifically, different sectors (agriculture, tourism and SMEs) have been identified as the most suitable for implementing the project. However, since ROP ERDF 2014-2020 has already concluded its budget allocation, the group faced the challenge to figure out what by which project or initiative we could support. Nevertheless, it was agreed on different measures, such as scheduling future meetings with project designers financed by the ERDF in order to influence their workplans.

Conclusions

The Lombardy Region expressed again its interest in the project, looking at the possibility of using the outputs that will emerge to convey financial resources of different nature, at national or European level, towards the implementation of

projects aimed at internal areas of Lombardy and dealing with the topic of the efficient use of water resources. This meeting has been successful in providing FLA with more suitable tools to redirect its efforts towards the priorities of Lombardy's government policies in relevant fields of action (agriculture, tourism and SMEs).

4. Municipality of Trebnje

First Session

The first presentation focused on Water in circular economy. In the context of growing urban population and demand for gradually depleting sources, coupled with environmental crisis, shift towards circular and more efficient management of water is a necessity. Restructuring is needed and/or decentralizing the urban water infrastructure to facilitate the extraction of water, nutrients and energy from wastewater and enable their reuse in agriculture and energy systems on site. Thus, on one hand the resources can be used for increasing resilience and on the other hand this management assists the existing infrastructure by reducing waste load.

Second Session

Second presentation was delivered and concerned the project BLUEGRASS, INTERREG IT-SI. BLUEGRASS which aims to introduce and develop aquaponics as a sustainable production technique that reflects the principles of green growth and the circular economy. This technique involves the cultivation of vegetables with a decrease in water consumption of up to 90% with respect to traditional farming practices, by recycling wastewater from fish farms. Two pilot aquaponics systems (one in Slovenia and one in Austria) have been built and have created a network of farmers and fish farmers who are interested in expanding their businesses by experimenting with this technology.

Third Session

In the last session, the Ministry of Environment and Spatial Planning, in charge for preparing national guidelines for water reuse in Slovenia described the process. At the moment there are no regulation. The European Commission proposed on May 2018 new rules to stimulate and facilitate water reuse in the EU agricultural irrigation. The Ministry does not want to just transfer parameters and guidelines for water reuse from other countries but rather develop its own.

Discussion and conclusions

1. The need for more efficient use of water and other nature resources is increasingly reflected in strategies and legislation through Europe. Water reuse is part of Circular Economy strategies and is very interdisciplinary.
2. There were identified obstacles that need to be overcome for the implementation of water reuse in Slovenia:

- policy development;
- social awareness and acceptance;
- upgrading
- existing water infrastructure where we can do it;
- supporting research and enriching
- knowledge about water reuse implementation possibilities;
- supporting investments in water reuse.

3. The goal should be closing loops. The need was highlighted to restructure and/or decentralizing the urban water infrastructure to facilitate the extraction of water, nutrients and energy from wastewater and enable their reuse in agriculture and energy systems on site. Thus, on one hand the resources can be used for increasing resilience and on the other hand this management assists the existing infrastructure by reducing waste load.

4. Aquaponic is one example of water savings and water reuse in agriculture, especially suitable for urbanised area.

5 Importance of recharging aquifers and not rapidly changing hydrological circles.

6. Ministry of the Environment and Spatial Planning is preparing guidelines for water reuse according to EU legislation.

7. Implementation of water reuse at larger scale, also to increase awareness about it.

5. Līga Brūniņa Board of the Baltic Coast

1. Following the introductory session of second stakeholders meeting the agenda was devoted to one of the problems identified during the first stakeholders meeting - sustainable rainwater management and reuse.

The topics discussed were:

- improvements to the legislation on sustainable rainwater management and reuse;
- rainwater purification;
- regulatory framework and green solutions;
- the issue of re-using water resources in irrigation systems (wetlands);
- the reuse of rainwater in irrigation systems, fire safety, landscape design, peak load reduction in urban environments.

Furthermore, special attention was focused on the transfer of knowledge and effective solutions for water management policy, as well as water reuse for innovation and business opportunities, paying close attention to linkage between development planning documents and their integration into policy making and management process.

2. First Session

In first session the AQUARES project was presented within the objectives of Water Framework Directive in European level. In this session a presentation was delivered to:

- Explain how and where water reuse fits in an integrated water resource management model
- Show the interconnection between water policy and various economic sectors
- Explain the benefits which may be derived by reusing water including the reduction of water
- stress if treated water is properly matched with the intended use.
- Show how water reuse improves efficiency of use and is an effective source to alleviate

- scarcity and improve the status of water bodies.

