

MID-TERM EVALUATION CONSENSUS REPORT

Sustainable technology for the staged recovery of agricultural water from high moisture fermentation products (RECOWATDIG)

Name of Coordinator: Dr. Halina Pawlak-Kruczek
 Project code: WaterWorks2017-RECOWATDIG
 Duration of project: 36 months
 Start date: 01/04/2019 End date: 31/03/2022

FOLLOW-UP GROUP

Please include the data of the FG members reviewing the report

Name	Organisation
Olga Covaliova	Institute of Chemistry, Republic of Moldova
Mi-Yong Becker	Bochum University of Applied Sciences

1. Scientific and technological progress (Maximum 250 words)

During the reporting period the work has been performed in line with 6 WPs out of 9. WP1: Additional mitigation plan was developed, Milestones M1.1 and M1.2. achieved. WP2: the aim was to define optimal parameters of pressure membrane process for 2 kinds of wastewater. M2.1 was achieved, M 2 2 – close to be achieved, characterization of condensate after drying needs to be done. Laboratory setup for chemical coagulation/precipitation process was prepared, process diagram, mass and energy balance for biogas plant made. Although, analysis of digestate from municipal biogas plant is still in progress. Multistage purification of digestate was delayed as wet digestate was just received. WP3: study of hydrothermal carbonization processes was started on a bench scale, in order to produce highly porous sorbent. Optimization of hydrothermal process of digestate dewatering was delayed. M3.1., M3.2 were achieved, although M3.3. needs to be finalized. WP4 and WP 5: characterization of physical, structural and chemical properties of hydrochars produced from digestate was done. WP6: the research of using the by-products of water recovery and purification was focused at pyrolysis of hydrochars. Information on the progress of work packages 4, 5, 7 and 9 all of which have started in month 1, 3 and 16 respectively, is not included in this report, information on WP 6 only cursory (page 10). Of WP 2 the tasks 2.3 to 2.6 have not started yet even though the work is due for conclusion in month 24. Delayed deliverables: D2.3, D 3.2. plan has been elaborated to overcome difficulties caused by Covid 19 pandemic. Multidisciplinary work: tests were performed in different areas, including membrane processes, precipitation/coagulation, hydrothermal carbonization, etc. Dissemination: papers in peer-reviewed journals – 5, manuscripts – 5, conference communications – 8, 1 Booklet published.

2. Collaboration, coordination and mobility within the Consortium (Maximum 250 words)

Four Consortium meetings were held, two of them online. Several joint publications in research journals and joint conference communications are to be mentioned. Collaboration also involved sending the samples, exchanging knowledge and experience, interpretation of experimental results. One Ph.D student and one MS student from Wroclaw University of Science and Technology and had internships in University of Twente. are participating in mobility programs under Erasmus + Programme. Project meets

the transnational nature and demonstrates added value due to collaboration.

3. Coordination with other international project funded by WaterWorks2017, or other instruments (Maximum 250 words)

There is no collaboration effective with other projects funded by WaterWorks2017, nor with other projects mentioned.

4. Coverage of the themes and sub-themes of the call (Maximum 250 words)

The Project is related to the following themes and sub-themes of the Call: Theme 2. Strengthening socio-economic approaches to water management. Sub-theme 2.2. The reuse of water: and Theme 3. Supporting tools for sustainable integrative management of water resources.

5. Stakeholder/industry engagement (Maximum 250 words)

A key user – ZGO Gac Company which is also a Consortium Partner – was involved in Project activity, providing the samples and necessary data for further research.

6. Recommendations for improvements/amendments of the report (Please complete Table below)

Page	Modification	Rationale for change
Page 5. The phrasing: "The proposed technology guarantees the recovered water will be safe".	<i>The requirements towards the irrigation water quality are not mentioned elsewhere in the Project Proposal and Mid-term report. To my opinion, such requirements should be specified, if not as a quantitative water quality indicatorsw, then at least as a reference to some Official document specifying the necessary vater indicators to be reached. In this context, the authors should demonstrate that the final purification degree of treated waters will be safe in using for irrigation of certain types of crops.</i>	<i>Safe using of treated water for irrigation of specific crops in agriculture.</i>
	<i>Of course, economic assessment of the proposed several-stage treatment technology should be performed, to consider its practical applications.</i>	<i>Importance of the cost-effective treatment technology.</i>
10	<i>Add information on work and tasks performed in WP 4,6,7, and 9</i>	<i>This information in important in order to understand whether the project is on track</i>
23	<i>Add plan for managing the project and expected results under prolonged Covid-10 conditions</i>	<i>To ensure project goals, a revised project plan, may be even including revised project goals should be provided. Transparency for the funding organizations is important.</i>

7. General Assessment Comments (Maximum 250 words)

The work in this project was mainly focused on WP 2 and WP 3. Furthermore, information on the progress of work packages 4, 5, 7 and 9 all of which have started in month 1, 3 and 16 respectively, is not mentioned, information on WP 6 only cursory (page 10). Of WP 2 the tasks 2.3 to 2.6 have not started yet even though the work is due for conclusion in month 24. Delayed deliverables: D2.3, D 3.2. Collaboration among the consortium partners has lead to several joint publications and conference contributions.

The project aims at generating reclaimed water from water from dewatering and drying of high moisture fermentation products. However, the stated market potential for this technology does not include the estimated overall amount of water that could be recovered and reused as a result of application/introduction of this technology. Also, important bottlenecks concerning water quality / effluent quality are not clearly addressed in the mid-term report.

As the Covid 19 pandemic is a force-majeure, it could be recommended that the Consortium prepare the request for Project extension, to be able to completely perform all the scheduled tasks. It is recommended that the project provide information on how much wet MSW digestate could be treated globally and how much reclaimed water could be generated for which reuse purposes by also taking into account different biomass qualities, logistics and other coordinations issues. This information has been missing from the beginning and while the project claims to provide results for SDG 6 (see 8 - Knowledge Output and Transfer, pp. 18-20), it remains unclear whether the technology can deliver outcomes on a scale significant for reuse purposes on SDG level.