MID-TERM EVALUATION CONSENSUS REPORT

Supporting tools for the integrated management of drinking water reservoirs contaminated by Cyanobacteria and cyanotoxins – BlooWater

Name of Coordinator: Dr. Maria Sighicelli
Project code: WaterWorks2017-BLOOWATER
Duration of project: 36 M
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
Gaëtane SUZENET	International Impact Partners
Olga COVALIOVA	Institute of Chemistry, Republic of Moldova

1. Scientific and technological progress

Progress towards the objectives was achieved, albeit not to the extent described in the main proposal, due to COVID 19 and delays in receiving funding for some partners.

WP1: D.1.1 has been completed. The choice and definition of the main parameters needed for the modelling exercises were finalised as well as the choice of the sensor, the suitable satellite platform and the design of the in situ sampling protocol. The monitoring system and technologies were tested and an initial sampling campaign was launched. D.1.2 has also been fully completed, except for Norway, as the study area was included beyond this reporting period. Not all the remote sensing data from 2 satellites were acquired (3 out of 6).

WP2: Two modeling methods have been tested regarding occurrence of cyanobacteria blooms. There were delays with data collection and model development. M3 – data collection not yet completed; M9 – hydrothermal model setup for all study sites and M18 – SELMA water quality model were tested, as well as coupling of these two models.

WP3: completed activities – Practical report on data performances and economical assessment of technologies for cyanobacteria reduction. Laboratory tests started to determine parameters of pilot scale equipment. First treatment step - chitosan coagulation was tested.
WP4: Guidelines on data collection, as well as data spreadsheet are under development. Data collection and acquisition are not yet complete.
The project promotes a multi-disciplinary approach through the combination of the use of modelling, monitoring techniques and water treatment technologies.

No dissemination of results was reported.

2. Collaboration, coordination and mobility within the Consortium

The mid-term report gives limited information on the efficiency of the coordination and organisation of the project, beyond mentioning the details of the kick-off meeting and the quarterly exchanges between the partners and individual emails and reports to the Coordinator to inform about the project progress. The mid-term report does not say how effective this communication has been in advancing the project work packages and what it resulted in. There were specific contacts between partners, on e.g. data requests for building the forecast models. The collaborative and mobility aspects were limited because of the constraints linked to the COVID 19 situation. The project meets the transnational nature, as for instance datasets obtained for Swedish and Norwegian lakes will be applied to develop the forecast model systems in Italy.

3. Coordination with other international project funded by WaterWorks2017, or other instruments

Despite referring to the Water JPI project PROGNOS WATER and Climate JPI WATExR in the main proposal, the mid-term report does not mention whether the work initiated under work packages 1 and 2 has built on these.

The mid-term report does not mention any other collaboration with additional projects. It only states ENEA having extended the collaboration with its Department of Robotics, with which the test campaigns for monitoring by drones are run. The collaboration has also been extended to the Università Roma 3 (Engineering Department) and the Czech University of Life Sciences in Prague (Department of Applied Geo-informatics and Spatial Planning) to assess the potential of Sentinel-2 data to monitor algal blooms.

4. Coverage of the themes and sub-themes of the call

The BLOOWATER project relates to the theme on 'enabling sustainable management of water resources' and in particular sub-theme 1.1 'Promoting adaptive water management for global change'.

The project outcomes to date resulting in building datasets, identifying evidence-based monitoring methodologies and tools, and testing and calibrating forecast modeling aim to contribute to enhance knowledge of the occurrence and impacts of algal blooms in lakes and reservoirs. It is however still early stage to assess to what extent these results will be a building block for supporting drinking water managers in their decision-making process regarding how to adapt water resources management under different spatial, temporal and geographical scales.

5. Stakeholder/industry engagement

During the Reporting period, a series of collaborations have been started with following stakeholders:
***Regional Agency for Environmental Protection** - ARPA Lazio and ARPA Marche, collaborated by providing historical data series on the new pilot areas of the project, Lake Albano in Lazio and Lake Castreccioni in Marche:*
***Regional Park** of "Castelli Romani", where the lake of Albano is located, interested in monitoring the quality of the lake water; is providing great logistical and administrative support for necessary authorizations to navigate and fly within protected areas;*
***Acquambiente** a company owned by Local Authorities with a strong vocation in the comprehensive management of water resources, the drinking water treatment plant located in the district of Castreccioni*

is managed by Acquambiente Marche S.r.l., which is therefore particularly interested in the treatment of waters subject to blooms. *There is no mention of stakeholders' engagement for Sweden and Finland, or of potential contacts with the industry in view of knowledge transfer.*

6. Recommendations for improvements/amendments of the report

Page	Modification	Rationale for change
Page 8	*Under the Project, it was proposed using of chitosan as coagulant to remove the algae from treated water, as the first treatment step, prior to the polymer-enhanced filtration step. It would be rational assessing the amount and cost of natural resources (sea shells, etc.) necessary to obtain the dispersive chitosan, on a regional / or broader scale. Moreover, it would be worth assessing the chitosan consumption for coagulation treatment step per 1 m^3 of treated water, and, maybe, to identify other available raw materials that could be used for this treatment step. Maybe, using a mixture of coagulating agents could be considered as well.*	*Overall significance of cyanotoxines removal problem, and possible practical application of the proposed two-step treatment technology.*

7. General Assessment Comments

Progress has been made on executing the work plan, albeit not the expected extent. The factors that caused the delay with the scheduled activities' implementation were: 1. Covid pandemics and 2. Delays in funding of two Italian Partners, which have not received funding yet. This led to the organization of just a few meetings, prevented mobility, experts exchange, joint works at project sites and water treatment tests; difficulties with acquisition of satellite data and equipment tools; delays with staff involvement: the post-doc position in Sweden was not completed; and delays in performing the scheduled activities under WPs 1-5. *Progress on the other aspects of the projects has not been fully developed in the mid-term report, e.g. interactions with other projects, stakeholders' involvement beyond Italy.* *It could be recommended that the Partners continue using their own available resources, including manpower, equipment, logistics; to continue the remote communication with other partners; to attract stakeholders with relevant expertise, to implement certain works. The Consortium could submit a request for project extension for a certain period they consider necessary to successfully finalize the project activities.*