Following this, the problems and opportunities of water reuse in Latvia were presented and these issues discussed water reuse in Latvia – Problems and opportunities.
The main barriers to sustainable water re-use, as well as possible uses in various sectors of the economy. The presentation further analyzed problems and opportunities in five categories of water use:

- Drinking water;
- Waste water from households;
- Waste water from production;
- Rainwater in urban environment;
- Rainwater in agriculture.

At the end of the presentation, practical examples of reuse of water in Latvia and other European countries were shown, as well as questions for the meeting`s discussion part:

- The topicality and directions of sustainable / repeatedly reused water use in the context of Latvia
- What would be the path to take over European water policy in Latvia?
- Do you see inconsistencies with existing normative documents in Latvia?
- Your organization's experience with this issue?

Although in Latvia, water reuse is not a major problem, however, rapid climate change brings new solutions and approaches to the sustainable use of water resources especially during the summer season in the agricultural sector, due to droughts and in some areas even shortage of water resources shortage.
Overall, the first session was dedicated to give wider view on the problem and topicalities around sustainable water reuse implementation, practical examples, problems and possible solutions.

Also, this info gives baseline for next part of the meeting as well as some key points for discussion.

3. Second Session

AQUARES project 2nd stakeholder group meeting continued with two stakeholders' presentations on the topic of sustainable rainwater management and reuse.

1) The society`s "Cleantech Latvia" presented "Development of legislative proposals in the field of sustainable rainwater management".

First stakeholder's presentation was dedicated to improvements to the legislation and politics on sustainable rainwater management and reuse, including regulatory framework and green solutions; the issue of re-using water resources in irrigation systems (wetlands); the reuse of rainwater in irrigation systems, fire safety, landscape design, peak load reduction in urban environments.

The presentation`s opening question was – How can legislation contribute to sustainable rainwater management? Sustainable rainwater management is a multifunctional combination of solutions of infrastructure development and maintenance costs. The main aspects of the proposals to improve the regulatory framework are:

- Common analysis of rain drainage and drainage systems;
- Planning hierarchy and prioritization;
- Designing;
- Water quality;
- Maintenance, responsibility and ownership;
- Fee for infrastructure development and maintenance.

Also, sustainable rainwater management solutions for parking lots were discussed and analyzed.

2) Riga Technical University presented "Project NOAH – Protecting Baltic Sea from untreated wastewater spillages during flood events in urban areas". The main challenge of the project is to reduce urban stormwater runoff and the spillages of untreated wastewater into the receiving waters caused by extreme weather such as heavy rains and floods.

NOAH develops a new layer for extreme weather events to be used in computer-based modelling of drainage. By combining this modelling with traditional city planning techniques municipal planning shifts from fragmented individual site-based planning to a holistic approach covering the entire urban catchment.

Both expert presentations highlighted a very topical issue in Latvia - sustainable rainwater management. This theme is particularly important in the area of re-use of water, as it has the potential to generate financial savings, but also to promote environmental sustainability through proper management and re-use of rainwater in both urban and rural areas.

4. Discussion Session

After all presentation was been concluded, a discussion session was initiated. All stakeholders actively participated in last part of the meeting and had a fruitful discussion.

First discussion object was – How legislation can facilitate or hinder sustainable rain/storm-water management. It may seem that discussion divergent from the main theme of reuse of rain water, but it should be remembered that in order to introduce the reuse of rain water, it is necessary to organize and create a sustainable environment for storm/ rain water management. Rainwater management is not only rain water drainage, but also the use of water services or ecosystem services in urban environments, water storage, use to regulate microclimate or use for economic purposes. The key to reducing network load that can be achieved with both low-cost solutions and costly solutions is sustainable management. Not only technical but also institutional aspects are being discussed. Sustainable rainwater management is a multifunctional infrastructure. It is not just water drainage - how to drain and clean water as soon as possible or more successfully, but also how to use rain water resources as part of the urban environment.

In Copenhagen are good examples where in the event of heavy rain city parks serves as a water reservoirs, which allow infiltration and purification of rainwater.

In Latvia, there is good infrastructure with rain drainage and drainage system, but a considerable number of maintenance problems still exist. A very important aspect that has not yet been successfully addressed, the sustainability aspects of covering infrastructure development and maintenance costs. It is not only environmental sustainability, but it is also financial and economic sustainability. When rainwater drainage is used, a new and innovative approach would be to apply the principles of the river basins, where natural boundaries are respected.

Solutions in each part of the basin also affect solutions in other parts of the basin. It is also important to notice that still outdated climate data are being used. The suggestion would be to define what data should appear in building codes, construction climatology and LBN, which concerned rain drainage.

6. Coldenburgisch Ostfriesischer Wasserverband OOWV

The Agenda Summary consisted of the following:

1. Visit of the wastewater reuse demo site in Nordenham, Introduction to the technical possibilities and challenges of wastewater reuse.
2. Introduction to the AQUARES project.
3. Presentation of the groundwater resources of the island of Langeoog
4. Water reuse as a possible support of the groundwater of Langeoog against saltwater intrusion, technical and organizational approaches to secure the drinking water for the island.
5. Discussion.

Results and conclusions

Following aspects were discussed:
Aspect 1: The use of drinking water for irrigation of the green areas of the Golf course is not possible in quantities like in the dry year 2018. The aim is to not to use drinking water in the future, possible alternatives were discussed, possible use of surface water, high importance of laboratory tests of the water quality, parameter set and sampling still to be coordinated.
Aspect 2: Risk of microbiological and hygienic contamination when using treated waste water for irrigation.
Aspect 3: Due to the small quantities and the weather/seasonal demand, water reuse is probably not an economic option; there are currently no other customers known, grey water use too far away, transport costs.
Aspect 4: Changes in surface drainage, rainwater management should be taken into account so that as much fresh water as possible remains on the island to support the freshwater lens.
Aspect 5: Grey water use: In existing infrastructure, it is usually cost-intensive to retrofit grey water use. For new construction projects, however, this is also an economic alternative Such examples include:

- Construction project at the "House of the Island"; where, the swimming pool is in the immediate vicinity.
- In the swimming pool itself, reuse shower water for flushing toilets.
- Include intelligent water concepts for larger construction projects as evaluation criteria.

Aspect 6: Saving water to reduce the needed amount through e.g. water-saving fittings and OOWV checks further optimization of plant operation (rinsing water requirement, tank management

7 Energy and Water Agency.

The second stakeholders' meeting was held on the 1 February 2019 at Villa Arrigo Naxxar Malta. It focused on issues concerning *Linkages between water reuse policy and other sectoral policies, namely agriculture, industry and tourism*.

Four presentations were delivered:

a) Relevance of Water Reuse to overcome water scarcity and drought
b) The National Perspective of water reuse
c) Presentation on the wastewater treatment infrastructure operated by the Water Services Corporation (WSC)
d) Presentation on the initiative by the Malta Business Bureau to promote water conservation in hotels and the tourism sector

The first presentation 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 on "National perspective of Water Reuse" 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).
It was 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 by the Water Services Corporation (WSC) outlined the infrastructure which WSC operates, with a special focus on wastewater treatment plants and new facilities to polish the effluent to high standards. Ongoing projects to deliver highly treated New Water to farmers at the point of use were explained. 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 the Malta Business Bureau and described the promotion of 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

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

Most of the partners expressed their concern on the process of integration between water reuse policies and other policies such as agriculture and tourism. Other partners were interested in seeing the unlocking of capital for investment in water reuse project whilst some

focused on IWRM models and sought to explain the connections between water policy and various economic sectors. The relevance of reducing water scarcity and improving efficiency by water reuse, was also highlighted by several partner countries.

Several partners stressed the importance of integrating treated water with other non-conventional water resources such as rain water and surface water for different uses. Climate change is a growing concern in several regions and necessitates action and investment to overcome future scarcity.

One of the barriers common to several partners appeared to be lack of proper legislation. There is a wide scope of application of water reuse in agriculture and tourism – this was also a common outcome of the meetings. However proper funding sources should be identified to raise the necessary capital for similar projects

Some partners stressed on the need for more inter-sectoral consultations to bring water reuse closer to the end user. Of equal importance is the need to increase public awareness so to create a well informed demand and remove all apprehensions for water reuse.
There was a general interest on rainwater harvesting and the integration of planning policies with water reuse to ensure that stormwater is not waste and is made good use of.

All partners agreed that education and public awareness were two essential elements which need to be factored in a water reuse policy and its integration with other policies of economic importance.